SEPTINTOJI TARPTAUTINĖ KONFERENCIJA

THE 7th INTERNATIONAL CONFERENCE

2026 m. liepos mėn. 7-10 d., Vilniaus universitetas, LIETUVA

7th-10th of July, 2026, Vilnius University, LITHUANIA

EVOLIUCINĖ MEDICINA: ŽMOGAUS RAIDOS PERSPEKTYVOS IR SVEIKATA BESIKEIČIANČIOJE APLINKOJE

EVOLUTIONARY MEDICINE: PERSPECTIVES ON HUMAN DEVELOPMENT AND HEALTH CONSEQUENCES IN A CHANGING ENVIRONMENT

Rengėjas:
Vilniaus universiteto Medicinos ir sveikatos mokslų
Doktorantūros mokykla, VU Medicinos fakultetas

Organized by
the Doctoral School of Medicine and Health sciences
at Vilnius University, VU Faculty of Medicine

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Sofija ŠESTAK
Renata ŠIMKŪNAITĖ-RIZGELIENĖ
Rūta VOSYLIŪTĖ
Violeta ŽALGEVIČIENĖ

Tuesday, July 7th

Venue: Aula Parva, Old University Campus, Universiteto str. 3

13:00-14:00 Registration (lobby of Aula Parva, Old University Campus, Universiteto str. 3)

14:00-14:40 **Opening ceremony and concert** (Aula Parva)

14:40-16:00 Session I (Aula Parva)

Chairperson: Janina Tutkuviene

14:40-15.20 **Dalius JATUZIS**
Clinic of Neurology and Neurosurgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

CELEBRATING THE 245TH ANNIVERSARY OF VILNIUS UNIVERSITY'S FACULTY OF MEDICINE: A LOOK AT THE ORIGINS OF SCIENTIFIC DEVELOPMENT

15:20-16:00 **Noel CAMERON**
School of Sport, Exercise and Health Sciences, Loughborough University, Loughborough, United Kingdom

CRITICAL PERIODS IN THE EVOLUTION OF GROWTH IN THE HOMININS

16:00-16:30 **Coffee break (University Cafe)**

16:30-18:15 Session II (Aula Parva)

Chairperson: Dalius Jatuzis

16:30-17:10 **Wojciech SLUSARCZYK**
Faculty of Health Sciences, Collegium Medicum, Nicolaus Copernicus University in Torun, Poland

JĘDRZEJ ŚNIADECKI, ON THE PHYSICAL EDUCATION OF CHILDREN – TIME AND WORK

17:10-17:35 **Aistis ZALNORA**
Centre for Health Ethics, Law and History, Institute Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

JĘDZEJ ŚNIADECKI ON THE PHYSICAL EDUCATION OF CHILDREN: THE PRIMARY GOAL OF EDUCATION IS HEALTH

17:35-18:15	**Janina TUTKUVIENE** Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania THE ORIGINS OF AUXOLOGY AT VILNIUS UNIVERSITY 220 YEARS AGO: ANDRZEJ SNIADECKI'S INSIGHTS INTO CHILD DEVELOPMENT AND THEIR RELEVANCE TODAY
18:30-22:00	**Welcome networking** (University Cafe)

Wednesday, July 8th

Venue: Faculty of Medicine, M.K. Čiurlionio str. 21

09:00-09:30 Registration

09:30-11:35 Session III (Room 203)

Chairperson: Noel Cameron

09:30-10:10 **Lawrence M. SCHELL**
Department of Anthropology, College of Arts & Sciences; Department of Epidemiology & Biostatistics, College of Integrated Health Sciences, University at Albany, S.U.N.Y, Albany, USA

POLLUTION AS A FACTOR IN HUMAN REPRODUCTION AND EVOLUTION

10:10-10:25 **Tomas BALCYTIS[1,2], Ting-Chia HSU[1,2], Michael W. HUGHES[1,2]**
[1]Institute of Clinical Medicine, College of Medicine, National Cheng Kung University, Tainan, Taiwan
[2]International Center for Wound Repair and Regeneration, National Cheng Kung University, Tainan, Taiwan

METABOLIC REGULATION OF TISSUE REGENERATION

10:25-10:40 **Dalia GINEITYTE-OZOLINCE[1,2], Vaidas VICKA[1,2], Dalius RATAUTAS[3], Gabija BALCIUNAITE[4], Marija Mantaute GUDYNAITE[4], Marija AUKSTUOLYTE[4], Izabele GERVELYTE[4], Alis KURDIAN[4], Vilhelmas Konstantinas LANDSBERGIS[4], Jurate SIPYLAITE[1,2]**
[1]Clinic of Anaesthesiology and Intensive Care, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[2]Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania
[3]Life Science Center, Vilnius University, Vilnius, Lithuania
[4]Faculty of Medicine, Vilnius University, Vilnius, Lithuania

PEPTIDASE ACTIVITY IN SYSTEMIC INFLAMMATORY RESPONSE SYNDROME: A CASE SERIES IN CRITICAL CARE PATIENTS

10:40-10:55 **Goda ALEKNAVICIUTE, Linas CERNIAUSKAS, Dovile KARCIAUSKAITE**

Department of Physiology, Biochemistry, Microbiology and Laboratory Medicine, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

STANDARDISATION CHALLENGES IN EXTRACELLULAR VESICLES AND LIPOPROTEIN ISOLATION FROM HUMAN PLASMA

10:55-11:10 **Indre LAPINSKIENE[1,2], Vytautas PETKUS[3], Jurate SIPYLAITE[1,2], Mindaugas SERPYTIS[1,2]**

[1]Clinic of Anaesthesiology and Intensive Care, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[2]Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania
[3]Health Telematics Science Institute, Kaunas University of Technology, Kaunas, Lithuania

EARLY AND DELAYED SERUM BIOMARKERS FOR PREDICTING BRAIN DEATH AFTER ACUTE BRAIN INJURY: NEURON-SPECIFIC ENOLASE AND S100 CALCIUM-BINDING PROTEIN B

11:10-11:25 **Laurynas ORLA[1,2], Edita PAULIKAITE-BIVAINE[1], Evita SERIKOVAITE[2], Justina ALCAUSKAITE[2], Rasa AUKSTIKALNIENE[1], Violeta ZALGEVICIENE[2], Grita SKUJIENE[1]**

[1]Institute of Biosciences, Life Sciences Center, Vilnius University, Vilnius, Lithuania
[2]Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

EFFECTS OF MATERNAL PHTHALATE EXPOSURE ON HIPPOCAMPAL STRUCTURE IN FIRST- AND SECOND-GENERATION MALE RAT OFFSPRING

11:25-11:35 **Evita SERIKOVAITE[1], Justina ALCAUSKAITE[1], Edita PAULIKAITE-BIVAINE[2], Laurynas ORLA[1,2], Rasa AUKSTIKALNIENE[2], Violeta ZALGEVICIENE[1], Grita SKUJIENE[2]**

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[2]Institute of Biosciences, Life Sciences Center, Vilnius University, Vilnius, Lithuania

THE IMPACT OF PHTHALATES ON EMBRYONIC MALFORMATIONS AND LONG BONE LENGTH ACROSS TWO RAT GENERATIONS

11:35-12:00 **Coffee break (Room 202)**

12:00-13:35 Session IV (Room 203)

Chairperson: Lawrence M. Schell

12:00-12:40 **Sylvia KIRCHENGAST**
Department of Evolutionary Anthropology, University of Vienna, Vienna, Austria

GROWTH AND DEVELOPMENT IN TIMES OF CLIMATE CHANGE

12:40-12:55 **Andrius BLEIZGYS**
Clinic of Internal Diseases and Family Medicine, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

FIRST LITHUANIA'S NATIONAL VITAMIN D GUIDELINES: THE KEY ASPECTS

12:55-13:10 **Ausma SPRUDZANAITE, Donatas AUSTYS**
Department of Public Health, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

RADIATION PROTECTION IN HEALTHCARE: THEMATIC ANALYSIS OF NEWS MEDIA COVERAGE

13:10-13:25 **Vilma KUZMINSKAITE[1], Egle KONTRIMAVICIUTE[1], Alfredas LAURINAVICIUS[2], Gabija MARTISIUTE[2], Tomas POSKUS[3]**
[1]Clinic of Anesthesiology and Reanimatology, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[2]Department of Clinical Psychology, Institute of Psychology, Faculty of Philosophy, Vilnius University, Vilnius, Lithuania
[3]Clinic of Gastroenterology, Nephro-Urology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

EQUIVALENCE OF IN-PERSON AND ONLINE PATIENT EDUCATION IN REDUCING PREOPERATIVE ANXIETY FOR PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY

13:25-13:35 **Erikas TARVYDAS[1,2], Austeja TRECIOKAITE[1], Egidijus AUKSORIUS[1]**
[1]Center for Physical Sciences and Technology, Vilnius, Lithuania
[2]Faculty of Medicine, Vilnius University, Vilnius, Lithuania

LABEL-FREE INTRACELLULAR IMAGING USING HIGH-RESOLUTION DYNAMIC FULL-FIELD OPTICAL COHERENCE MICROSCOPY

13:35-15:00 **Lunch** (Vilnius Park Plaza Hotel, M.K. Čiurlionio str. 84)

15:00-17:30 Session V (room 203)

Chairperson: Sylvia Kirchengast

15:00-15:40 **Maria KACZMAREK**
Institute of Human Biology and Evolution, Faculty of Biology, Adam Mickiewicz University, Posnań, Poland

THE HEALTH PARADOX OF ADOLESCENCE: WHY EVOLUTION PROMOTES RISK-TAKING

15:40-15:55 **Kornelija RAUDUVYTE JIMENEZ[1], Paulina KAZLAUSKAITE[1], Austeja BALUTYTE[1], Irena BERNECKA[1], Matas JAKUBAUSKAS[1], Maximilian NEPEL[2], Angela HORVATH[2,3], Vanessa STADLBAUER[2,3], Arnoldas KAUNIETIS[4], Silvija KIVERYTE[5], Kristina MARCINKEVICIENE[5], Antanas GULBINAS[6], Povilas IGNATAVICIUS[7], Tomas POSKUS[1], Marius KRYZAUSKAS[*1], Augustinas BAUSYS[*1]**
*shared last authorship
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[2]Division of Gastroenterology and Hepatology, Department of Internal Medicine, Medical University of Graz, Graz, Austria
[3]Division Translational Precision Medicine, Center for Biomarker Research in Medicine (CBmed GmbH), Graz, Austria
[4]Department of Microbiology and Biotechnology, Institute of Biosciences, Life Sciences Center, Vilnius University, Vilnius, Lithuania
[5]Laboratory of Microbiology, Centre of Laboratory Medicine, Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania
[6]Faculty of Health Sciences, Klaipeda University, Klaipeda, Lithuania
[7]Institute for Digestive Research, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

POTENTIAL ROLE OF THE GASTROINTESTINAL MICROBIOME IN THE PATHOGENESIS OF SURGICAL SITE INFECTIONS AFTER MAJOR GASTROINTESTINAL CANCER SURGERY

15:55-16:10 **<u>Jurate VALCIUKIENE</u>[1], Egle LASTAUSKIENE[2], Aida LAURINAVICIENE[3,4], Matas JAKUBAUSKAS[1], Marius KRYZAUSKAS[1], Ruta Barbora VALKIUNIENE[3,4], Eugenijus JASIUNAS[5], Renaldas AUGULIS[3], Ausra GARNELYTE[3], Ieva STUNDIENE[1], Justinas KAVOLIUNAS[2], Ugne SILINSKAITE[6], Tomas POSKUS[1]**

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[5]Medical Science Centre, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[6]Faculty of Medicine, Vilnius University, Vilnius, Lithuania

EVOLVED REGIONAL IMMUNE ZONATION OF THE HUMAN ILEOCOLIC MUCOSA AND ITS BREAKDOWN ALONG THE ADENOMA–CARCINOMA SEQUENCE

16:10-16:25 **<u>Ugne IMBRASAITE</u>[1], Augustas POSKUS[2], Marius KRYZAUSKAS[3], Matas JAKUBAUSKAS[3], Tomas POSKUS[3]**

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[2]Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[3]Center of Abdominal Surgery, Vilnius University Hospital Santaros Clinics, Vilnius, Lithuania

PROGNOSTIC DETERMINANTS OF STAGE I-II COLORECTAL CANCER: DOES THE INFLUENCE OF PREDICTORS SHIFT OVER TIME? 10-YEAR EXPERIENCE OF RETROSPECTIVE MULTICENTRE COHORT STUDY

16:25-16:40 **<u>Egle MICKEVICIUTE-ZINKUVIENE</u>[1,2], Vitalij NOVICKIJ[1,2]**

[1]Faculty of Electronics, Vilnius Gediminas Technical University, Vilnius, Lithuania
[2]Department of Immunology and Bioelectrochemistry, State Research Institute Centre of Innovative Medicine, Vilnius, Lithuania

INFLUENCE OF HIGH-FREQUENCY ASYMMETRIC NANOSECOND ELECTRIC FIELD SEQUENCES ON TUMOR DRUG RESISTANCE CONTROL AND ERADICATION

16:40-16:55 **Rokas SAMBARAS, Sigita LESINSKIENE**
Clinic of Psychiatry, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

ADOLESCENT SUICIDAL IDEATION AND ATTEMPTS IN LITHUANIA OVER A DECADE: RESULTS FROM TWO SCHOOL-BASED SURVEYS

16:55-17:10 **Dovile KIELAITE[1], Smilte LEDZINSKAITE[1], Zana BUMBULIENE[2]**
[1]Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[2]Clinic of Obstetrics and Gynecology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

CURRENT INSIGHTS INTO CATAMENIAL EPILEPSY: BRIDGING NEUROENDOCRINOLOGY AND WOMEN'S HEALTH

17:10-17:20 **Guste SULIAUSKAITE[1], Egle Marija JAKIMAVICIENE[2], Jelena ISAKOVA[3], Janina TUTKUVIENE[2]**
[1]Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[2]Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
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PREVALENCE, RISK FACTORS AND PHYSICAL STATUS OF NEWBORNS WITH CONGENITAL ANOMALIES (ACCORDING TO LITHUANIAN MEDICAL BIRTH DATA FROM 1997 TO 2020)

17:20-17:30 **Radvile VAIGAUSKAITE[1], Jelena VOLOCHOVIC[2,3]**
[1]Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[2]Department of Obstetrics and Gynaecology, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[3]Center of Obstetrics and Gynaecology, Vilnius University Hospital Santaros Clinics, Vilnius, Lithuania

KNOWLEDGE AND AWARENESS OF PREGNANT WOMEN REGARDING CAFFEINE CONSUMPTION DURING PREGNANCY: A CROSS-SECTIONAL STUDY

17:30-19:00 E-poster reviewing

Thursday, July 9th

Venue: Faculty of Medicine, M.K. Čiurlionio str. 21

09:00-09:30 Registration

09:30-11:30 Session VI (room 203)

Chairperson: Janet Carton

09:30-10:10 **Karolis AZUKAITIS**
Clinic of Pediatrics, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

FROM NUMBERS TO RELEVANCE: CHANGING PARADIGMS IN PEDIATRIC CARDIOVASCULAR RISK ASSESSMENT

10:10-10:25 **Vygintas ALIUKONIS, Eugenijus GEFENAS**
Centre for Health Ethics, Law and History, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

AUTHORSHIP AND AUTHORITY: POWER RELATIONS IN SCIENTIFIC WRITING

10:25-11:30 Science-SLAM presentations (5 min. + 2 min. for discussion):

Andrius CEKUOLIS, Zana BUMBULIENE
Clinic of Obstetrics and Gynaecology, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

BODY MASS INDEX AND PUBERTAL TIMING IN LITHUANIAN GIRLS

Kamile CERLINSKAITE-BAJORE, Jelena CELUTKIENE
Clinic of Cardiac and Vascular Diseases, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

THE STRATIFICATION OF PROGNOSIS IN ACUTE HEART FAILURE PATIENTS: THE EFFECT OF REHOSPITALIZATIONS AND OPTIMAL MEDICAL TREATMENT

Kestutis CERNIAUSKAS[1,2], Kotryna LINAUSKIENE[1,2], Anzelika CHOMICIENE[1,2], Linas GRIGUOLA[1,2], Laura MALINAUSKIENE[1,2]
[1]Clinic of Chest Diseases, Immunology and Allergology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[2]Pulmonology and allergology center, Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania

CLONAL MAST CELL DISORDERS IN HYMENOPTERA VENOM ALLERGIC PATIENTS: DIAGNOSTIC DILEMMAS AND SAFETY OF IMMUNOTHERAPY

Aivaras GRYBAS[1], Povilas BARASA[3], Egidijus SIMOLIUNAS[3], Ieva SIMOLIUNE[3], Emilija BALTRUKONYTE[3], Ramune ZILINSKAITE TAMASAUSKE[4], Gilvydas VERKAUSKAS[4], Darius DASEVICIUS[5], Daiva BALTRIUKIENE[3], Feliksas JANKEVICIUS[2]
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[4]Center of Children's Surgery, Orthopaedic and Traumatology, Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania
[5]National Center of Pathology, Affiliate of Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania

3D PRINTED ADIPOSAL AND MUCOSAL STEM-CELLS ENRICHED VERSUS ACELLULAR SCAFFOLD FOR URETHRAL REPAIR IN A RABBIT EXPERIMENTAL MODEL

Jekaterina KALINIENE, Rimantas STUKAS, Donatas AUSTYS
Department of Public Health, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

EVOLVED TO REFUSE? FOOD NEOPHOBIA AND THE ACCEPTANCE OF ALTERNATIVE PROTEINS AMONG LITHUANIAN CONSUMERS

Adomas LADUKAS[1,2], Ausvydas PATASIUS[1,3]
[1]Department of Public Health, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[2]Laboratory of Cancer Epidemiology, National Cancer Institute, Vilnius, Lithuania
[3]Clinical Research Department, National Cancer Institute, Vilnius, Lithuania

URINARY METABOLOME ANALYSIS FOR DETECTION OF CLINICALLY SIGNIFICANT PROSTATE CANCER: ACCURACY AND ACCEPTABILITY OF NOVEL BIOMARKER TEST

Anastasija LEVKINA[1], Jurate GUDONYTE[1], Indre TRECIOKIENE[1], Irena ZUKAUSKAITE[2]

[1]Pharmacy and Pharmacology Center, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

[2]Institute of Psychology, Faculty of Philosophy, Vilnius University, Vilnius, Lithuania

WHAT HAPPENS WHEN A COMMUNITY PHARMACIST BECOMES PART OF DIABETES CARE?

Monika MAKUTIENE[1], Natalija ISTOMINA[2], Rimantas STUKAS[1]

[1]Department of Public Health, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

[2]Department of Midwifery and Nursing, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

HOW PREPARED IS THE SCHOOL COMMUNITY TO PROMOTE CHILDREN'S MENTAL HEALTH?

Andrius BERUKSTIS[1], Kipras MIKELIS[2], Arvydas BARANAUSKAS[1], Marius KURMINAS[2], Givi LENGVENIS[2], Dalius JATUZIS[3], Radvilas JANCIAUSKAS[4], Jurgita VALAIKIENE[3], Egidija RINKUNIENE[1], Giedrius DAVIDAVICIUS[1], Sigita GLAVECKAITE[1], Saulius ANDRIUSKEVICIUS[3]

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[4]Faculty of Medicine, Vilnius University, Vilnius, Lithuania

COMPARISON OF NOVEL HEMODYNAMIC AND ANATOMICAL METHODS FOR CAROTID ARTERY STENOSIS MEASUREMENT

11:30-12:00 **Coffee break (Room 202)**

12:00-13.30 Session VII (Room 203)

Chairperson: Karolis Azukaitis

12:00-12:40 **Janet CARTON**
Head of Graduate Studies & Research Strategy, University College Dublin (UCD), Dublin, Ireland

THE POSITIVE IMPACT OF AN EVOLVING LANDSCAPE ON DOCTORAL EDUCATION

12:40-13:30 Science-SLAM presentations (5 min. + 2 min. for discussion):

Gabriele MILAKNYTE, Ieva STUNDIENE, Laura MASALAITE
Clinic of Gastroenterology, Nephro-Urology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

CAN TRUST SAVE LIVES? RETHINKING ORGAN DONATION MODELS IN LITHUANIA

Vidas PETRAUSKAS[1], Valdemaras MILKUS[2], Linas MAZUTIS[2], Kestutis STRUPAS[1], Aiste GULLA[1,3]
[1]Institute of Clinical Medicine, Clinic of Gastroenterology, Nephro-Urology and Surgery, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[2]Institute of Biotechnology, Life Sciences Centre, Vilnius University, Vilnius, Lithuania
[3]Department of Surgery, The George Washington University School of Medicine and Health Sciences, The George Washington University Hospital, Washington DC, USA

A PILOT INVESTIGATION OF PANCREATIC PSEUDOISLET SIZE AND MONOCYTE INTERACTIONS IN A NOVEL MICROFLUIDIC PLATFORM WITH IMPLICATIONS FOR TRANSPLANT OUTCOMES

Barbora SAKALAUSKAITE, Janina TUTKUVIENE
Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

DO YESTERDAY'S GROWTH CHARTS STILL REFLECT TODAY'S CHILDREN?

Ernestas SILEIKA[1,2], Juras KISONAS[4], Edita BALTRUSKEVICIENE[1,2], Sarune LIUKPETRYTE-KUOSIENE[1], Deimante TAMASAUSKAITE[7], Mantas SPOKAS[7], Dovile CERKAUSKAITE[7], Andrej ALEINIKOV[5], Rokas STULPINAS[3], Tomas POSKUS[6], Audrius DULSKAS[1,2]
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[3]National Center of Pathology, Vilnius, Lithuania
[4]Open Access Center, National Cancer Institute, Vilnius, Lithuania
[5]Center of Surgical Oncology, National Cancer Institute, Vilnius, Lithuania
[6]Translational Medicine Center, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[7]Faculty of Medicine, Vilnius University, Vilnius, Lithuania

FINANCIAL IMPACT OF WATCH AND WAIT STRATEGY AFTER TOTAL NEOADJUVANT THERAPY IN RECTAL CANCER: A COST SAVINGS ANALYSIS BASED ON REAL-WORLD INSTITUTIONAL DATA

Nora SLEKIENE[1,2], Paulina BLOTNIENE[3,4], Alina URNIKYTE[4]
[1]Pharmacy and Pharmacology Center, Institute of Biomedical Science, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[2]Translational Health Research Institute, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[3]Clinic of Obstetrics and Gynaecology, Institute of Clinical Medicine, Faculty of Medicine Vilnius University, Vilnius, Lithuania
[4]Populational genomics laboratory, Translational Health Research Institute, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

MICROPLASTIC-LIKE PARTICLES IN HUMAN PLACENTA: PRELIMINARY FINDINGS FROM SEM-EDX ANALYSIS

Gediminas VAITENAS, Ugne GAILIUTE
Clinic of Cardiac and Vascular Diseases, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

INFRARENAL AORTIC ANEURYSM DYNAMICS ON SERIAL COMPUTER TOMOGRAPHY ANGIOGRAPHY SCANS USING ARTIFICIAL INTELLIGENCE

Guoda ZUKIENE, Vilius RUDAITIS
Clinic of Obstetrics and Gynaecology, Faculty of Medicine, Institute of Clinical Medicine, Vilnius University, Lithuania

THE INVISIBLE ECOSYSTEM BEHIND CERVICAL CANCER

13:30-15:00 **Lunch** (Vilnius Park Plaza Hotel, M.K. Čiurlionio str. 84)

15:00-17:05 Session VIII (room 203)

Chairperson: Maria Kaczmarek

15:00-15:15 **Svetlana DAUENGAUER-KIRLIENE[1], Laura PRANCKENIENE[2], Austeja LETUKIENE[2], Faustas PUZERAS[2], Ingrida DOMARKIENE[2], Alina URNIKYTE[2]**
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GENOTYPE–PHENOTYPE RELATIONSHIPS IN PRETERM BIRTH: INSIGHTS FROM FETAL GENOMIC VARIATION

15:15-15:30 **Karolina KEVELAITIENE[1,2], Roma PURONAITE[4], Valerija Edita DAVIDAVICIENE[3], Birute NAKCERIENE[3] and Edvardas DANILA[1,2]**
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EVOLUTION FROM DRUG-SUSCEPTIBLE TO DRUG-RESISTANT TUBERCULOSIS: CLINICAL AND SOCIAL PREDICTORS IN A 22-YEAR NATIONAL COHORT

15:30-15:45 **Egle STUKAITE-RUIBIENE, Jonas TUTKUS, Renata SIMKUNAITE-RIZGELIENE, Arunas BARKUS, Janina TUTKUVIENE**

Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

STABLE FACIAL PROPORTIONS THROUGHOUT ADOLESCENCE, TAKING INTO ACCOUNT BODY SIZE PARAMETERS

15:45-16:00 **Simonas UTKUS[1], Ugne UTKUTE[2], Gabija PAULAUSKAITE[2], Laura NEDZINSKIENE[1]**

[1]Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
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ASSOCIATIONS OF SOMATOTYPE AND ANTHROPOMETRIC CHARACTERISTICS WITH SPORTS INJURY HISTORY AMONG ATHLETES: A PILOT STUDY

16:00-16:15 **Dario PIOMBINO-MASCALI[1,2]**

[1]Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
[2]Department of Cultural Heritage, University of Salento, Lecce, Italy

CHILDHOOD, DISEASE, AND SOCIAL INEQUALITY IN LATE MODERN ITALY: A NORTH–SOUTH COMPARATIVE STUDY OF MUMMIFIED NON-ADULTS

16:15-16:25 **Elvin Francisek BOGDZEVIC, Andrej SUCHOMLINOV, Janina TUTKUVIENE**

Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

BODY DONATION PRACTICES: A RETROSPECTIVE ANALYSIS OF THE VILNIUS UNIVERSITY BODY DONATION REGISTRY

16:25-16:35 **Laura REKUTE[1], Aleksandras VILIONSKIS[2]**

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CLINICAL OUTCOMES OF ENDOVASCULAR TREATMENT IN BASILAR ARTERY OCCLUSION STROKE: MECHANICAL THROMBECTOMY ALONE VERSUS BRIDGING THERAPY

16:35-16:45 **Mindaugas SMETANINAS[1], Roberta KERPYTE[2], Giedre ZULPAITE[3], Laurynas RIMSEVICIUS[3], Kristina PETRULIENE[4], Marius MIGLINAS[3]**

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UNRECOGNIZED BURDEN OF REDUCED KIDNEY FUNCTION AND ELEVATED BLOOD PRESSURE IN THE COMMUNITY: A WORLD KIDNEY DAY SCREENING INITIATIVE IN LITHUANIA

16:45-16:55 **Meile JUCYTE[1], Mindaugas SMETANINAS[1], Artur AIRAPETIAN[2]**

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ANATOMICAL VARIATIONS AND MORPHOMETRIC CHARACTERISTICS OF THE SURAL NERVE: A CADAVERIC STUDY IN THE LITHUANIAN POPULATION

16:55-17:05 **Sofija SESTAK, Mindaugas SMETANINAS, Laura NEDZINSKIENE**

Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

AWARENESS, KNOWLEDGE AND APPLICATION OF LIFESTYLE MEDICINE IN LITHUANIA: A CROSS-SECTIONAL COMPARISON OF HEALTH CARE PROFESSIONALS AND THE GENERAL PUBLIC

17:05-18:05 E-poster reviewing

19:00-23:00 Conference networking dinner.
Awards of the best students' presentations
(Verkiai Palace Restaurant, Žaliųjų ežerų Str. 49)

E-POSTERS

Pre-recorded audio e-posters will be available on the Conference website (with a password only)

Dovile ABRAMIKIENE[1], Domantas GUDAS[2,3], Roma PURONAITE[1,3,4], Greta BURNEIKAITE[1,5], Audrone JAKAITIENE[4], Sigita GLAVECKAITE[1,5]

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MULTIMORBIDITY CLUSTERS AMONG HEART FAILURE PATIENTS: SURVIVAL DIFFERENCES

Hiba ACHAHBAR CHARKI[1], Ruta VOSYLIUTE[2], Renata SIMKUNAITE-RIZGELIENE[2], Justinas BALEISIS[3], Romualdas RUDYS[3], Inga BIKULCIENE[3,4]

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STRESS UNDER THE MICROSCOPE: BETA-CELL AND NUCLEAR MORPHOMETRY IN EXPERIMENTAL TYPE 1 DIABETES

Tadas ALCAUSKAS[1], Vilija GURKSNIENE[1], Daiva KLIMASAUSKIENE[2], Ingrida LISAUSKIENE[2], Ligita JANCORIENE[1]

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HUMAN–MICROBE CO-EVOLUTION IN THE INTENSIVE CARE: STOOL SURVEILLANCE AS A WINDOW INTO MULTIDRUG-RESISTANT COLONIZATION AND INFECTION RISK

Denizalp AZAZI[1], Sigita LESINSKIENE[2]
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PATIENT AND PARENT PERSPECTIVES ON INPATIENT CHILD AND ADOLESCENT PSYCHIATRIC CARE: FEEDBACK FROM A LITHUANIAN TERTIARY UNIT

Laura BALKEVICIENE[1,2], Saule SATKAUSKIENE[3], Linas PETKEVICIUS[3], Greta BURNEIKAITE[1,2], Jelena CELUTKIENE[1]
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LONG-TERM PROGNOSTIC VALUE OF STRESS ECHOCARDIOGRAPHY AND EXERCISE ECG FINDINGS

Deividas BLAZYS[1], Julija IGNATJEVA[1], Giedre SMAILYTE[2,3], Linas ZALECKAS[4], Alina PURIENE[4]
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RADIOLOGICAL FEATURES OF ROOT RESORPTION ASSOCIATED WITH JAW CYSTS

Katerina Akvile BLIUJUTE, Margarita DROZDOVA-STATKEVICIENE[1], Neringa PAUZIENE
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NEUROCHEMICAL AND MORPHOLOGICAL CHARACTERIZATION OF INTRACARDIAC GANGLIA IN OVINE ATRIA USING IMMUNOHISTOCHEMISTRY

Elvin Francisek BOGDZEVIC[1], Juozapas RYLISKIS[1], Andrej SUCHOMLINOV[1], Igoris SATKAUSKAS[2], Povilas MASIONIS[2]
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VARIATIONS OF POPLITEAL ARTERY TERMINAL BRANCHING: A PILOT STUDY IN A SAMPLE OF VILNIUS UNIVERSITY BODY DONORS

Andrius CEKUOLIS[1,2], Rytis MAROZAS[2], Zivile SABONYTE-BALSAITIENE[1], Zana BUMBULIENE[1]
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IMAGING THE DEVELOPING BREAST: A SONOGRAPHIC JOURNEY FROM NEONATES TO ADOLESCENTS

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ADULT-ONSET STILL'S DISEASE – A DIAGNOSTIC CHALLENGE AND ECONOMIC BURDEN: A CASE REPORT AND LITERATURE REVIEW

Vaiva CESNAUSKYTE[1], Diana GASIUNAITE[2]
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UTILITY OF THE ANALGESIA–NOCICEPTION INDEX (ANI) IN ANESTHESIA

Vytaute CHARZEVSKYTE, Indre STANKEVICIENE
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ELECTRONIC CIGARETTE USAGE FREQUENCY AND PERCEIVED DEPENDENCY AS PREDICTORS FOR XEROSTOMIA

Svetlana DAUENGAUER-KIRLIENE[1], Alina URNIKYTE[2], Ingrida DOMARKIENE[2], Ausra MATULEVICIENE[1]
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PHENOTYPING PRETERM BIRTH HETEROGENEITY: COMPOSITE NEONATAL ADAPTATION IN A LITHUANIAN COHORT

Giedre DERESEVICIENE[1], Jolanta DADONIENE[1,2], Dalia MILTINIENE[1,3]
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CLINICAL MANIFESTATIONS OF ANCA-ASSOCIATED VASCULITIS DEPENDING ON ANCA SEROPOSITIVITY: UNIVERSITY CLINIC EXPERIENCE

Julija BLAZYTE[1], Gerda DEVEIKIENE[1,2], Gintautas DOMZA[1,2], Jelena VOLOCHOVIC[1,2]
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MATERNAL EXPOSURE TO TEMPERATURE EXTREMES AND IMPAIRED FOETAL GROWTH OUTCOMES: A SYSTEMATIC REVIEW

Vilte DONAUSKAITE[1], Egle Marija JAKIMAVICIENE[2]
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FACTORS INFLUENCING REPRODUCTIVE DECISION-MAKING AMONG YOUNG ADULTS: A LITERATURE REVIEW AND DIRECTIONS FOR FUTURE SURVEY RESEARCH

Erdene GARUNKSTYTE[1], Egle Marija JAKIMAVICIENE[2], Jelena ISAKOVA[3], Janina TUTKUVIENE[2]
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THE INFLUENCE OF FOETAL SEX ON THE FREQUENCY OF PREGNANCY COMPLICATIONS AND MODE OF DELIVERY

Viktorija GURSKYTE[1,2], Violeta MIKSTIENE[1,3], Rasa STRUPAITE – SILEIKIENE[2,4], Evelina SIAVRIENE[1], Audra STEPANAUSKAITE[5], Audrone JAKAITIENE[1,5], Evelina Marija VAITENIENE[1,3], Ramunas DZINDZALIETA[5], Algirdas UTKUS[1]
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COMPARATIVE ANALYSIS OF MACULAR STRUCTURAL PARAMETERS AMONG GENETIC SUBTYPES OF ROD-CONE DYSTROPHIES

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MALE REPRODUCTIVE CHARACTERISTICS AND POSSIBLE CONTRIBUTING FACTORS (A LITERATURE REVIEW)

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ATTITUDES OF PREGNANT AND RECENTLY POSTPARTUM WOMEN TOWARD THE USE OF ARTIFICIAL INTELLIGENCE IN PREGNANCY AND CHILDBIRTH CARE

Alis KURDIAN[1], Marija Mantaute GUDYNAITE[1], Izabele GERVELYTE[1], Andrius KLIMASAUSKAS[2], Erika SALCIUTE-SIMENE[2]
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COMPARISON OF TWO INDIRECT CALORIMETRY DEVICES IN CRITICALLY ILL PATIENTS

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DIFFERENCES IN VITAMIN AND FATTY ACID STATUS BETWEEN TUBERCULOSIS PATIENTS AND HEALTHY CONTROL SUBJECTS

Ieva MICHAILOVIENE[1,2], Daiva VALADKEVICIENE[1,3], Ieva LAUCEVICIENE[1,2], Lina BUTENAITE[2], Juozas RAISTENSKIS[1,2], Tomas AUKSTIKALNIS[1,2]
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A SIX-YEAR CASE FOLLOW-UP ON FUNCTIONAL OUTCOME IN HUNTINGTON'S DISEASE: EFFECT OF ANNUAL INDIVIDUALIZED INPATIENT REHABILITATION COURSES

Emilija MIKULIENE[1], Ausra PABEDINSKAITE[2], Egle MAZGELYTE[2,3], Neringa BUROKIENE[1]
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THE EFFECT OF BILATERAL NON-INVASIVE VAGUS NERVE STIMULATION ON STRESS-RELATED SYMPTOMS IN HEALTHY ADULTS

Agne MISIUTE[1], Janina TUTKUVIENE[2], Laura NEDZINSKIENE[2]
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BODY IMAGE DISSATISFACTION AND BODY MASS INDEX AMONG LITHUANIAN MEN BEFORE COVID-19 AND DURING QUARANTINE PERIODS

Karole Simona MOTIEJUNAITE[1,2], Indre STANKEVICIENE[1], Kristina DANIUNAITE[2], Alina PURIENE[1]
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ASSOCIATION BETWEEN MPPED2 GENE POLYMORPHISM AND PERIODONTAL POCKETS IN ADULTS WITH INTELLECTUAL DISABILITIES

Gintare NASKAUSKIENE[1], Tadas ZVIRBLIS[2], Miglė GERVYTĖ[2], Diana RAMASAUSKAITE[1], Ingrida PILYPIENE[1], Zydrune VISOCKIENE[1]
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METABOLIC PREDICTORS OF MATERNAL AND NEONATAL OUTCOMES IN WOMEN WITH GESTATIONAL DIABETES MELLITUS: A PROSPECTIVE COHORT STUDY

Emilija PAKALNICKAITE[1], Amrita SENKUTE[1], Patricija SMIGELSKAITE[1], Renata SIMKUNAITE-RIZGELIENE[2], Violeta ZALGEVICIENE[2], Violeta BARTUSKIENE[2], Ramune CEPULIENE[2], Ruta VOSYLIUTE[2], Janina TUTKUVIENE[2]
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MATERNAL MALNUTRITION AND HISTOMORPHOLOGICAL CHANGES IN CARDIAC AND SKELETAL MUSCLES OF FIRST-GENERATION RAT OFFSPRING: A PILOT STUDY

Meda PETRYLAITE[1], Renata SIMKUNAITE-RIZGELIENE[2], Violeta ZALGEVICIENE[2], Violeta BARTUSKIENE[2], Ramune CEPULIENE[2], Ruta VOSYLIUTE[2], Janina TUTKUVIENE[2]
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TRANSGENERATIONAL ASSOCIATIONS OF MATERNAL NUTRITIONAL INSUFFICIENCY WITH RENAL HISTOPATHOLOGICAL CHANGES IN RAT OFFSPRING

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UNDERSTANDING RECURRENT PULMONARY EMBOLISM: POSSIBLE CAUSES

SNL Prasanna Bhargavi RAMISETTY[1], Ruta VOSYLIUTE[2], Renata SIMKUNAITE-RIZGELIENE[2], Justinas BALEISIS[3], Romualdas RUDYS[3], Inga BIKULCIENE[3,4]
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STRUCTURAL CARDIAC REMODELING: CARDIOMYOCYTE AND NUCLEAR MORPHOMETRIC CHANGES ASSOCIATED WITH TYPE 1 DIABETES AND CHRONIC PSYCHOLOGICAL STRESS

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IMPLICIT BIAS: AN INNATE ADAPTATION OR AN ACQUIRED CAPACITY?

Sophie-Leonor REICHERT[1], Ruta VOSYLIUTE[2], Renata SIMKUNAITE-RIZGELIENE[2], Justinas BALEISIS[3], Romualdas RUDYS[3], Inga BIKULCIENE[3,4]
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THE HIDDEN COST OF STRESS: OVARIAN REMODELING UNDER CHRONIC PSYCHOLOGICAL STRESS

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EXPOSURE TO LABOUR AS A DETERMINANT OF LONG-TERM HYPOTHALAMIC-PITUITARY-ADRENAL (HPA) AXIS PROGRAMMING IN CHILDREN

Laura REKUTE[1], Veronika SHKARUPA[1], Natasa GIEDRAITIENE[2], Rasa KIZLAITIENE[2]
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EPILEPSY IN MULTIPLE SCLEROSIS: FREQUENCY, CLINICAL CHARACTERISTICS, AND POSSIBLE DISEASE ASSOCIATION IN A SINGLE-CENTRE COHORT

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ANATOMICAL VARIABILITY AND MORPHOMETRIC CHARACTERISTICS OF THE HUMAN OPHTHALMIC ARTERY: A SYSTEMATIC LITERATURE REVIEW

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COMPARATIVE ANATOMY OF THE MAMMALIAN OPHTHALMIC ARTERY: A SYSTEMATIC REVIEW OF ANATOMICAL, MORPHOMETRIC, AND METHODOLOGICAL TRENDS

Anna Franziska RUDHART[1], Renata SIMKUNAITE-RIZGELIENE[2], Ruta VOSYLIUTE[2], Inga BIKULCIENE[3,4], Justinas BALEISIS[3], Romualdas RUDYS[3]
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THE INFLUENCE OF TYPE 1 DIABETES AND CHRONIC PSYCHOLOGICAL STRESS ON HEPATIC FAT CONTENT AND HEPATOCYTE NECROSIS

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RISK FACTORS ASSOCIATED WITH KIDNEY IMPAIRMENT IN DEHYDRATED CHILDREN

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CARDIAC TUMOURS: CHALLENGES IN DIAGNOSIS AND MANAGEMENT

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BIOMARKERS OF AORTIC STENOSIS PROGRESSION: CLINICAL SIGNIFICANCE OF INFLAMMATION, CALCIFICATION AND MYOCARDIAL REMODELLING

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PERCUTANEOUS CRYOABLATION FOR PANCREATIC INSULINOMA: A TWO-CASE SERIES AND LITERATURE REVIEW

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VIRTUAL CT DOSE REDUCTION IN EARLY-STAGE LUNG TUMOUR DIAGNOSIS: PULMONARY NODULE DETECTION AND CHARACTERISATION

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EFFECTS OF CHRONIC PSYCHOLOGICAL STRESS ON AORTIC MORPHOLOGY IN A RAT MODEL OF TYPE 1 DIABETES MELLITUS

ABSTRACTS OF KEYNOTE AND INVITED LECTURES

(Contents are under full responsibility of the authors)

FROM NUMBERS TO RELEVANCE: CHANGING PARADIGMS IN PEDIATRIC CARDIOVASCULAR RISK ASSESSMENT

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Medicine is recognised as an inherently vague discipline in its borders, concepts and evidence, while the thresholds separating normal from pathological are frequently not given by nature but determined more by convention and value judgement. However, when clinical decision-making is reduced to a single number with flawed origins and limited validity, this disciplinary vagueness remains underacknowledged.

Though these challenges apply conceptually to various fields, this lecture explores pediatric cardiovascular risk assessment as an instructive case study. With the growing burden of childhood cardiometabolic risk and evidence that adult cardiovascular disease has developmental origins, early risk stratification is increasingly recognised as clinically relevant. This assessment relies largely on blood pressure, evaluated against reference values that are interpreted through different perspectives - statistical, physiological and clinical. However, percentiles represent statistical but not actual biological boundaries. These reference values are method-dependent, growth-influenced and error-prone, and lack long-term causative evidence. Moreover, brachial pressure alone may misclassify physiological variants, such as spurious systolic hypertension of youth, or even measurement artefacts, as disease.

Finally, from an evolutionary and developmental perspective, blood pressure and hypertension cannot be strictly defined. What is considered hypertension today may once have represented a survival advantage, and the population distribution from which "normal" is drawn is itself shaped by selection. Recognising hypertension as a heterotypic - vascular and cardiac - phenomenon requiring comprehensive assessment through temporal dimensions, central pressure, cardiac adaptation and arterial stiffness, with meaningful interpretation of numbers and their inherent flaws, may better align risk assessment with surveillance, prevention and treatment. Ultimately, acknowledging this vagueness reinforces that clinical reasoning and decision making should not be reductionist and relying on single numbers but move towards conceptual and holistic understanding.

Keywords: blood pressure, cardiovascular risk, decision making, pediatric population

CRITICAL PERIODS IN THE EVOLUTION OF GROWTH IN THE HOMININS

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The pattern of growth in Homo sapiens is punctuated by periods of increased sensitivity to hormonal, nutritional, psycho-social, and environmental influences during which long-term structural and functional outcomes are established. The existence of these 'critical periods' during growth has prompted questions regarding their evolutionary significance. Their characteristic increased sensitivity distinguishes them from the suite of 'life history traits' that separate hominins from other primates, e.g. prolonged gestation, secondary altriciality, extended childhood, delayed maturation, and a marked adolescence including rapid growth and secondary sexual development. The pattern of growth of the constituent tissues of the body (neural, muscle, skeletal, immunological and reproductive) highlights the timing of these critical periods during the passage to an adult phenotype. In auxological research emphasis is placed on the integration of biological plasticity, ecological context, and evolutionary adaptation leading to interpreting such periods in relation to the achievement of 'evolutionary fitness'.

Critical periods can, however, be interpreted from both auxological and evolutionary standpoints. From the auxological standpoint (i.e. nutritional, psycho-social, or developmental variation), the pattern of growth is a direct response to hazards affecting the most rapidly developing tissues, but with the possibility of catch-up growth, dependent on the frequency, severity and duration of exposure, to allow normal growth to proceed. From an evolutionary standpoint, survival to reproductive maturity is the primary goal, but modifications to the pattern of growth lead to 'fitness' and greater life expectancy, allowing for more influence on the survival of future generations.

Keywords: critical periods, evolution, Hominin growth

THE POSITIVE IMPACT OF AN EVOLVING LANDSCAPE ON DOCTORAL EDUCATION

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The premise of doctoral training is the production and advancement of knew knowledge and individuals who can research and produce new knowledge independently. Recent (and not so recent) perspectives on doctoral training have queried the numbers of PhD 's produced (1,2) and the relevance of doctoral education in contemporary society. However, new knowledge is exactly what is needed to address societal, economical, environmental and political crises and challenges. So perhaps we should be asking, how can we ensure that existing outputs of doctoral education and training be more easily translated and more effectively and obviously applied to these global challenges?

It is in our gift as educators, to re-imagine (3) the research degree through an ethical and responsible lens that delivers doctoral training with value and impact. The doctoral landscape has changed since Humboldt and recent developments may require a re- build or, at the very least, a new perspective. This is a time to be considered and measured, but open minded, curious and proactive and ask, how can we harness positive aspects of generative AI, sharing through open research and assimilation of needed advancements in assessment of research, researchers and research environments (4). With increases in doctoral education engagement in the global south, massification, global mobility (5) and justifiable accountability required from society, how do we ensure standards and quality in the framework on which doctoral education is built?

This presentation positively explores engagement with these challenges and how a considered approach by educators can actually enhance equity, quality, value and impact as core components of contemporary doctoral education.

Suggested readings:

1. *Too Many PhD's not enough Tenured Positions*. Else, H. Times Higher Education, May 28 2015
2. *How many PhD's does the world need?* Kwon, D. Nature, June 2025
3. *Re-imagining the PhD Journey, nurturing Thinkers, Builders and Leaders for Global Demand.* Poh, H.J., Lee, P.S., Ramahrishna S., Mujumdar, A. Taylor and Francis, 2025 2015-17pp.
4. *CoARA* – Coalition for Advancing Research Assessment. *coara.org*
5. *The Making of Doctoral Supervisors. International Case Studies of Practice.* Taylor, S., Kiley, M., Holley, K.A. Taylor & Francis e-books. 2020.

Keywords: doctoral education, equity, global challenges, quality, value

CELEBRATING THE 245TH ANNIVERSARY OF VILNIUS UNIVERSITY'S FACULTY OF MEDICINE: A LOOK AT THE ORIGINS OF SCIENTIFIC DEVELOPMENT

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The Faculty of Medicine of Vilnius University celebrates its 245th anniversary in 2026, marking a long tradition of medical education and scientific advancement. Founded on 24 November 1781 as the Collegium Medicum within the Main School of the Grand Duchy of Lithuania, it emerged during the Enlightenment following the dissolution of the Jesuit Order and the transfer of the University to the Education Commission, often regarded as the world's first ministry of public education. Its establishment marked a decisive shift towards secular, scientifically grounded medicine in the region.

The foundations of the Faculty had been laid earlier. In 1775, Nicolas Régnier established the first Department of Anatomy and Surgery, while students from the Royal Medical School of Grodno were transferred to Vilnius. The first dean, Steponas Laurynas Bizis, together with Jean-Emmanuel Gilibert and Johann Lobenwein, developed a curriculum integrating anatomy, physiology, surgery, and obstetrics with practical clinical training.

The Faculty reached its peak during the "Golden Age" of 1803–1832, following the University's reorganisation as Imperial Vilnius University by Tsar Alexander I. This period was shaped by Johann Peter Frank, a pioneer of public health and social medicine, and his son Joseph Frank, who established the first clinical wards for therapeutics, surgery, and obstetrics. Their work helped transform the Faculty into one of the leading centres of medical education in Central and Eastern Europe.

The November Uprising of 1831 brought this flourishing era to an end. In 1832, Tsar Nicholas I closed the University, although medical education continued through the Imperial Medical-Surgical Academy of Vilnius until 1842. After the Faculty was closed, some of its library collections and scientific specimens were moved, mainly to Kyiv.

This lecture examines the Faculty's first six decades, highlighting how scientific progress and medical education were shaped by broader political, social, and cultural transformations.

Keywords: Central and Eastern Europe, enlightenment, Faculty of Medicine, history of medicine, medical education, Vilnius University

THE HEALTH PARADOX OF ADOLESCENCE: WHY EVOLUTION PROMOTES RISK-TAKING

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Adolescence is a unique stage in the human life course, characterised by rapid physical growth and significant behavioural change. During this period, individuals experience a growth spurt, increases in muscle mass and strength, and the maturation of reproductive capacity. In many respects, adolescents approach their physical peak. However, this phase of increasing biological robustness paradoxically coincides with elevated mortality, driven not by disease but by external causes such as injury, accidents, and interpersonal violence. This apparent contradiction raises an important evolutionary question: why would natural selection maintain a developmental stage associated with heightened behavioural risk? From a life history theory perspective, adolescence is a transitional phase during which investment shifts from growth to reproduction, social competition and increasing independence from the family. Behavioural tendencies such as seeking novelty, exploration, and risk-taking may facilitate the acquisition of ecological knowledge, access to resources, and the establishment of social status within peer groups. They may also serve as signals of strength, competitiveness, and resilience in contexts of social and sexual selection. In ancestral environments, risk-taking may have been adaptive by enabling dispersal from the natal group, exploration of new territories, and success in competitive or cooperative challenges. Evidence from small-scale societies suggests that adolescents often engage in such behaviours which can enhance status, skill acquisition, and mating opportunities — a pattern that is consistent with the proposed evolutionary functions of these behaviours.

This lecture integrates biological, behavioural, and evolutionary perspectives on adolescence. It examines the proximate mechanisms of risk-taking alongside ultimate explanations within a life history framework and considers how environmental mismatch in modern societies may amplify behaviours that were once adaptive.

Keywords: adolescence, environmental mismatch, life history theory, risk-taking behaviour, sexual selection

GROWTH AND DEVELOPMENT IN TIMES OF CLIMATE CHANGE

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The effects of Anthropogenic climate change, with rising average temperatures, more frequent and longer heat waves, even in temperate climate zones, are becoming increasingly real. In addition to rising ambient temperatures, the several adverse environmental effects—such as droughts, heavy rainfall, and flooding—also constitute stressors, making climate change a challenge not only for affected individuals but also for health care systems.
From an evolutionary perspective, *Homo sapiens* should be better adapted to high ambient temperatures than to low ones. Cold periods therefore represented a particular stress factor in prehistoric and historical times and were associated with shorter stature. During the so-called Little Ice Age between the 14th and 18th centuries, body height in Central Europe declined and rose again from the 18th century onward. Currently, the prevailing view is that rising ambient temperatures have a negative effect on growth and development. A particularly intense debate is currently underway regarding the effect of rising ambient temperatures on pregnant women and intrauterine development. Pregnant women and fetuses are considered particularly vulnerable groups; heat waves and rising temperatures are discussed as risk factors for increased preterm birth rates, as well as intrauterine growth restriction. However, the results of a wide variety of studies do not present a consistent picture. For Austria, a country that, despite its small size, exhibits highly variable ambient temperatures due to its topography, associations between ambient temperatures during pregnancy and intrauterine growth were analysed. Here, associations between heat stress and embryonic growth were already observed during the embryonic phase. Gestational length and birth length also show significant associations with ambient temperature during pregnancy. Furthermore, gender-specific sensitivities to the stress factor of higher ambient temperatures have been documented.
Climate change can thus be understood as a potential risk to intrauterine development with possible long-term consequences.

Keywords: climate changes, intrauterine growth, preterm birth

POLLUTION AS A FACTOR IN HUMAN REPRODUCTION AND EVOLUTION

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Pollution as a factor in human reproduction and evolution.
Pollution is a term that encompasses a great many exposures including exposures to chemicals and elements as well as to forms of energy such as sound (noise) and radiation. The chief characteristic of pollution is that it is unwanted and thought to be dangerous. Some pollutants are naturally occurring such as volcanic ash and elements that human activity concentrates to unnatural levels (e.g., lead, Pb).
Pollution has direct and indirect effects on human evolution, particularly mutation. Only mutations to germ cells are heritable and relevant to evolution. Certain, specific pollutants are mutagenic through direct chemical action. Of many indirect mechanisms is through the process of global warming. Co2 pollution is known to raise temperatures globally and because heat stimulates mutagenesis, pollution indirectly contributes to the mutation rate. The ozone layer that protects populations from damaging exposure to ultraviolet radiation (UV-B) is weakened by the action of specific pollutants and the loss of protection allows more UV-B radiation to stimulate mutagenesis. An interesting line of research is into the human biologic variation in either genomic or epigenetic resistance to pollution's effects on reproduction, growth, disease and longevity.
Evolution by natural selection occurs by differential reproduction. Pollution can affect reproduction through the chemical action of the pollutant's constituents on physiological systems mediated by hormones. The concept of the EDC, the endocrine disrupting compound, is well established. EDCs are known to affect several hormonal systems including those that stimulate sexual maturation, gamete maturation and physical growth. Delays in reaching sexual maturity may shorten the reproductive span. Inhibition of gamete maturation likewise limits reproduction also.

Keywords: human evolution, human reproduction, pollution

JĘDRZEJ ŚNIADECKI, ON THE PHYSICAL EDUCATION OF CHILDREN – TIME AND WORK

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Lecture devoted to the late Enlightenment scientific treatise *On the physical education of children* by Jędrzej Śniadecki. The treatise was created under the influence of Rousseau and Frank. It was an attempt to combine medical knowledge with pedagogy. This is the first such work written in Polish. Childhood is a separate stage in human life, which heralds modern changes in European culture and science. The recommendations contained in the treatise are consistent with Śniadecki's natural and medical views contained, among others, in the *Theory of Organic Beings*. When writing his work, Śniadecki largely used the knowledge obtained during his studies in Poland and abroad. The utilitarian importance of education in it should be combined with the tradition of the National Education Commission and the difficult political, economic and cultural situation of Poles and Lithuanians at that time. The analysed work is therefore a sublime of the intellectual trends of Śniadecki's times and the sum of his experiences.

Keywords: children, Jędrzej Śniadecki, Lithuanians, physical education, Poles

THE ORIGINS OF AUXOLOGY AT VILNIUS UNIVERSITY 220 YEARS AGO: ANDRZEJ SNIADECKI'S INSIGHTS INTO CHILD DEVELOPMENT AND THEIR RELEVANCE TODAY

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A. Sniadecki (1768–1838) was one of the most prominent scientists of the late 18th and early 19th centuries, known for his interdisciplinary and holistic approach to human development. He is regarded as the founder of Lithuanian auxology. In his book "On the Physical Education of Children", he examined children's physical and mental development, emphasising the influence of environmental, social, and cultural factors, viewed human growth through a broad, interdisciplinary lens.

Many of his ideas anticipate modern concepts such as epigenetics and developmental programming. A. Sniadecki analysed child development from parental health, marriage, and pregnancy through infancy, childhood, and puberty, identifying critical growth periods and stressing the long-term impact of early-life conditions on health. He emphasised the unity of physical and mental development, but stressed that physical activity should dominate in early childhood, while intensive intellectual development should begin later. A. Sniadecki described the importance of nutrition, breastfeeding, sleep, hygiene, emotional well-being, and physical activity. He observed that unfavourable living conditions could contribute to early puberty and increase later health risks (what a modern and contemporary approach). His views on disabled children and their individualised care were remarkably progressive. A. Sniadecki advocated support, inclusion, and equal opportunities for all children, making his humanistic ideas relevant even today.

In this lecture, insights into child development and their relevance today will be analysed based on the main chapters of Andrzej Sniadecki's book, the content of which may be completely relevant even for a modern auxology textbook: What to consider when building a marriage; On the care of pregnant women; Rearing Babies; Childrearing from weaning to the end of the seventh year; Raising children after the age of seven or the eruption of permanent teeth; Nurturing maturing youth; Treating children who are naturally weak or sick.

Keywords. Andrzej Sniadecki, growth and development, physical education, Lithuanian auxology, 220 years history

JĘDZEJ ŚNIADECKI ON THE PHYSICAL EDUCATION OF CHILDREN: THE PRIMARY GOAL OF EDUCATION IS HEALTH

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Background and Aim: Vilnius University professor and president of the Vilnius Medical Society, Jędrzej Śniadecki (1768-1838) was a distinguished scholar in multiple disciplines, including chemistry, biology, medicine, hygiene and dietetics, philosophy, and education. However, his papers also include an interdisciplinary approach. This is clearly evident in his studies on children's physical education, which combine both biological and social perspectives. The aim of the research was to examine Śniadecki's main ideas on physical education and their origin.
Materials and Methods: The study was based on the analysis of primary historical sources, such as Śniadecki's original book "O Fizycznem Wychowaniu Dzieci" (1840) and other publications.
Results: the study revealed that the works of Jędrzej Śniadecki (1768-1838) were characteristic of the Enlightenment and Romanticism periods. Śniadecki emphasised the need to educate society; he was also a supporter of the idea of a national state and individuals' obligations to it. However, as a physician himself, he focused on children's health and happiness as the primary goals and crucial preconditions for all the phases of successful education. Therefore, preventive measures and strategies to maintain the individual's physical and mental health were his greatest concern. He expressed sharp criticism towards the modern lifestyle as artificial, physically passive, technology-dependent, and eventually leading to disease. As an alternative to the modern lifestyle, Śniadecki proposed a healthy lifestyle grounded in the balance between an individual's biological and social needs.
Conclusions: In contrast to most outdated 19th-century theories, the ideas of Jędrzej Śniadecki have become surprisingly relevant, given the increasingly technology-dependent and physically inactive contemporary lifestyle.

Keywords: children, health, physical education, Śniadecki

ABSTRACTS OF ORAL PRESENTATIONS

(Contents are under full responsibility of the authors)

STANDARDISATION CHALLENGES IN EXTRACELLULAR VESICLES AND LIPOPROTEIN ISOLATION FROM HUMAN PLASMA

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Background and Aim: Cardiovascular disease (CVD) remains the leading cause of both morbidity and mortality worldwide. To enhance the understanding of atherosclerosis pathogenesis and support the development of preventive strategies, research increasingly focuses on lipoproteins and relatively understudied extracellular vesicles (EV). Extracellular vesicles and lipoproteins are abundant in human plasma and share similar physicochemical properties, which complicates their isolation and independent analysis in atherosclerosis research. This study aimed to develop clinically applicable density gradient centrifugation (DGC)–based workflows for the isolation and characterisation of EV and lipoproteins from human plasma, with a focus on reproducibility and translational applicability.
Materials and Methods: This cross-sectional study enrolled 201 participants from the national CVD prevention program. The study was approved by the Vilnius Regional Biomedical Research Ethics Committee (Approval No. 2023/9-1518-998), affiliated with Vilnius University. Plasma samples were processed using DGC with clinically feasible sample volumes. A 10–40% DGC solution was prepared, and samples were ultracentrifuged at an average of 118,700 g for 40 h at 4 °C. Fraction characterisation included total protein distribution analysis, density evaluation and Western blot assessment of EV and lipoprotein-associated markers.
Results: The developed workflow enabled the separation of EV-enriched fractions from major lipoprotein fractions. EV-associated marker CD81 was predominantly detected in fractions 5–9, whereas apolipoprotein B was localised mainly in fractions 1–4. Nevertheless, partial co-isolation with apolipoprotein A-I persisted across multiple fractions, highlighting ongoing challenges in achieving sufficient EV purity and yield from limited clinical sample volumes.
Conclusions: These findings emphasise both the potential and the current limitations of DGC-based EV isolation approaches in translational cardiovascular research. Further optimisation and standardisation of EV and lipoprotein isolation protocols are essential to improve reproducibility, facilitate cross-study comparability, and support the future integration of EV-based biomarkers into clinical cardiovascular risk assessment.

Keywords: cardiovascular disease, extracellular vesicles, lipoproteins

AUTHORSHIP AND AUTHORITY: POWER RELATIONS IN SCIENTIFIC WRITING

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Authorship is usually understood as a public signal of contribution, responsibility, and expertise. In practice, it supports trust. Hierarchical research environments create a particular challenge. Institutional authority can shape how credit is allocated and responsibility perceived, even without financial conflicts. Leaders may influence authorship decisions through expected roles, dependence, and control over resources or opportunities. Leadership-related authorship is not necessarily inappropriate. However, recurring authority-related patterns may indicate questionable authorship practices and suggest the need for greater transparency. They can make authorship less interpretable, making credit and accountability harder to trace.

We argue that institutional authority should be understood as a built-in, non-monetary interest that can shape authorship patterns and affect trust in science. Although often treated as a feature of hierarchy, authority-related influence is rarely recognised as a conflict of interest. COI discussions focused mainly on financial ties may therefore overlook an important source of distortion in credit and responsibility.

We suggest using bibliometric authorship patterns as a diagnostic tool in contexts where authorship order may be a weaker indicator of contribution and accountability. Relevant signals include irregular or changing first, middle, or last authors' positions, team size, and concentration of publications among researchers. These patterns can describe recurring authorship profiles across publication contexts, while avoiding direct conclusions about individual cases.

To support clearer interpretation in hierarchical settings, we distinguish three contribution profiles: primary contributor, team contributor, and supervisory/coordinating contributor. The aim is not to label individuals, but to clarify expectations and indicate when stronger transparency is ethically warranted.

Authorship patterns cannot prove whether the criteria were met in specific publications. However, they can show when the author list becomes a weaker signal of warranted trust. Where authority may shape credit and responsibility, keeping authorship interpretable should be treated as a basic condition of trustworthy science.

Keywords: authorship, bibliometrics, conflict of interest, institutional authority, research integrity

METABOLIC REGULATION OF TISSUE REGENERATION

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Background and Aim: Tissue regeneration is a complex process requiring intimate collaborations between different systems. Unfortunately, human tissue regeneration is limited and usually is replaced with scaring. One of the key components of successful regeneration elements is metabolism, and its key component mitochondria have received an increasing amount of scientific attention. This study aims to capitalise on the deepened understanding of mitochondrial structure to investigate the connection between metabolism and tissue regeneration.
Materials and Methods: To investigate this interaction a K14CreMicu1fl/fl mouse model possessing basal layer keratinocyte Mitochondrial Calcium Uptake 1 (MICU1) dysfunction was generated. This animal model was then characterised for developmental changes by conducting immunohistochemistry staining for the intermediate filament cytokeratin in skin, and PCNA to analyse cell proliferation. The MICU1-knockout phenotype was further investigated based on possible disturbances in hair follicle, scale pattern and mitochondria network organisation. Lastly, the K14CreMicu1fl/fl animal model was compared with normal mouse models for wound healing and tissue regeneration by conducting hair-follicle-neogenesis assay. To quantify the effect of perturbed MICU1 gene, hair follicles were counted at the centre of a full-thickness 1x1cm2 wound on post-wound day 21.
Results: The observed developmental changes were limited to the perturbed hair and scale patterning on the tail, and significantly increased mitochondria proximity to the nucleus. Interestingly, the wound closure assay results showed significantly perturbed healing ability, and significantly reduced tissue regeneration capacity in Micu1fl/fl mice.
Conclusions: The findings suggest that a deficiency of MICU1 in basal keratinocytes has a prominent role in the developmental processes in tail skin and mitochondria distribution in the cells. Moreover, it was revealed that deletion of MICU1 has significant consequences to the wound healing and regeneration efficiency.

Keywords: metabolism, MICU1, mitochondria, tissue regeneration, wound healing

FIRST LITHUANIA'S NATIONAL VITAMIN D GUIDELINES: THE KEY ASPECTS

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Despite the remarkably high prevalence of low vitamin D (VitD) status in various age groups in Lithuania, the country lacked official recommendations for the diagnosis, prevention, and treatment of VitD deficiency for many years, except the guidelines for rickets developed in 2015 (still not updated). In 2026, the final version of the first national VitD guidelines was prepared by the experts' panel. In line with similar documents, those original guidelines include sections that outline VitD risk groups, VitD status categorisation (deficiency, insufficiency, etc.) and recommend VitD dosages for both therapy and prevention. Notably, in contrast to many others, the prepared document also provides recommendations on various laboratory tests (apart from the assessment of serum 25-hidroxy-vitamin D levels) that may be useful when low VitD status is suspected or confirmed, as well as recommendations for cases in which treatment with VitD has failed.

Keywords: guidelines, prevention, supplementation, treatment, vitamin D

BODY DONATION PRACTICES: A RETROSPECTIVE ANALYSIS OF THE VILNIUS UNIVERSITY BODY DONATION REGISTRY

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Background and Aim: Practical anatomy education remains a cornerstone of healthcare education and research, providing a fundamental basis for undergraduate medical education while assuming an increasingly significant role in postgraduate and specialist training. Methods of anatomy teaching involving donor bodies vary across Europe, from hands-on cadaver dissection by students to the use of pre-dissected bodies for demonstration purposes. The aim of this study was to analyse body donation practices at Vilnius University.
Materials and Methods: This retrospective study included 513 individuals who registered to donate their bodies postmortem to the Faculty of Medicine, Vilnius University, for anatomical education and research between February 1999 and March 2026. The following data were collected: date of birth, sex, municipality of residence, date of signing the declaration of will for body donation, preferred place of burial, preference for commemoration during Holy Mass, and the permitted duration of body use for educational and research purposes. For individuals whose bodies were donated and accepted after death, date of death, place of burial, and body preservation method were analysed additionally. Statistical analyses were performed using Microsoft Excel and IBM SPSS Statistics.
Results: The median age of study participants was 69 years (IQR: 18), 61.99% (n=318) of them being female and 38,01% (n=195) male. Vilnius University received n=17 declarations of will between 1999 and 2009, n=233 between 2010 and 2019, and n=263 between 2020 and 2026. Nearly half of received declarations of will - 48.81% (n=247) were from individuals living in Vilnius municipality. Vilnius University has received 75 donated bodies, 25.33% (n=19) of them remain in use for educational and research purposes, 74.67% (n=56) were cremated.
Conclusions: Women were more likely to donate their bodies for anatomical studies and research. The number of declarations of will has grown substantially over time. Most declarations of will were received from individuals residing in Vilnius Municipality.

Keywords: anatomical research, body donation, teaching of anatomy

GENOTYPE–PHENOTYPE RELATIONSHIPS IN PRETERM BIRTH: INSIGHTS FROM FETAL GENOMIC VARIATION

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Background and Aim: Preterm birth (PTB) remains incompletely explained, partly due to limited understanding of how fetal genomic variation contributes to heterogeneous clinical phenotypes. We aimed to investigate whether prematurely born neonates harbour distinct fetal genomic signals associated with PTB by integrating analyses of inherited PTB-associated variants, rare variants, de novo variants (DNVs), relative fitness, and quantitative neonatal phenotyping.
Materials and Methods: We analysed parent–offspring trios comprising 71 preterm cases, including 23 trios in the final DNV analysis, and 25 term-born controls. Genomic data were generated using SNP arrays and short-read whole-genome sequencing. Variants were prioritised and analysed for biological pathways and relative fitness profiles. A quantitative Major Neonatal Outcome (MNO) score was incorporated to support genotype–phenotype analyses.
Results: Preterm neonates and their mothers demonstrated distinct rare variant profiles compared with term-born controls, with no overlap across curated PTB-associated loci. Relative fitness analysis identified contrasting genomic signatures: term-born controls were enriched for rare or population-absent variants, whereas preterm genomes were characterised predominantly by more common non-coding variation. A total of 147 DNVs were identified across 23 preterm neonates, of which 74.3% were non-coding. No significant association was observed between total DNV burden and clinical severity. However, variant-level analyses identified rare coding and regulatory variants co-occurring with clinically relevant phenotypes. Pathway enrichment analyses suggested involvement of neurodevelopmental and extracellular signalling pathways, although the associations attenuated after multiple-testing correction.
Conclusions: These findings suggest that the genomic architecture of PTB reflects heterogeneous combinations of rare and regulatory fetal variants rather than overall mutational burden alone. Integrating quantitative neonatal phenotypes may improve the interpretation of genotype–phenotype relationships in PTB and support more refined fetal genomic studies.

Keywords: de novo variants, fetal genomics, genotype–phenotype associations, preterm birth, rare variants

PEPTIDASE ACTIVITY IN SYSTEMIC INFLAMMATORY RESPONSE SYNDROME: A CASE SERIES IN CRITICAL CARE PATIENTS

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Background and Aim: Systemic inflammatory response (SIRS) is a non-specific inflammatory reaction triggered by both endogenous and exogenous stimuli. The study aimed to evaluate a novel peptidase activity detection technology to phenotype critically ill patients with SIRS.
Materials and Methods: This exploratory study included four patients and two healthy volunteers for the primary analysis. Four patients representing distinct critical care scenarios were selected: (P1) SIRS due to bleeding, (P2) SIRS with fever of suspected bacterial origin, (P3) SIRS with concomitant chronic critical illness, and (P4) SIRS following resolution of bacterial infection. Peptidase activity was assessed using 58 peptide substrates in patient and healthy volunteer samples. Laboratory data were collected concurrently. Statistical analyses were performed using IBM SPSS Statistics v21.
Results: In healthy volunteers, peptidase activity was highly consistent across all 58 substrates ($R^2 = 0.95$, $\beta = 1.08$, 95% CI 1.01–1.14, $p < 0.0001$). In patients, peptidase activity was also strongly correlated between individuals, ranging from P1 to P4 ($p < 0.001$). Compared with healthy volunteers, patients demonstrated distinct cleavage patterns for several substrates, including Met-Met, Met-Arg, Leu-Leu, and Phe-Phe, suggesting increased peptidase activity for these substrates. When comparing patients with each other, P1 peptidase activity was less intense, comparable to healthy volunteers. As for the P3 cleavage of Gly-D-nor-Val was the highest (0.04 vs -0.002,-0.002, 0.006).
Conclusions: This exploratory analysis suggests that peptidase activity is different in healthy volunteers and patients. Furthermore, it might be possible to phenotype critical care patients. A larger data set is needed to prove these assumptions and determine their clinical utility.

Keywords: critical illness, peptidase, systemic inflammatory response syndrome

PROGNOSTIC DETERMINANTS OF STAGE I-II COLORECTAL CANCER: DOES THE INFLUENCE OF PREDICTORS SHIFT OVER TIME? 10-YEAR EXPERIENCE OF RETROSPECTIVE MULTICENTRE COHORT STUDY

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Background and Aim: Stage I-II colorectal cancer (CRC) patients present with high overall survival rates though some of these patients result with worse outcomes. This study aims to identify the most common factors affecting prognosis in early stage CRC and their influence in different postoperative survival period (1-, 3-, 5-, and 10-year postoperatively).
Materials and Methods: This is a multicentre retrospective observational study. Adult patients with stage I-II CRC who underwent elective surgery (2014-2018) were included. Patients were followed-up until 2026 January. Data on patients' demographic characteristics, comorbidities, postoperative period, tumors related factors and mortality were collected. 1-year, 3-year, 5-year, and 10-year survival analysis were performed. Results were compared using statistical methods.
Results: 876 patients were included (stage I - 335, stage II - 541). Overall survival rate for 1-, 3-, 5-, and 10-year survival were 96%, 91%, 85% and 57% respectively. 1-year multivariate survival analysis revealed that older age, larger tumor size, higher rate of postoperative anastomotic leak and Clavien-Dindo score had a prognostic impact on survival. Age, cancer related characteristics (size, differentiation grade, lymphovascular invasion), anastomotic leakage rate and Clavien Dindo score showed statistically significant ($p < 0.05$) influence on 3-year survivability. 5- and 10-year survival rates were similar: demographic characteristics (age, gender) and ASA score had a prognostic effect on survival rates ($p < 0.05$), as well as comorbidities (cardiovascular pathology, chronic kidney disease, diabetes and history of stroke), which were linked to increased mortality.
Conclusions: The impact of prognostic factors shifts over time in early stage CRC. Surgery related and oncological factors play the biggest role in survival rates during the first postoperative years while patient related characteristics and chronic comorbidities as time progresses become a burden for 5- and 10-year survival rates.

Keywords: early stage, colorectal cancer, stage I-II, survival rate

ANATOMICAL VARIATIONS AND MORPHOMETRIC CHARACTERISTICS OF THE SURAL NERVE: A CADAVERIC STUDY IN THE LITHUANIAN POPULATION

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Background and Aim: The sural nerve (SN) is the most frequently harvested nerve for autologous grafting, a common biopsy site in diagnosing peripheral neuropathies, and is highly prone to iatrogenic injury during lower limb surgery. Given its anatomical variability, knowledge of SN formation patterns is essential for surgical planning and optimising outcomes. This study examined anatomical variations in SN formation and morphometry in Lithuanian cadavers.
Materials and Methods: Twenty-four lower limbs were dissected. The SN and its contributing branches were identified and traced to origin using standard dissection techniques. Variations in SN formation were documented and classified according to the system proposed by P.K. Ramakrishnan et al. Morphometric measurements of the SN and its contributing branches were obtained and subsequently analysed. Statistical analysis was performed using SPSS, applying Student's t-tests and Mann-Whitney U tests.
Results: Type 3 was the most frequent SN formation pattern, occurring in 11 of 24 limbs (45.8%), whereas Type 6 was not identified. The SN was most commonly formed within the middle third of the leg (50.0%). Morphometric characteristics varied significantly according to formation pattern. Nerves formed by two contributing branches exhibited greater diameter and length than those arising from a single contributor, with mean diameters of 3.11 mm and 2.04 mm, respectively ($p < 0.001$), and mean lengths of 297.2 mm and 191.2 mm ($p = 0.008$). Bilateral symmetry of SN formation was observed in 58.3% of cadavers.
Conclusions: There is substantial variability in SN anatomy within this Lithuanian cadaveric sample. The predominance of Type 3 formation, the frequent formation of the nerve within the middle third of the leg, the observed bilateral symmetry, and the association between SN diameter and the number of contributing branches provide important anatomical insights that are potentially relevant for clinical and surgical practice.

Keywords: anatomical variations, cadaveric study, sural nerve

EVOLUTION FROM DRUG-SUSCEPTIBLE TO DRUG-RESISTANT TUBERCULOSIS: CLINICAL AND SOCIAL PREDICTORS IN A 22-YEAR NATIONAL COHORT

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Background and aim: Although most tuberculosis (TB) patients are diagnosed with drug-susceptible TB (DS-TB) and respond well to standard treatment, some develop acquired drug resistance (DS→DR-TB) during the disease course. Drug-resistant TB (DR-TB) requires longer, more complex, and costly treatment with poorer outcomes. To evaluate treatment outcomes among adults with DS-TB, who developed DR-TB (DS→DR-TB) (initial culture showing DS-TB followed by a subsequent culture confirming DR-TB). Treatment outcomes were classified as successful or unsuccessful (failure, chronic disease, or death).
Materials and Methods: Data were obtained from the National TB Information System (2000–2021). Among 37,713 pulmonary TB cases, 885 patients with culture-confirmed DS→DR-TB were included. Patients with missing data were excluded. Cases were grouped into three periods: 2000–2007, 2008–2015, and 2016–2021. Logistic regression identified predictors of unsuccessful outcomes.
Results: Successful and unsuccessful treatment rates over the periods:
Period I (n = 310): Successful treatment: 39.0%, Unsuccsessful treatment: 61.0%
Period I (n = 175): Successful treatment: 60.0%, Unsuccsessful treatment: 40.0%
Period I (n = 40): Successful treatment: 67.5%, Unsuccsessful treatment: 32.5%
The distribution of patient groups based on treatment outcomes (p-value <0.001 between the periods):
Died from TB: Period I – 45.2%, Period II – 30.3%, Period III - 20%
Died from other causes: Period I – 12.3%, Period II – 5.1%, Period III – 12.5%
Treatment failure: Period I – 3.5%, Period II – 4.6%, Period III - 0.0%
Unsuccessful treatment in DS→DR-TB cases is significantly associated with various risk factors: homelessness, low education, unemployment, excessive alcohol consumption, smoking, TB relapse, older age, male sex, chronic

pulmonary disease, coronary heart disease, cancer, kidney disease, and HIV. **Conclusions:** Treatment outcomes for DS→DR-TB improved substantially over two decades. Unsuccessful DS→DR-TB treatment was associated with persistent social vulnerability, harmful behaviours, prior TB treatment, comorbidities, and increasing drug resistance.

Keywords: drug-susceptible tuberculosis management, drug-resistance tuberculosis treatment outcome, tuberculosis risk factors

CURRENT INSIGHTS INTO CATAMENIAL EPILEPSY: BRIDGING NEUROENDOCRINOLOGY AND WOMEN'S HEALTH

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Background and Aim: To summarise current evidence regarding the epidemiology, pathophysiology, diagnosis, and treatment of catamenial epilepsy, with emphasis on neurosteroid mechanisms and individualised management strategies.
Materials and Methods: A focused literature review was conducted using PubMed/MEDLINE and the Cochrane Library for publications from 2012–2025. Search terms included "catamenial epilepsy", "menstrual cycle", "progesterone", and "neurosteroids". Forty-five full-text publications were screened, and 23 studies meeting inclusion criteria were analysed.
Results: Catamenial epilepsy (CE) is characterised by seizure exacerbations linked to menstrual cycle phases and is classified into perimenstrual (C1), periovulatory (C2), and inadequate luteal/anovulatory (C3) patterns. Recent evidence suggests CE may affect up to 70% of women with epilepsy, with C1 being the most prevalent subtype. Mechanistically, estrogen exhibits proconvulsant effects, whereas progesterone-derived neurosteroids, particularly allopregnanolone, exert anticonvulsant activity by modulating GABA-A receptors. Neurosteroid withdrawal during the perimenstrual phase appears central to seizure vulnerability. Diagnosis remains dependent on cycle-synchronised seizure tracking and ovulation assessment. Therapeutic evidence remains heterogeneous. Cyclic progesterone therapy demonstrates potential benefit mainly in women with pronounced C1 patterns, while intermittent benzodiazepines, hormonal suppression, and neurosteroid-based therapies may provide individualised treatment options in refractory cases.
Conclusions: Catamenial epilepsy represents an important but frequently underdiagnosed neuroendocrine epilepsy subtype. Current evidence supports individualised, pattern-specific management approaches, while future research should prioritise standardised diagnostic criteria, biomarker development, and targeted neurosteroid-focused clinical trials.

Keywords: catamenial epilepsy, menstrual cycle, neurosteroids, progesterone, women's health

EQUIVALENCE OF IN-PERSON AND ONLINE PATIENT EDUCATION IN REDUCING PREOPERATIVE ANXIETY FOR PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY

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Background and Aim: In-person patient education is recognised as an effective measure to control preoperative anxiety, reduce pain, and positively impact recovery after the surgery. However, contact teaching creates organisational challenges, requires time from both patients and medical staff, leading to increased costs. Current fast lifestyle, trend towards day-care surgery and widespread internet technologies raise the question whether online education could be comparable to in-person one.
Materials and Methods: patients undergoing elective laparoscopic cholecystectomy were included in the study and randomly assigned to either intervention (in-person or online education) or control group. Intervention group attended education course 10-14 days before the surgery. Preoperative anxiety on the day before surgery was assessed using APAIS score. Anxiety, postoperative recovery and satisfaction scores were compared between the groups using independent sample t-test. Clinical trial registration No. NCT05208580 (ClinicalTrials.gov).
Results: 85 patients were included: 53 in intervention group (25 in-person and 28 online courses) and 32 controls. Intervention group had lower APAIS anxiety scores (13.49 vs. 18.31, $p<0.001$). Patients who underwent preoperative classes had less nausea (7.5% vs. 34.4%, $p=0.004$) and pain (1.8 vs. 2.7, $p<0.001$) on postoperative day 2. This possibly led to better QoR-40 recovery scores (181.4 vs. 168.2, $p<0.001$) and satisfaction with provided healthcare (HCAPS score 82.62 vs. 77.1, $p<0.001$).
No difference in APAIS anxiety score was found between in-person and online education groups (10.13 vs. 10.9, $p=0.596$). These groups did not differ based on postoperative recovery and satisfaction scores as well. However, online group felt less pain on first postoperative day (0.6 vs. 1.4, $p=0.037$).
Conclusions: Patient education statistically and clinically significantly reduces preoperative patient anxiety and improves recovery after the surgery. In-person and online education are similar when reducing anxiousness before the laparoscopic cholecystectomy.

Keywords: cholecystectomy, patient education, preoperative anxiety

EARLY AND DELAYED SERUM BIOMARKERS FOR PREDICTING BRAIN DEATH AFTER ACUTE BRAIN INJURY: NEURON-SPECIFIC ENOLASE AND S100 CALCIUM-BINDING PROTEIN B

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Background and Aim: Early neuroprognostication after severe acute brain injury remains challenging because clinical assessment may be affected by sedation, metabolic disturbances, and hemodynamic instability. This study aimed to evaluate the prognostic value of neuron-specific enolase (NSE) and S100 calcium-binding protein B (S100b) for predicting brain death (BD) and compare their performance with conventional clinical severity scores.
Materials and Methods: This ongoing observational study included 108 adult patients admitted to a tertiary intensive care unit between September 2024 and May 2026 with severe acute brain injury. Clinical severity was assessed using the Glasgow Coma Scale (GCS) and Acute Physiology and Chronic Health Evaluation II (APACHE II). Serum NSE and S100b concentrations were measured within the first 24 hours after ictus (early measurement) and repeated at 72 hours (delayed measurement). Receiver operating characteristic (ROC) analysis and multivariable logistic regression were performed to identify predictors of BD.
Results: Delayed biomarker measurements showed superior prognostic performance compared with early measurements and clinical severity scores. Delayed S100b demonstrated the highest predictive accuracy for BD, with an area under the curve (AUC) of 0.975 (95% confidence interval [CI] 0.946–1.000), sensitivity of 87.9%, and specificity of 98.3%. Delayed NSE also showed excellent discrimination (AUC 0.939, 95% CI 0.885–0.994). GCS and APACHE II demonstrated lower predictive performance (AUC 0.833 and 0.781, respectively). After adjustment for age, GCS, APACHE II, and NSE, delayed S100b remained independently associated with BD (adjusted odds ratio 2.301, 95% CI 1.326–3.993; p = 0.003).
Conclusions: Serum NSE and S100b are promising biomarkers for neuroprognostication after severe acute brain injury. Delayed S100b showed the strongest independent association with brain death and outperformed conventional clinical severity scores. Serial biomarker assessment may improve multimodal prognostication in critically ill neurological patients.

Keywords: acute brain injury, brain death, neuroprognostication, NSE, S100b

INFLUENCE OF HIGH-FREQUENCY ASYMMETRIC NANOSECOND ELECTRIC FIELD SEQUENCES ON TUMOUR DRUG RESISTANCE CONTROL AND ERADICATION

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Background and Aim: Nanosecond electrochemotherapy (nsECT) and calcium electroporation have emerged as promising strategies for cancer treatment, enabling enhanced intracellular delivery of therapeutic agents and induction of tumour cell death. However, the effectiveness of bipolar nanosecond pulses is often limited by bipolar cancellation, which reduces membrane permeabilisation and treatment efficiency. These experiments aimed to evaluate recent advances in high-frequency nanosecond pulse protocols, focusing on waveform optimisation, cancellation mitigation, immune modulation, and their role in overcoming tumour drug resistance.

Materials and Methods: We investigated nanosecond pulsed electric field applications in melanoma and breast cancer models. Experimental protocols included monopolar and bipolar pulse delivery (100–500 ns, 3–7 kV/cm, up to 1 MHz), calcium electroporation, and modulation of pulse asymmetry and interphase delays. Treatment efficacy was assessed through membrane permeabilisation, cell viability, tumour regression, survival analysis, and immune-cell profiling in vitro and in vivo.

Results: Monopolar nanosecond pulses consistently demonstrated superior membrane permeabilisation and cytotoxicity compared with symmetric bipolar pulses. Bipolar cancellation significantly reduced treatment efficacy in vitro, while waveform asymmetry and interphase delays partially restored electroporation efficiency. Calcium electroporation enhanced intracellular calcium accumulation, promoted tumour cell death, and significantly reduced tumour growth. In vivo studies showed prolonged survival and favourable immune modulation, including increased $CD4^+$ and $CD8^+$ memory T-cell populations and reduced immunosuppressive regulatory T cells. Bipolar cancellation effects observed in vitro were less pronounced in vivo, suggesting microenvironmental modulation of treatment response.

Conclusions: High-frequency nanosecond electrochemotherapy represents a promising approach for tumour eradication and management of drug-resistant tumours. Bipolar cancellation remains a critical limitation of symmetric pulse protocols, but waveform engineering through asymmetry and optimised interphase delays can improve treatment outcomes. These findings support further development of advanced nanosecond pulse strategies for enhanced clinical electrochemotherapy efficacy.

Keywords: bipolar cancellation, calcium electroporation, high-frequency electric pulses, nanosecond electrochemotherapy, tumor drug resistance

EFFECTS OF MATERNAL PHTHALATE EXPOSURE ON HIPPOCAMPAL STRUCTURE IN FIRST- AND SECOND-GENERATION MALE RAT OFFSPRING

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Background and Aim: Di(2-ethylhexyl) phthalate (DEHP) and dibutyl phthalate (DBP) are endocrine-disrupting chemicals widely detected in Lithuanian surface waters that may impair neurodevelopment and increase the risk of neurological disorders later in life. Such effects may be particularly relevant to the hippocampus, a brain region essential for learning, memory formation, and emotional regulation, which is highly sensitive to environmental toxicants. The aim of this study was to evaluate the effects of DEHP and DBP exposure on hippocampal morphology in male offspring of the first (F1) and second (F2) generations derived from continuously exposed maternal lineages.
Materials and Methods: Female Wistar rats were assigned to six experimental groups: DEHP-200, DEHP-1000, DBP-100, DBP-500, a phthalate-mixture group (DEHP 200 + DBP 100 µg/kg/day), and a control group. Exposure began before mating and continued throughout pregnancy and lactation. Male offspring from F1 and F2 generations were euthanised after weaning. Brain sections were stained using the Cresyl Violet method. Hippocampal CA1 and CA3 region thickness and neuronal density were assessed using light microscopy. Statistical analysis was performed using one-way ANOVA.
Results: Maternal exposure to phthalates induced structural alterations in the hippocampus of male offspring in both the first (F1) and second (F2) generations. Significant reductions in neuronal density and thickness of the CA1 and CA3 regions were observed in male offspring from females exposed to higher DEHP and DBP doses. Lower DBP doses and the phthalate mixture also produced measurable changes in hippocampal morphology. Similar alterations were observed in both generations, suggesting that continuous maternal exposure to phthalates resulted in persistent hippocampal changes across generations.
Conclusions: Developmental exposure to DEHP and DBP during gestation and lactation adversely affects hippocampal structure in both F1 and F2 generations of rats in male offspring of both the F1 and F2 generations. The observed reductions in neuronal density and regional thickness suggest persistent neurotoxic effects of phthalates across multiple generations under continued maternal exposure.

Keywords: DBP, DEHP, hippocampus, neurotoxicity, phthalates

CHILDHOOD, DISEASE, AND SOCIAL INEQUALITY IN LATE MODERN ITALY: A NORTH–SOUTH COMPARATIVE STUDY OF MUMMIFIED NON-ADULTS

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This study investigates the social history of disease in late modern Italy through a comparative analysis of 43 non-adult preserved remains from the Capuchin Catacombs of Palermo (Sicily, 1787–1880 CE) and six infant specimens prepared in nineteenth-century Lodi, Lombardy, by Paolo Gorini (1813–1881). Integrating radiographic, anthropological, and contextual evidence, the research examines how morbidity patterns, socioeconomic inequality, and preservation technologies shaped the post-mortem biographies of children in different Italian regions. In the Sicilian assemblage, non-adult individuals display predominantly acute mortality profiles, with limited evidence of chronic skeletal disease and occasional indicators of metabolic stress. Both natural mummification and embalming are documented, revealing variation in mortuary treatment. Funerary artifacts and preservation quality suggest that embalming and public display were closely linked to family wealth and social status, making socioeconomic inequality visible in death. The Lombard assemblage consists of very young infants subjected to experimental embalming techniques developed by Paolo Gorini. Radiographic analysis shows exceptional soft-tissue preservation together with developmental immaturity and metabolic disorders, indicating early-life physiological stress. Preservation in this context was driven by scientific experimentation rather than familial status. Together, the two assemblages reveal distinct patterns of childhood morbidity in late modern Italy. Acute mortality predominates among the Sicilian non-adults, whereas developmental and metabolic conditions are more evident in the Lombard infants. In Palermo, preservation reflected familial wealth and social prestige, while in Lodi it served scientific purposes. Childhood in late modern Italy emerges as a biocultural category shaped by biological vulnerability, social inequality, and regional cultural practices.

Keywords: anthropology, bio-history, collection, paleopathology, Italy

POTENTIAL ROLE OF THE GASTROINTESTINAL MICROBIOME IN THE PATHOGENESIS OF SURGICAL SITE INFECTIONS AFTER MAJOR GASTROINTESTINAL CANCER SURGERY

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Background and Aim: Despite advances in aseptic techniques, SSIs remain a major challenge in surgery of GI oncology. Emerging preclinical evidence suggests that endogenous GI microorganisms may contribute to SSI development. However, clinical validation of this hypothesis is still lacking. This study aims to investigate whether bacteria causing surgical site infections (SSIs) may be derived from the patient's gastrointestinal (GI) tract microbiome.
Materials and Methods: This prospective longitudinal observational study included adults undergoing major GI cancer surgery. Preoperative stool, oral swabs, and blood samples were collected, with intraoperative wound cultures obtained. Postoperative blood samples were collected on postoperative days (POD) 2 and 4, and samples from infected surgical sites were collected at SSI diagnosis. Intestinal barrier disruption markers (intestinal fatty acid-binding protein (iFABP) and lipopolysaccharide-binding protein (LBP)) were measured, and microbiome composition of stool, oral, and SSI samples was analysed using 16S rRNA gene amplicon sequencing to assess microbial concordance.
Results: Of 110 patients, 25 (23%) developed SSIs. Patients with SSIs showed early postoperative intestinal barrier disruption, reflected by elevated iFABP on

POD2 and LBP on POD4. Among 21 patients with paired samples, bacterial DNA was detected in all SSI specimens, and 7 (33%) showed concordant taxa between their gut/oral microbiome and the infection site. Concordance was observed in 4 of 7 (57%) patients with superficial SSIs, including 2 (50%) with intraoperatively confirmed non-contaminated wounds, whereas concordance in deep SSIs was limited (3 of 16, 19%).
Conclusions: This study provides the first clinical observations consistent with microbiome concordance between SSI sites and the GI tract, even among patients with intraoperatively confirmed non-contaminated wounds.

Keywords: gastrointestinal microbiome, gastrointestinal surgery, surgical site infections, Trojan Horse hypothesis

CLINICAL OUTCOMES OF ENDOVASCULAR TREATMENT IN BASILAR ARTERY OCCLUSION STROKE: MECHANICAL THROMBECTOMY ALONE VERSUS BRIDGING THERAPY

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Background and Aim: Basilar artery occlusion (BAO) is a severe acute ischemic stroke associated with high morbidity and mortality. Although intravenous thrombolysis (IVT) is recommended when eligible, regardless of planned mechanical thrombectomy (MTE), evidence in BAO stroke remains limited, and bridging therapy (BT) may increase symptomatic intracranial haemorrhage risk (sICH). This study evaluated the efficacy and safety of MTE alone compared with BT.

Materials and Methods: This single-centre retrospective study included patients treated for BAO stroke between 2019 and 2024. BT was defined as IVT followed by MTE. Efficacy outcomes were 24-hour NIHSS change and successful recanalization (TICI 2b–3). Safety outcomes included sICH and in-hospital mortality. Subgroup analyses were performed by sex, treatment within 4.5 hours, and stroke severity on admission.

Results: A total of 63 patients were included; mean age was 71.0 ± 12.2 years, 33 were female. IVT was administered to 21 patients, while 40 patients underwent MTE alone. MTE alone and BT did not differ significantly in 24-hour NIHSS change ($p=0.334$), successful recanalisation ($p=1.000$), sICH ($p=1.000$), or in-hospital mortality ($p=0.378$). Subgroup analyses by sex, treatment within 4.5 hours, and stroke severity on admission (NIHSS <10 and NIHSS ≥10) showed no significant differences. In adjusted regression, treatment strategy was not independently associated with NIHSS change ($p=0.853$), mortality ($p=0.390$), or sICH ($p=0.675$). Stroke severity was independently associated with greater 24-hour NIHSS improvement ($p=0.001$). No independent predictor of sICH or in-hospital mortality was identified.

Conclusions: In this cohort of BAO stroke patients, BT did not demonstrate superior efficacy or increased safety risk compared with MTE alone. Baseline stroke severity was the main independent determinant of early neurological improvement. Further multicenter prospective study is warranted to define the best strategy of reperfusion treatment in BAO stroke

Keywords: basilar artery occlusion, bridging therapy, ischemic stroke, mechanical thrombectomy, reperfusion

ADOLESCENT SUICIDAL IDEATION AND ATTEMPTS IN LITHUANIA OVER A DECADE: RESULTS FROM TWO SCHOOL-BASED SURVEYS

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Background and Aim: Suicide is a leading cause of death among adolescents; however, mortality data only reflect a small portion of the overall burden of suicidal thoughts and behaviours. This study aimed to examine changes in suicidal ideation and suicide attempts among Lithuanian adolescents between 2012 and 2023, and to identify individual and contextual factors associated with these behaviours, separately for girls and boys.
Materials and Methods: Data came from two repeated cross-sectional, school-based surveys conducted in 2012 and 2023. Anonymous self-report questionnaires were completed by 3851 adolescents in 2012 and 2830 in 2023, enrolled in grades 7–10 in urban and rural schools across four Lithuanian regions. Suicidal ideation and suicide attempts during the past six months were assessed with single items. Covariates included sociodemographic characteristics, school safety, traditional and cyberbullying victimisation, self-reported health problems, and Strengths and Difficulties Questionnaire subscales (SDQ).
Results: Between 2012 and 2023, the prevalence of any suicidal ideation increased from 23.6% to 40.2% in girls and from 15.6% to 21.5% in boys, with adjusted odds ratios of 2.23 and 1.83, respectively. Any suicide attempt rose from 4.0% to 7.0% among girls and from 3.1% to 4.2% among boys, with adjusted odds ratios of 1.93 and 2.25, respectively. Across both survey years, higher emotional problems, hyperactivity, and conduct difficulties, traditional and cyberbullying (especially their co-occurrence), feeling unsafe at school, non-two-biological-parent family structures, and physical health problems were strongly associated with suicidal ideation and attempts. Among boys, older age and non-Lithuanian origin further increased the odds of suicide attempts.
Conclusions: Adolescent suicidality in Lithuania has worsened over the past decade. The findings underscore the need for school-based, gender-responsive prevention strategies that address emotional and behavioural difficulties, bullying in both offline and online settings, and perceived school safety, while strengthening prosocial competencies and support for vulnerable family and health contexts.

Keywords: adolescents, bullying, school safety, suicidality

THE IMPACT OF PHTHALATES ON EMBRYONIC MALFORMATIONS AND LONG BONE LENGTH ACROSS TWO RAT GENERATIONS

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Background and Aim: Phthalates are widely used plasticisers associated with embryonic malformations and disrupted prenatal skeletal development. This study aimed to evaluate and compare the effects of di(2-ethylhexyl) phthalate (DEHP), dibutyl phthalate (DBP), and their mixture on embryonic malformations and long bone length across two generations (F1 and F2).
Materials and Methods: Thirty-six female Wistar rats were randomly divided into six groups: control (K), DEHP200 mg/kg, DEHP1000 mg/kg, DBP100 mg/kg, DBP500 mg/kg, and a combination group (200 mg/kg DEHP + 100 mg/kg DBP). Animals were exposed to phthalates via diet. The same exposure protocol was applied to the F1 generation offspring. A subset of F1 females was bred to produce the F2 generation. Embryonic malformations (internal and external) and long bones were assessed by dissection and measured using a stereomicroscope. Groups were statistically compared. The study was approved by Lithuanian SFVS (No. G2-221).
Results: Embryonic malformation rates were highest in the combination group across both generations (F1: 22.73%, F2: 28.00%), indicating a potential mixture-related enhancement of developmental toxicity. Although overall malformation frequency decreased in F2, the observed defects were more severe, including anasarca and encephalocele. Long bone development showed generation-dependent differences. In F1 offspring, phthalate exposure was associated with reduced tibia and fibula lengths, particularly at lower doses. In contrast, F2 offspring showed significant alterations primarily in forelimb bones. Ulna and radius lengths were significantly affected by low-dose DEHP200 exposure, while humerus length differed between the DBP500 and DEHP + DBP groups.
Conclusions: Combined exposure to DEHP and DBP resulted in the highest teratogenic effects across both generations, with more severe malformations observed in F2 offspring. DEHP had a greater impact on long bone development than DBP, showing a non-monotonic dose-response relationship. Transgenerational exposure was associated with altered patterns of skeletal development, particularly in forelimb long bones.

Keywords: embryonic malformations, long bone length, phthalates, transgenerational effects

AWARENESS, KNOWLEDGE AND APPLICATION OF LIFESTYLE MEDICINE IN LITHUANIA: A CROSS-SECTIONAL COMPARISON OF HEALTH CARE PROFESSIONALS AND THE GENERAL PUBLIC

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Background and Aim: Non-communicable diseases (NCDs) drive most global deaths, and Lithuania carries one of Europe's heaviest burdens of preventable mortality. Lifestyle medicine (LM) is an evidence-based discipline using lifestyle interventions to prevent, treat and sometimes reverse NCDs, but is often mistaken for disease prevention. Since 2023 LM specialists have been part of Lithuanian primary care teams, but uptake also depends on the awareness and readiness of patients and health care professionals (HP). This study assessed LM awareness, knowledge and associated factors among HP and the general public.

Materials and Methods: A cross-sectional anonymous questionnaire with a structured LM knowledge test (0-23) was completed by 305 HP (240 physicians, 65 allied) and 386 general-population adults. Comparisons used Mann-Whitney U and Kruskal-Wallis tests, tertile associations used chi-squared, Cramer's V and Mantel-Haenszel trend tests (SPSS; alpha 0.05).

Results: Only 34.5% of the public had heard of LM and 52.3% chose a wrong definition, yet 72.5% wanted LM-based care. Lower public knowledge was associated with male sex, rural residence, poorer quality of life, higher BMI and multiple chronic diseases, whereas lifestyle behaviours did not differ by knowledge, indicating a knowledge-behaviour gap. Among HPs, 79.3% had heard of LM but only 60% defined it correctly. Physicians scored above the public (median 14.5 vs 12; $p<0.0001$), therapeutic subspecialties above surgical (15 vs 13.5; $p=0.002$), allied professionals did not exceed the public. Fewer than half felt competent to apply LM, limited consultation time was the dominant barrier (64.6%), training demand was highest for lifestyle and stress-management counselling.

Conclusions: Demand for LM is high, but recognition is poor and, even where knowledge is greater, it does not translate into confidence or practice. Awareness alone is insufficient; integration needs practical counselling skills, sufficient consultation time and system support in primary care.

Keywords: chronic non-communicable diseases, health care professionals, knowledge-behaviour gap, lifestyle medicine, primary health care

UNRECOGNIZED BURDEN OF REDUCED KIDNEY FUNCTION AND ELEVATED BLOOD PRESSURE IN THE COMMUNITY: A WORLD KIDNEY DAY SCREENING INITIATIVE IN LITHUANIA

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Background and Aim: Chronic kidney disease (CKD) is common yet often underdiagnosed and data on its burden in the Lithuanian general population are scarce. We assessed the prevalence of renal and cardiovascular abnormalities detected during a World Kidney Day community screening initiative and identified factors associated with positive findings.
Materials and Methods: In this cross-sectional study, adult passers-by were screened in shopping centres in Kaunas and Vilnius. Serum creatinine, blood pressure (BP), and self-reported diabetes, hypertension, CKD were recorded; estimated glomerular filtration rate (eGFR) was calculated using the CKD-EPI 2021 equation. A positive result was defined as reduced eGFR (below 60 mL/min/1.73 m2) and/or elevated BP (systolic 140 mm Hg or higher and/or diastolic 90 mm Hg or higher). Associations were assessed by multivariable logistic regression.
Results: Of 377 participants (72.4% women; median age 64 years), 7.2% had reduced eGFR and 58.0% had elevated BP; 60.7% were screen-positive. Among those reporting none of the three conditions, 3.6% had reduced eGFR and 46.4% had elevated BP. Older age (odds ratio [OR] 1.49 per 10 years; 95% confidence interval [CI] 1.27 to 1.76), male sex (OR 2.16; 95% CI 1.26 to 3.76), and self-reported hypertension (OR 1.95; 95% CI 1.17 to 3.27) were independently associated with a positive result; diabetes was not. Overall, 60.2% required further referral.
Conclusions: Community-based screening revealed a high burden of elevated BP and reduced eGFR, including among individuals without known chronic disease. Older age, male sex, and hypertension predicted positive findings, and over half required referral, supporting community screening for early detection and timely referral.

Keywords: chronic kidney disease, hypertension, screening, early diagnosis

RADIATION PROTECTION IN HEALTHCARE: THEMATIC ANALYSIS OF NEWS MEDIA COVERAGE

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Background and Aim: Although the use of ionising radiation for healthcare purposes began in the early 20th century, until today, radiation protection is often a misunderstood topic. Based on empirical evidence, news media have become highly effective channel for conveying a health related topics, including radiation protection. The aim of this study was to assess the prevalence of healthcare-related radiation protection topics in the most popular news portals of Lithuania.
Materials and Methods: The data was collected using a questionnaire-based instrument. A qualitative analysis of publications of three largest Lithuanian online news websites was performed. In total, 505 publications published from 2019 to 2025, found using search-phrases "nuclear accident," "ionising radiation," "radiation" (in Lithuanian), were analysed. Afterwards, the quantitative analysis on the distribution of publications by different topics was performed.
Results: The majority (40.4%) of publications indicated that ionising radiation has negative effects on health, and a quarter (21.19%) specified those effects. Most frequently indicated risks to health were cancer (15.05%) and burns (3.96%). Other health-related factors, like birth defects, cataract, infertility, bronchitis or shortened life expectancy, were indicated in less than 1.0% of publications. Sensitivity to ionising radiation differences in various groups such as children, pregnant women or elderly individuals were indicated in a small proportion of publications (respectively, 2.18%, 1.98%, and 0.2%). Also, a small proportion of publications (5.15%) indicated healthcare as one of the radiation application fields, fewer than 5% referred to specific procedures.
Conclusions: Although health effects of ionising radiation are commonly indicated in news media publications, only a minority indicate healthcare as a field where ionising radiation is used. While new publications disproportionaly cover certain topics, poor public knowledge about ionising radiation may occur as a result.

Keywords: healthcare communication, ionising radiation, radiation protection, news media

STABLE FACIAL PROPORTIONS THROUGHOUT ADOLESCENCE, TAKING INTO ACCOUNT BODY SIZE PARAMETERS

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Background and Aim: The most rapid facial growth occurs during puberty. Facial proportions can be assessed using facial indices. Stable indices are important for determining which facial proportions remain unchanged throughout adolescence. This study aimed to identify which facial indices remain stable during adolescence and their relations with body parameters.
Materials and Methods: The study included 1376 participants aged 10–20 years. Faces were investigated using classical anthropometry. Eighteen craniofacial landmarks were identified, ten facial parameters measured, 34 facial indices calculated. Their stability was evaluated using linear regression ($p > 0.05$ – index is independent of age) and standard deviation (low standard deviation indicates stability).
Results: During adolescence, these indicators remained stable in girls: intercanthal width relative to biocular width (en-en/ex-ex) (SD = 2.53, $p > 0.05$), nasal width relations to morphological facial height (al-al/se-gn) and bigonial width (al-al/go-go) (SD = 2.21 and 2.46, respectively, $p > 0.05$), physiognomical upper facial height relative to bizygomatic width (se-sto/zy-zy) (SD = 3.19, $p > 0.05$). In boys, only the zygomandibular index (go-go/zy-zy) remained stable (it was also stable in girls: SD = 3.60 in boys, SD = 3.04 in girls, $p > 0.05$). Girls' se-sto/zy-zy was negatively correlated with BMI at age intervals 10–12, 13–16, and 17–20. Go-go/zy-zy positively correlated with body height in girls at the beginning (10-12 y.) and end (17-20 y.) of adolescence, and negatively related to BMI in both sexes at ages 17-20.
Conclusions: Only one index remained stable in boys – girls' facial proportions were more predictable during facial growth. Girls with higher BMI had relatively wider cheeks during the whole adolescence. Taller girls had relatively wider jaw in comparison to cheeks at the beginning and at the end of adolescence. Boys and girls with higher BMI had relatively wider jaw at the end of adolescence.

Keywords: anthropometry, facial growth, facial indices

PREVALENCE, RISK FACTORS AND PHYSICAL STATUS OF NEWBORNS WITH CONGENITAL ANOMALIES (ACCORDING TO LITHUANIAN MEDICAL BIRTH DATA FROM 1997 TO 2020)

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Background and Aim: Congenital anomalies remain an important public health issue. This study aimed to evaluate the prevalence of congenital anomalies in Lithuania during 1997–2020, compare the physical status of affected and unaffected newborns, and identify maternal factors associated with congenital anomalies.
Materials and Methods: A population-based descriptive study was performed using data from the Lithuanian Medical Birth Register. Information on 32,656 newborns with congenital anomalies was compared with data on 713,037 unaffected newborns. The prevalence and distribution of congenital anomalies, neonatal characteristics, and maternal demographic, social, reproductive, and health-related factors were analysed using MS Excel and SPSS software.
Results: The prevalence of congenital anomalies increased from 2.92% in 1997 to 5.65% in 2020. Cardiovascular, musculoskeletal, and urogenital anomalies were the most common anomaly groups, with cardiovascular defects showing the greatest increase over time (from 13.35% to 25.98%). The highest relative prevalence of congenital anomalies was observed in Siauliai (8.8%) and Kaunas (6.7%). Compared with unaffected newborns, newborns with congenital anomalies were more frequently born preterm (boys: 16.3% vs. 5.3%; girls: 16.0% vs. 4.6%) and from multiple pregnancies (4.3% vs. 2.4%). They also had significantly lower mean gestational age, birth weight, length, and head circumference ($p < 0.05$). Mothers of affected newborns were more likely to be older than 30 years, have lower educational attainment, be unmarried, be of non-Lithuanian ethnicity, have a history of adverse pregnancy outcomes, and report smoking or alcohol consumption during pregnancy.
Conclusions: The prevalence of congenital anomalies in Lithuania increased during the study period and was accompanied by changes in the dominant anomaly groups. Congenital anomalies were associated with less favourable neonatal outcomes and several maternal risk factors, including advanced maternal age, lower education, adverse reproductive history, smoking, and alcohol consumption during pregnancy.

Keywords: congenital anomalies, Lithuania, maternal risk factors, neonatal outcomes, prevalence

LABEL-FREE INTRACELLULAR IMAGING USING HIGH-RESOLUTION DYNAMIC FULL-FIELD OPTICAL COHERENCE MICROSCOPY

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Intracellular imaging is a broad scientific field that continues to hold many unresolved questions while offering significant potential for clinical applications. Advancing imaging techniques are essential for achieving more precise visualisation of cellular structures and improving our understanding of the origins of various pathologies. In this presentation, we introduce a high-resolution dynamic full-field optical coherence microscopy (d-FF-OCM) system that enables label-free, in-depth cellular imaging while also providing functional insights into cellular dynamics and intracellular vibrations driven by biophysical processes.

FF-OCM is an interferometric imaging technique which is capable of visualising highly scattering tissues at depth. Despite its high potential across many biomedical imaging fields, conventional systems face some limitations, such as image acquisition speed, resolution, imaging depth. By enhancing a conventional time-domain full-field optical coherence tomography (TD-FF-OCT) system, we have managed to mitigate some of the drawbacks of such systems. Our system takes advantage of high NA (NA 1.25) oil-immersion 100× objectives, paired with high full well capacity (FWC) camera and low étendue laser pumped white light source. These improvements allowed us to reach lateral and axial resolutions up to 274 nm and 500 nm, respectively, along with an increase in signal-to-noise ratio (SNR) which in turn enabled the exploration of d-FF-OCM approaches. Using this method, we successfully visualised hepatocytes, small intestine tissue, and other mouse organs in depth (up to 120 μm) with fluorescent like contrast without any need for labelling the sample. The functional contrast of the system enables visualisation of structures not previously seen with typical OCT methods, offering critical insight into intracellular activity, cell viability and other biophysical behaviour without compromising tissue integrity.

Keywords: d-FF-OCM, label-free, microscopy

ASSOCIATIONS OF SOMATOTYPE AND ANTHROPOMETRIC CHARACTERISTICS WITH SPORTS INJURY HISTORY AMONG ATHLETES: A PILOT STUDY

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Background and Aim: From an evolutionary medicine perspective, sport-specific somatotypes may reflect morphological adaptations that optimise mechanical load distribution and reduce injury susceptibility. Sport-related injuries remain a major concern among athletes. One of the ongoing uncertainties is whether certain body parameters are linked to higher injury rates. Current results in the literature are contradictory and lack measurable outcomes. The aim of the study was to investigate potential associations between somatotype scores, anthropometric values, and frequency and severity of injuries among athletes of different levels.
Materials and Methods: A cross-sectional pilot study with retrospective assessment of sports injuries was conducted. 40 athletes of different levels and sports disciplines were questioned and evaluated. Heath-Carter method of somatotyping and anthropometric measurements were performed using a stadiometer, a scale, calipers, flexible tape.
Results: In the last two years, athletes have been injured on average 1,98 times, missed more than 21,42 training sessions. Due to injury 6 athletes missed more than 50 sessions. Throughout the career 9 surgeries were performed in total. Males presented with a body fat of 17,7%, females 23,6%. Median somatotype scores: endomorphy 2,93; mesomorphy 3,00; ectomorphy 2,47. No relationship between gender, bodyfat and the number of injuries or missed trainings was found. Ectomorphy increase was found to be the only protective covariate regarding the amount of missed training sessions ($p = 0,004$) but not the amount of injuries ($p = 0,817$).
Conclusions: In the subject of anthropometry and injuries, the possibility of a type II error cannot be excluded. Further research with a larger sample size is required in order to prove the lack of anthropometric factors influencing a significant number of injuries. Ectomorphy as a protective covariate could be explained by the large number of endurance athletes in the study. Our findings could suggest that the optimal somatotype for any particular sport provides a stress-shielding effect as well.

Keywords: anthropometry, athlete, injury, somatotype, trauma

KNOWLEDGE AND AWARENESS OF PREGNANT WOMEN REGARDING CAFFEINE CONSUMPTION DURING PREGNANCY: A CROSS-SECTIONAL STUDY

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Background and Aim: Caffeine (1,3,7-trimethylxanthine) is one of the most used psychoactive substances worldwide. Although a daily caffeine intake of up to 400 milligrams (mg) is considered safe for healthy adults, pregnant women (PW) are advised to limit caffeine intake to 200 mg per day. This study aimed to assess PW's knowledge and awareness regarding caffeine consumption (CC) during pregnancy in Lithuania.
Materials and Methods: An anonymous online cross-sectional survey was conducted among PW in Lithuania. Socio-demographic and pregnancy-related data were collected, together with information about changes in CC before and during pregnancy, as well as participants' knowledge and awareness of CC during pregnancy. Knowledge was assessed using ten true-or-false statements developed based on recommendations from the World Health Organization, the Lithuanian Society of Obstetricians and Gynaecologists, the American College of Obstetricians and Gynaecologists, and the European Food Safety Authority.
Results: A total of 200 PW participated in the research. Most respondents were aware of the recommendation to limit caffeine intake throughout all stages of pregnancy. However, more than half of PW were unable to identify that a daily caffeine intake of up to 200 mg is safe for the foetus and does not impair its development. Most women also reported a lack of accessible and reliable information regarding CC during pregnancy in Lithuania.
Conclusions: PW consciously reduce caffeine intake during pregnancy; however, misconceptions and insufficient knowledge regarding the effects of caffeine on maternal and foetal health remain common. Improving education about safe CC during pregnancy may contribute to healthier maternal behaviour and foetal well-being.

Keywords: caffeine consumption, foetus, pregnancy, pregnant women

EVOLVED REGIONAL IMMUNE ZONATION OF THE HUMAN ILEOCOLIC MUCOSA AND ITS BREAKDOWN ALONG THE ADENOMA–CARCINOMA SEQUENCE

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Background and Aim: The gut harbours the body's largest immune compartment, organised into an evolutionarily conserved regional architecture in which the antigen-rich terminal ileum and the colon are immunologically specialised. Colorectal carcinogenesis evolves through a stepwise adenoma–carcinoma sequence shaped, in part, by mucosal immune surveillance, yet how this evolved regional architecture changes during dysplastic progression—including in mucosa distant from the lesion—remains incompletely defined. We aimed to map immune cell density along the healthy human ileocolic axis and characterise its breakdown across the adenoma–carcinoma sequence.
Materials and Methods: In this observational study (MIMICA-1), we performed compartment-resolved immunohistochemistry for CD3, CD8, CD20, and CD68 with epithelium- and stroma-resolved digital image analysis on 820 sections from 57 individuals (14 healthy controls, 16 small adenomas ≤1 cm, 17 large adenomas >1 cm, 10 carcinomas), with mismatch-repair characterisation of all carcinomas. Group differences were assessed by omnibus Kruskal–Wallis testing with Holm-adjusted Dunn's post-hoc comparisons.
Results: In the healthy bowel, T cells were strongly zonated, enriched in the terminal ileum and declining distally ($CD3^+$ stroma $P<0.001$, $\varepsilon^2=0.45$; $CD8^+$ stroma $P<0.001$, $\varepsilon^2=0.58$), and consistently more abundant in stroma than epithelium. This zonation broke down progressively along the sequence: lesional $CD3^+$ density was higher in small than large adenomas ($P=0.001$),

a difference that tracked with adenoma size rather than villous histology. In macroscopically normal mucosa distant from the lesion, two coordinated alterations emerged—$CD8^+$ depletion in the terminal ileum (P=0.018) and $CD68^+$ macrophage expansion in the right-colonic epithelium (P=0.006)—both robust across sensitivity analyses.
Conclusions: The healthy ileocolic mucosa shows reproducible, evolutionarily patterned immune zonation that breaks down progressively along the adenoma–carcinoma sequence, with coordinated perturbations extending into normal-appearing mucosa. Viewing colorectal neoplasia as a disruption of evolved mucosal immune homeostasis may offer an integrative, evolutionary-medicine perspective on early tumorigenesis.

Keywords: colorectal adenoma, evolutionary medicine, field cancerization, immune zonation, mucosal immunity

ABSTRACTS OF SLAM PRESENTATIONS

(Contents are under full responsibility of the authors)

BODY MASS INDEX AND PUBERTAL TIMING IN LITHUANIAN GIRLS

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Background and Aim: Women make up about half of mankind. Girls aged 7-17 make about 50 % of children in this age group. During puberty, complex anatomical, hormonal, and psychosocial processes occur. Weight problems are one of the most important issues for girls in this period, both physically and psychologically. Overweight, obesity, or thinness are the two extreme sides of the problem. Both of them greatly influence puberty. For women's health, puberty is of primary importance, as it often determines the health of the fertile period.
Materials and Methods: A cohort of 952 healthy, asymptomatic volunteer girls aged 7–17 years was examined between September 2023 and May 2026. The study was approved by the Vilnius Regional Bioethics Committee, Vilnius, Lithuania. Breast development was staged using Tanner criteria. Anthropometric and ultrasound parameters were recorded, including body circumferences, skinfolds, uterine and ovarian dimensions, and breast tissue thickness. All the girls and their parents filled out the questionnaires about their birth data, menstrual cycle (if there is one), and other medical conditions. Body mass index (BMI) was calculated BMI=weight/height2. We aim to determine how girls' BMI influences the onset of thelarche and menarche.
Results: Puberty in girls with increased BMI starts earlier than in girls with low BMI.
Conclusions: We think that both thinness and obesity greatly influence puberty: obesity accelerates puberty, and thinness slows it down.

Keywords: girls, obesity, puberty, thinness, ultrasound

THE STRATIFICATION OF PROGNOSIS IN ACUTE HEART FAILURE PATIENTS: THE EFFECT OF REHOSPITALIZATIONS AND OPTIMAL MEDICAL TREATMENT

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Background and Aim: Heart failure (HF) is a significant challenge for patients and the healthcare system, associated with poor quality of life, high morbidity and mortality. The aim of the thesis was to investigate the impact of rehospitalisations and optimal medical treatment on the prognosis of patients with acute HF (AHF).
Materials and Methods: In this dissertation, two patient cohorts from prospective acute dyspnoea observational studies from Lithuania and Switzerland and a cohort from a randomised clinical trial (RCT), which included AHF patients in 14 countries, were analysed. The relationship between rehospitalisations and mortality was investigated in the two observational cohorts. The impact of rapid up-titration of optimal medical HF treatment on 180-day heart failure readmission or all-cause mortality based on sex, baseline quality-of-life and presence of baseline anaemia was investigated in the RCT cohort.
Results: The 6-month readmission was associated with an increased risk of 1-year all-cause mortality in both Lithuanian and Swiss cohorts [adjusted hazard ratio (aHR) 3.0, 95% confidence interval (CI) 2.2–4.0, P < 0.001; aHR 1.8, 95% CI 1.4–2.2, P < 0.001, respectively]. The rapid up-titration of HF treatment reduced the risk of 180-day heart failure readmission or all-cause mortality compared to usual care in both men and women (interaction P value = 0.65), regardless of baseline quality-of-life as either a categorical (interaction P value = 0.58) or a continuous variable (interaction P value = 0.87) and presence of anaemia (interaction P value = 0.28) or haemoglobin as a continuous variable (interaction P value = 0.53).
Conclusions: Unplanned readmission during the first 6 months after discharge was associated with significantly increased 1-year mortality risk acute dyspnoea patients. Rapid up-titration of optimal medical treatment after AHF hospitalisation reduces 180-day all-cause death or heart failure readmission risk, regardless of sex, baseline quality-of-life and baseline anaemia.

Keywords: acute dyspnoea, acute heart failure, rehospitalisation, mortality

CLONAL MAST CELL DISORDERS IN HYMENOPTERA VENOM ALLERGIC PATIENTS: DIAGNOSTIC DILEMMAS AND SAFETY OF IMMUNOTHERAPY

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Background and Aim: Systemic mastocytosis (SM) and other clonal mast cell disorders (CMDs) are disproportionately common among patients with severe anaphylaxis following hymenoptera stings. The aim of this study was to determine how frequently this condition is confirmed in the study population, what diagnostic challenges the clinician may face, and what impact CMD have on the safety of venom-specific immunotherapy (VIT).
Materials and Methods: This retrospective, single-center study was conducted at the Vilnius University hospital Santaros clinics (Lithuania). Ethical approval was obtained from Vilnius Regional Bioethics Committee. Descriptive statistics were used to summarise patient characteristics, diagnostic parameters, occurrence of systemic reactions during VIT.
Study population: 168 patients (n – 168, median age 44 years (±12,9, 18 - 74 years) who underwent VIT from January 2013 to December 2025
Results: CMD was confirmed in 13,9% patients (n = 22/169). The exhaustive haematological work- was performed in 29 of 49 suspected cases. REMA score was ≥ 2 in 56 patients. In 26 patients with REMA ≥ 2, CMD was confirmed in 76,9 % (n = 20/26) cases by bone morrow examination. 6 patients (30 %) with CMD had tryptase 20 ng/ml, ant 20 % had less than 8,4 ng/ml. cKIT mutation evaluation from peripheral blood was performed in 19 cases. In 8 indolent SM patients this test was positive in 2 cases. During VIT, a systemic reaction occurred in 25% of patients with CMD (*vs.* 3,4% of nonCDM patients). All reactions were caused by bee venom.
Conclusions: Identification of CMD is of biggest importance in HVA patient but requires thorough diagnostic work up. Decision to perform hematological evaluation rely on comprehensive clinical evaluation (REMA score) rather than laboratory testing. Bee VIT is related with systemic reaction risk in this group of patients.

Keywords: anaphylaxis, clonal mast cell disorder, mastocytosis, venom immunotherapy

3D PRINTED ADIPOSAL AND MUCOSAL STEM-CELLS ENRICHED VERSUS ACELLULAR SCAFFOLD FOR URETHRAL REPAIR IN A RABBIT EXPERIMENTAL MODEL

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Background and Aim: The study was conducted to develop and test an artificial biocompatible tissue that could later be used in urethral surgery. The need for synthetic material for replacement urethroplasty in adult and pediatric medicine for the treatment of congenital urethral deformities is well known and widely discussed in modern scientific literature.
Materials and Methods: Biocompatible materials, gelatin methacrylate (GelMA) and polycaprolactone (PCL), supplemented with silk fibroin and polylactic acid (PLA), were selected to form the scaffold. Using 3D printing technology, a multilayered scaffold was produced. Adult rabbit stem cells were isolated from biopsies, cultured, differentiated into epithelial and mesenchymal cells and inserted into the artificial scaffold. 16 New Zealand White rabbits were divided into three groups: stem-cells enriched scaffolds, acellular scaffolds and a control. 3 months postoperative follow-up included clinical observation, blood and urine tests, urethrograms, histological evaluation. Approved by the Regional Bioethics Committee.
Results: All 16 animals completed the study. Final urethrograms showed a significant advantage of the cell-enriched scaffold. Final urethrograms showed 4/6 (67%) completely patent urethras without strictures compared to 1/5 (20%) in group B. The results were complemented by histological findings. Acellular Group B showed significantly higher histological inflammation (50% vs. 17%), fibrosis (70% vs. 33%), and residual hydrogel (20% vs. 0%). Clinical signs and laboratory measurements showed a worse postoperative period in

group B. On average, animals in group B lost about 5.8% of their body weight, while animals in group A gained about +1% on average.
Conclusions: Rabbit perineal adipose-derived stem cells and rabbit oral mucosal stem cells are suitable for forming artificial urethral tissue. Urethrograms and final histology showed the superiority of the stem cell-enriched scaffolds. 3D printed multilayer cell-enriched artificial tissue has advantages over acellular scaffolds in a rabbit urethral reconstruction experimental model.

Keywords: artificial, bioengineered, rabbit, stricture, urethra

EVOLVED TO REFUSE? FOOD NEOPHOBIA AND THE ACCEPTANCE OF ALTERNATIVE PROTEINS AMONG LITHUANIAN CONSUMERS

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Humans evolved a protective wariness towards unfamiliar foods (food neophobia) that once shielded our ancestors from toxins and pathogens. In today's rapidly changing environment, this evolved trait may have become a mismatch: it stands between consumers and the dietary transition that a warming, resource-constrained planet increasingly demands. Alternative proteins, including plant-based meat substitutes, mycoprotein products and edible insects, are promoted as sustainable, health-compatible substitutes for conventional meat, yet their uptake depends on whether people are willing to overcome a deeply rooted aversion to novel foods.

This doctoral research examines how Lithuanian residents respond to such innovative foods. It pursues four aims: to assess attitudes towards alternative-protein products; to estimate the prevalence of their consumption; to identify the factors shaping trust and acceptance; and to determine consumers' willingness to pay. The work is grounded in the Theory of Planned Behaviour, the tricomponent attitude model and the validated Food Neophobia Scale, allowing evolved dispositions to be analysed alongside social and economic determinants of food choice.

A cross-sectional survey of Lithuanian adults will provide the data, analysed using the SPSS and R statistical software. By linking an evolved psychological mechanism to contemporary, environmentally driven dietary change, the study offers an evolutionary-medicine perspective on a pressing public-health question: how populations can adapt their diets quickly enough for a changing world, and what helps or hinders that adaptation. The findings are intended to inform public-health communication and policy supporting sustainable, acceptable protein transitions in Lithuania.

Keywords: alternative proteins, consumer behaviour, food neophobia, sustainable diet, willingness to pay

URINARY METABOLOME ANALYSIS FOR DETECTION OF CLINICALLY SIGNIFICANT PROSTATE CANCER: ACCURACY AND ACCEPTABILITY OF NOVEL BIOMARKER TEST

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Background and Aim: Population-level prostate cancer (PCa) screening, based on prostate-specific antigen (PSA) testing, has demonstrated the ability to diagnose PCa early and reduce PCa mortality. However, the limited specificity and sensitivity of PSA and other widely used biomarkers have led to an increased utilisation of invasive prostate biopsies, as well as the overdiagnosis and overtreatment of indolent PCa. The discovery of accurate and acceptable biomarker tests for detecting clinically significant PCa (csPCa) remains a major unmet clinical need, driving extensive research in the field. Urine passes through the prostatic urethra and collects metabolites from the prostate gland, making it a highly rational biofluid for the discovery of novel csPCa biomarkers, as well as a potentially more acceptable medium from the patient's perspective. We aim to develop a highly accurate, non-invasive diagnostic test for csPCa detection utilising urinary metabolomic fingerprinting. Our secondary objective is to evaluate and compare the acceptability of the novel urinary test against standard-of-care diagnostic modalities.
Materials and Methods: Pre-biopsy urine samples will be collected from a cohort of patients with elevated PSA levels and analysed via Gas Chromatography-Mass Spectrometry (GC-MS). Data preprocessing and machine learning techniques will be applied to identify distinct urinary metabolomic fingerprints differentiating patients with and without csPCa. Targeted prostate biopsies will be utilised as the diagnostic reference standard for the detection of csPCa. Patient-reported acceptability across the different diagnostic modalities will be systematically analysed and compared using structured questionnaires.
Results: Initial proof-of-concept data indicate that pairing routine PSA metrics with GC-MS spectral signatures provides excellent stratification of prostate cancer risk. Specifically, our baseline model separated csPCa(ISUP ³ 2) from non-significant pathological findings with high precision (AUC = 0.842; 95% CI: 0.825–0.859).
Conclusions: Given this promising clinical performance, an additional study cohort is currently being recruited to further validate the diagnostic model and to formally evaluate patient acceptability.

Keywords: biomarker, clinically significant prostate cancer, test acceptability, urinary metabolome

WHAT HAPPENS WHEN A COMMUNITY PHARMACIST BECOMES PART OF DIABETES CARE?

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Background: Effective diabetes management requires regular self-monitoring of blood glucose; however, previous research has shown that many patients with diabetes (DPs) perform it inconsistently or not at all. The increasing availability of continuous glucose monitoring (CGM) technologies has created new opportunities for diabetes self-management, while also increasing the need for DPs' education and support. International studies suggest that community pharmacists (CPs) may contribute to diabetes management through structured consultations, DP education, and ongoing monitoring. Nevertheless, evidence from real-world pharmacy practice remains limited, and no study in Lithuania has yet evaluated these associations in DPs using CGM systems.
Aim: This study aims to determine correlations between CPs - led structured glycemic control consultations and DPs' glycemic control, diabetes management, and patient-pharmacist collaboration in community pharmacy settings.
Study Design: This prospective observational study is being conducted in community pharmacies across Lithuania. Participating CPs receive dedicated training and provide CPs-led structured glycemic control consultations according to a standardised consultation framework. The study examines CPs' knowledge, confidence, and preparedness to consult, as well as CPs-led structured glycemic control consultations' correlation with DPs-reported glycemic control results from CGMs, self - assessed diabetes control, and collaboration with CPs.
Future Perspectives: The findings may contribute to the development and implementation of a structured pharmaceutical care model for DPs using CGM in routine community pharmacy practice and support the role of CPs in diabetes care.

Keywords: community pharmacy, continuous glucose monitoring, diabetes management, pharmaceutical care

HOW PREPARED IS THE SCHOOL COMMUNITY TO PROMOTE CHILDREN'S MENTAL HEALTH?

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Background and Aim: Children's mental health is an important public health and educational issue, and schools play a key role in promoting well-being and preventing mental health difficulties. Effective support depends on the preparedness of the whole school community. This study aimed to assess the school community's readiness to promote children's mental health.
Materials and Methods: A cross-sectional anonymous online survey was conducted. The study included 144 school-based professionals and 250 parents from 85 schools across 31 Lithuanian municipalities. Data were analysed using descriptive statistics and qualitative content analysis.
Results: The average mental health literacy score was 111.11 (SD±10.96) among parents and 109.83 (SD±10.49) among school professionals. School professionals identified in-person theoretical and practical training (31.3%) and mental health literacy courses (27.1%) as the most beneficial. Parents identified independent information search (23.6%; n=59), school-organised training (22.8%; n=57), and information provided by public health specialists (22.8%; n=57) as the most useful learning forms. Parents reported school as the best source of information (52.0%; n=130), followed by online sources (34.0%; n=85). School professionals emphasised the need for practical competencies (27.1%; n=39), skills for working with children with behavioural, emotional, and special educational needs (23.6%; n=34), and better understanding of mental health disorders (16.7%; n=24). Most school community members (51.4%; n=74) and parents (40.8%; n=102) stated that cooperation between teachers and parents occurs only occasionally.
Conclusions: The findings suggest insufficient school community preparedness for children's mental health promotion and the need for practical training and stronger collaboration.

Keywords: children's mental health, mental health literacy, school community

COMPARISON OF NOVEL HEMODYNAMIC AND ANATOMICAL METHODS FOR CAROTID ARTERY STENOSIS MEASUREMENT

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Background and Aim: Treatment decisions in asymptomatic carotid artery stenosis remain based on anatomical thresholds, despite limited correlation with hemodynamic significance and stroke risk. While pressure-derived indices guide coronary revascularisation, physiological assessment in carotid disease is largely unexplored. The aim was to evaluate the safety, feasibility, and physiological relevance of invasive pressure-wire assessment in asymptomatic carotid stenosis and to examine its relationship with anatomical imaging and the effects of carotid artery stenting (CAS).
Materials and Methods: In this prospective single-centre study, 30 patients with suspected high-grade asymptomatic carotid stenosis underwent duplex ultrasound screening and pre-procedural MRI. Pressure-wire measurements (Pd/Pa and resting full-cycle ratio [RFR]) were obtained distal to the lesion (M1, C5, C2 segments) before and after CAS. Stenosis severity was assessed using NASCET criteria. Associations between pressure indices, imaging parameters, and collateral circulation were analysed.
Results: Pressure-wire assessment was feasible in all patients without complications. Distal pressure indices were significantly lower in stenotic arteries and strongly correlated with ultrasound and MRI stenosis severity (r up to 0.84, $p<0.01$). Notably, patients with borderline anatomical stenosis who did not undergo stenting demonstrated pressure values comparable to contralateral arteries. CAS resulted in immediate normalisation of pressure across all segments. A Pd/Pa or RFR threshold of 0.88–0.90 identified ≥70% stenosis with high diagnostic accuracy. Collateral anatomy significantly influenced distal pressure behaviour.
Conclusions: Invasive physiological assessment of carotid stenosis is safe, reproducible, and reveals meaningful discordance with anatomical severity. These findings support a potential role for pressure-guided decision-making in carotid revascularisation.

Keywords: carotid stenosis, carotid stenting, collateral circulation, pressure gradient

CAN TRUST SAVE LIVES? RETHINKING ORGAN DONATION MODELS IN LITHUANIA

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A transplant may be a triumph of modern medicine, but before surgery, immunology, or logistics, one essential step must occur: someone must agree to donate. In transplantation, life-saving technology depends on a deeply human decision.

Lithuania currently uses an opt-in organ donation model, where donation requires explicit consent from the individual or, often, from relatives. However, donation rates remain below the European Union average. This raises an important question: is the challenge the legal model itself, or the level of public knowledge, trust, and acceptability surrounding it?

This Science Slam presentation introduces a doctoral dissertation analysing organ donation models in the Baltic States and seeking to identify the most suitable national model for Lithuania. The research compares opt-in, opt-out, mandatory choice, and mixed approaches, considering donation outcomes alongside ethical, legal, cultural, behavioural, and communication-related factors. It combines comparative analysis, a representative survey of Lithuanian residents, and semi-structured interviews with experts in healthcare, law, bioethics, communication, policy, and related fields.

Rather than asking only which model appears most effective on paper, this dissertation asks which model could genuinely work in Lithuania's social and cultural context. It explores how attitudes toward organ donation are shaped by information, trust in healthcare, ethical and religious beliefs, family influence, fears, and misconceptions.

The central idea is simple: organ donation systems do not function merely because they are written into law. They work when people understand them, accept them, and trust them. By identifying factors that influence donation-related decisions in Lithuania, this dissertation aims to offer evidence-based and culturally sensitive recommendations for national policy, communication, and public engagement.

Ultimately, the presentation asks a question with life-or-death relevance: can changing a legal model save lives, or must we first change the relationship between society, medicine, and trust?

Keywords: bioethics, Lithuania, organ donation, public trust, transplantation

A PILOT INVESTIGATION OF PANCREATIC PSEUDOISLET SIZE AND MONOCYTE INTERACTIONS IN A NOVEL MICROFLUIDIC PLATFORM WITH IMPLICATIONS FOR TRANSPLANT OUTCOMES

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Background and Aim: The optimal size of pseudoislets differentiated from human induced pluripotent stem cells (hiPSCs) for functional success in transplantation remains unknown. This study introduces a novel microfluidic system designed to trap *beta* cells and facilitate the controlled aggregation of varied pseudoislets sizes for comparative *in vitro* analysis.
Materials and Methods: Fabricated via soft lithography using polydimethylsiloxane (PDMS), the system employs hydrodynamic traps composed of micropillars to aggregate cells into spheroids: „U" shaped trap for 100 µm islets and „W" shaped double traps for 50 µm islets. To validate the system's biocompatibility and fluid dynamics, a pilot test using THP-1 monocytes was conducted. Viability of the cells was counted in the supernatant.
Results: This microfluidic device allows constant culture medium flow through the islet and between the micropillars ensuring optimal diffusion of oxygen, nutrients and removal of waste products. The dead space in the system is reduced to a minimum in order to achieve a high spatio-temporal resolution when switching culture medium in glucose stimulated insulin secretion test. Bright field and fluorescence microscopy are available to perform on the chip without removal of the pseudoislets from the trap. Although the small diameter of individual monocytes led to their washout from the traps, the system consistently maintained cell viability above 90% across varied flow protocols.
Conclusions: These results indicate that the microfluidic design provides a biocompatible environment with low shear stress, establishing a robust foundation for future research into the optimal size of hiPSC-derived pseudoislets for clinical transplantation.

Keywords: *beta* cell, hydrodynamic trap, microfluidic, monocytes, PDMS

DO YESTERDAY'S GROWTH CHARTS STILL REFLECT TODAY'S CHILDREN?

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Every day, healthcare professionals use growth charts to assess whether children are growing appropriately. The tool helps evaluate a child's overall health and the need for further attention or intervention. However, the growth charts used today in Lithuania were created in 1995 and may not fully reflect contemporary growth patterns. Environmental, sociodemographic and health-related factors have changed, raising an important question: have growth patterns changed as well?

Using a few relevant clinical examples, this Science Slam presentation illustrates the challenges of assessing a child's growth. It takes us into the healthcare professionals' everyday work and shows how growth assessment relies on growth charts. The presentation also highlights the importance of critically evaluating whether existing growth references remain representative of modern populations.

Furthermore, the presentation introduces an ongoing PhD project that aims to determine whether the growth charts developed more than 30 years ago are still appropriate for the children seen today.

As we assess children's growth every day, perhaps it is time to assess the growth charts as well.

Keywords: auxology, child growth, growth assessment, growth charts, growth references

FINANCIAL IMPACT OF WATCH AND WAIT STRATEGY AFTER TOTAL NEOADJUVANT THERAPY IN RECTAL CANCER: A COST SAVINGS ANALYSIS BASED ON REAL-WORLD INSTITUTIONAL DATA

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Background and Aim: Growing evidence supports non-operative management of rectal cancer, yet its economic consequences in real-world healthcare settings have not been evaluated. Watch and wait (W&W) — active surveillance following complete clinical response (cCR) — avoids total mesorectal excision (TME) and associated surgical morbidity, but whether this translates into meaningful cost savings remains unclear.
Materials and Methods: A cost savings model was developed from the Lithuanian National Health Insurance Fund perspective with a five-year time horizon. Costs were derived from institutional data at the National Cancer Centre (NCC) of Lithuania: diagnostic-related group tariffs from 91 consecutive rectal resections (2025), including surgical, stoma care, and surveillance costs, alongside prospectively collected enrolment data from the ongoing STarT trial (85 patients, January 2025 to May 2026, NCT06758830). Clinical probability estimates were drawn from the OPRA randomised trial (cCR rate ~50%; local regrowth ~25%) and published stoma morbidity data.
Results: The modelled TME pathway cost €18,156 per patient, compared with €7,044 for W&W, yielding a saving of €11,113 per patient who avoided surgery. W&W surveillance accounted for only 39% of the TME pathway cost. At the NCC level, approximately 80 TNT candidates are treated annually (61 enrolled in the STarT trial and approximately 20 additional patients receiving TNT outside the trial), yielding an estimated annual saving of €356,000. National adoption across all Lithuanian centres would yield approximately €1,516,000 per year.
Conclusions: W&W following TNT in rectal cancer offers substantial and quan-

tifiable cost savings. These findings, grounded in real-world Lithuanian cost data and inclusive of stoma care expenses, support broader implementation of organ-preserving strategies within national oncology practice.

Keywords: cost analysis, non-operative management, rectal cancer, total neoadjuvant therapy, watch and wait

MICROPLASTIC-LIKE PARTICLES IN HUMAN PLACENTA: PRELIMINARY FINDINGS FROM SEM-EDX ANALYSIS

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Background and Aim: Plastic degradation generates microplastics, which have become ubiquitous environmental contaminants detected in air, food, drinking water, and numerous ecosystems worldwide. Increasing evidence suggests that micro- and nanoplastics can accumulate in human tissues, including blood and placenta and have been associated with adverse biological effects, including inflammation, oxidative stress, and reproductive toxicity. Their detection in placental tissue raises concerns regarding potential maternal and fetal exposure and highlights the need for further investigation of their occurrence during pregnancy. The aim of this study was to investigate the presence of microplastic-like particles in human placental tissue samples using scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDX).
Materials and Methods: Placental tissue samples were collected following delivery and processed under conditions minimising external contamination. Selected placental fragments were examined using high-resolution scanning electron microscopy (SEM). Particles identified based on their morphology were further analysed using energy-dispersive X-ray spectroscopy (EDX) to determine their elemental composition. Particles showing elemental profiles compatible with synthetic polymer materials were classified as suspected microplastic particles.
Results: SEM analysis revealed the presence of multiple microparticles embedded within placental tissue. Morphological assessment identified irregularly shaped particles of varying sizes. Subsequent EDX analysis demonstrated elemental compositions characterised predominantly by carbon-rich signatures and low levels of inorganic elements, consistent with a potential synthetic origin. Several particles were therefore considered highly suggestive of microplastic-like material within placental tissue.
Conclusions: Microplastic-like particles were detected in placental tissue samples using SEM and EDX analyses. The observed morphological features

and elemental composition were consistent with particles of potential synthetic origin. These findings highlight the feasibility of placental tissue analysis for investigating prenatal exposure to environmental contaminants and warrant further studies using polymer-specific methods to confirm particle identity.

Keywords: environmental contaminants, microplastics, placenta, placental tissue, SEM-EDX

INFRARENAL AORTIC ANEURYSM DYNAMICS ON SERIAL COMPUTER TOMOGRAPHY ANGIOGRAPHY SCANS USING ARTIFICIAL INTELLIGENCE

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Background and Aim: Accurate monitoring of infrarenal abdominal aortic aneurysms is essential for evaluating disease progression and implementing follow-up after treatment. Manual measurements on computed tomography angiography (CTA) scans may vary between observers and are time-consuming. This study aims to evaluate an artificial intelligence (AI)-based tool designed to automatically detect the infrarenal aorta on CTA scans and calculate its maximum diameter and volume.
Materials and Methods: 34 patients with 100 serial CTA scans performed during clinical follow-up for infrarenal aortic aneurysm are included. CTA scans are randomised and anonymised so that observers are blinded to patient identity and scan chronology. The developed AI tool indentifies the infrarenal aorta and automatically calculates maximum aortic diameter and aneurysm volume for each scan. To assess measurement reliability, maximum diameters obtained by the AI tool are compared with measurements performed independently by two physicians experienced in aortic CTA assessment. Changes between consecutive CTA scans will be analysed to classify aneurysm dynamics as growth, stability or shrinkage.
Results: The study assess agreement between AI-derived and physician-derived maximum diameter measurements, as well as the ability of the AI tool to quantify longitudinal aneurysm changes. Volumetric analysis is expected to provide additional information on aneurysm dynamics beyond single-diameter measurements.
Conclusions: This study evaluates whether automated AI-based analysis of serial CTA scans can support objective, reproducible, and time-efficient monitoring of infrarenal aortic aneurysms. If reliable, this approach may help improve follow-up assessment and clinical decision-making.

Keywords: abdominal aortic aneurysm, artificial intelligence, diameter, volume

THE INVISIBLE ECOSYSTEM BEHIND CERVICAL CANCER

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In 2008, the Nobel Prize in Physiology or Medicine was awarded to Harald zur Hausen for proving that human papillomavirus (HPV) infection is the necessary cause of cervical cancer.

Yet an important mystery remains unsolved. Although HPV is required for cervical cancer to develop, most women clear the virus naturally and never develop disease. Only a minority of infections persist and progress to cervical precancer or cancer. Why does HPV remain in some women while disappearing in others?

The answer may lie in an invisible ecosystem: the vaginal microbiome. Traditionally, Lactobacillus bacteria have been considered guardians of the vaginal environment. However, not all Lactobacillus species appear equally protective. Some women have asymptomatic bacterial vaginosis characterised by the near absence of Lactobacillus and a highly diverse microbiome dominated by anaerobic bacteria. Whether such microbial communities contribute to HPV persistence remains unclear.

This doctoral thesis investigates the relationship between the vaginal microbiome, persistent HPV infection, and cervical dysplasia. Using shotgun metagenomic sequencing, which provides greater resolution than 16S ribosomal RNA gene sequencing approach used in most previous studies, we will compare the microbiomes of healthy women and women with HPV-associated cervical lesions.

The goal is not simply to identify which microorganisms are present, but to determine whether specific microbial communities may serve as biomarkers of HPV persistence and disease progression. Such findings could improve risk stratification, support more personalised microbiome-targeted interventions, including probiotic therapies and selective antimicrobial approaches.

Keywords: cervical cancer, cervical dysplasia, human papillomavirus, vaginal microbiome, women's health

ABSTRACTS OF ELECTRONIC POSTERS

(Contents are under full responsibility of the authors)

MULTIMORBIDITY CLUSTERS AMONG HEART FAILURE PATIENTS: SURVIVAL DIFFERENCES

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Background and Aim: Patients with heart failure (HF) often present with multiple coexisting chronic conditions, yet the prognostic relevance of specific disease patterns remains uncertain. This study aimed to identify multimorbidity clusters among patients with HF and assess differences in survival outcomes.
Materials and Methods: This retrospective analysis used data obtained from the Lithuanian National Health Insurance Fund database and included 152,244 patients with a diagnosis of HF during 2016–2020. Disease clusters were identified using the CLARA algorithm with Jaccard distance, grouping patients with similar patterns of chronic diseases. The elbow method was used to determine the optimal number of clusters. All-cause mortality was calculated for each cluster, while cluster-specific survival was estimated using Kaplan–Meier analysis and compared with the log-rank test.
Results: Eight multimorbidity clusters were identified, ranging in size from 2,504 to 30,058 patients, with all-cause mortality rates from 11.5% to 56.2%. Cluster 1 had the highest mortality (N = 18,001; mean age 80.5 years; mortality 56.2%) and was characterised by hypertension, ischemic heart disease, dementia, and stroke. Clusters 6 and 7 also showed high mortality despite lower mean ages than Cluster 1: Cluster 6 (N = 14,148; mean age 73.6 years; mortality 36.1%) was defined mainly by diabetes, ischemic heart disease, and hypertension, whereas Cluster 7 (N = 11,374; mean age 77.2 years; mortality 48.0%) was marked by ischemic heart disease and chronic obstructive pulmonary disease. The lowest mortality was observed in Cluster 8 (N = 2,504; mean age 65.8 years; mortality 11.5%). Kaplan–Meier analysis demonstrated significant differences in cluster-specific survival, confirmed by the log-rank test ($p < 0.001$).

Conclusions: Distinct multimorbidity clusters in patients with HF were associated with significant differences in survival outcomes. These findings suggest that disease-based clustering may help identify patients who require closer follow-up.

Keywords: clustering, heart failure, multimorbidity, survival

STRESS UNDER THE MICROSCOPE: BETA-CELL AND NUCLEAR MORPHOMETRY IN EXPERIMENTAL TYPE 1 DIABETES

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Background and Aim: Chronic psychological stress and type 1 diabetes mellitus (T1DM) are associated with pancreatic beta-cell dysfunction, but their combined effects on beta-cell morphology remain unclear. This study evaluated morphometric alterations in pancreatic beta-cells within the islets of Langerhans under conditions of chronic psychological stress and experimental T1DM.
Materials and Methods: 33 mature healthy Wistar rats were randomly assigned to four experimental groups: Control (n=7), Stress (n=8), T1DM (n=11), and T1DM+Stress (n=7). T1DM was induced by a single intraperitoneal streptozotocin injection (65 mg/kg). Chronic psychological stress was induced using a restraint stress protocol. On day 29, animals were anaesthetised, and pancreatic tissue was collected for histological analysis. Sections were stained with toluidine blue, and beta-cell morphometric evaluation was performed using QuPath software (version 0.4.4). A total, 1,982 beta-cells and their nuclei were measured.
Results: Mean beta-cell size was highest in the Control group (14.71 μm), followed by the Stress group (13.47 μm), T1DM (11.04 μm), and T1DM+Stress (11.32 μm). Significant differences were found between all groups except a smaller but significant difference between the T1DM and T1DM+Stress groups. Mean nucleus size was highest in the Control (7.72 μm), followed by the Stress (7.29 μm), T1DM (6.74 μm), and T1DM+Stress (6.86 μm). Statistically significant differences were found in all groups, except T1DM vs T1DM+Stress.
Conclusions: Morphometric analysis showed a progressive reduction in beta-cell size and their nuclei, indicating structural alterations associated with both chronic psychological stress and T1DM. While psychological stress alone induced moderate morphological changes, experimental T1DM led to a more pronounced reduction in beta cells, consistent with greater cellular damage.

The observed differences suggest that both stress and diabetes negatively affect pancreatic islet morphology, although the additional impact of stress in established T1DM appears limited.

Keywords: beta-cells, morphometry, pancreatic islets, psychological stress, type 1 diabetes mellitus

HUMAN–MICROBE CO-EVOLUTION IN THE INTENSIVE CARE: STOOL SURVEILLANCE AS A WINDOW INTO MULTIDRUG-RESISTANT COLONIZATION AND INFECTION RISK

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Background and Aim: Humans and microbes have co-evolved as interconnected ecological systems, with the intestinal microbiome acting as both a protective barrier and a reservoir for opportunistic pathogens. In intensive care units, this long-standing balance is disrupted by severe illness, antibiotics, invasive procedures, surgery, and environmental exposure to hospital-adapted organisms. We examined stool culture surveillance as a window into this changing host-microbe relationship.
Materials and Methods: We reviewed serial epidemiological stool cultures from patients admitted to four intensive care units at Vilnius University Hospital Santaros Klinikos between June and August 2023. Samples were collected on admission and every seven days during ICU stay. We described potentially pathogenic bacteria, multidrug-resistant Enterobacterales and Pseudomonadales, resistance markers, and subsequent infection caused by the same colonising organism.
Results: Among 228 patients, 367 stool samples were obtained. Potentially pathogenic organisms were frequently detected, including Enterococcus faecium, Klebsiella spp., Candida spp., Pseudomonas spp., Escherichia coli, Enterobacter cloacae, and Acinetobacter baumannii. Emergency admissions had more detections than planned admissions, suggesting that acute host stress may weaken ecological resistance within the gut. Thirty-six patients became colonised with multidrug-resistant Enterobacterales or Pseudomonadales, and ten developed infection attributed to the same organism. ESBL and VRE were the most frequent resistance markers, while OXA-48 was the leading carbapenemase marker.
Conclusions: These findings illustrate the evolutionary tension between human hosts and microbes in modern medicine. Critical illness reduces host defenses and alters microbial habitats, while antibiotics and hospital environments select for organisms able to persist, compete, and spread. Colonisation may therefore represent an intermediate evolutionary stage, where resistant microbes adapt to the patient before crossing the boundary into infection. Stool surveillance can help detect this transition early. Viewed through evolutionary medicine, ICU infection prevention is not only pathogen control, but management of a fragile human-microbial ecosystem shaped by selection, adaptation, and vulnerability.

Keywords: colonisation, evolution, resistance

PATIENT AND PARENT PERSPECTIVES ON INPATIENT CHILD AND ADOLESCENT PSYCHIATRIC CARE: FEEDBACK FROM A LITHUANIAN TERTIARY UNIT

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Background and Aim: Systematic feedback from children, adolescents, and parents is important for monitoring inpatient psychiatric care and strengthening patient- and family-centered services. This study integrated patient and parent feedback on care in the Child and Adolescent Psychiatry Inpatient Unit of the Republican Vilnius Psychiatry Hospital.
Materials and Methods: Anonymous feedback was collected after inpatient treatment using Lithuanian adaptations of the Psychiatric Inpatient Patient Experience Questionnaire, on-site (PIPEQ-OS). Patients completed a child/adolescent-friendly version with two closed 1-5 satisfaction items and one open comment question. Parents/legal guardians completed a 22-item version rated on a 0-5 Likert scale and grouped into five domains: communication and therapeutic relationship; participation and family involvement; information and discharge preparation; ward environment and dignity; perceived benefit and overall satisfaction. Descriptive analyses were performed using SPSS; patient comments were grouped thematically. Internal consistency of the domains was assessed using Cronbach's alpha.
Results: Patient feedback was collected from January 2022 to July 2024: 253 of 503 inpatients responded (50.3%). Mean ratings were high for received support (M = 4.69/5) and feeling in the department (M = 4.66/5). Sixty-nine patients (27.3%) commented, mainly expressing general satisfaction, positive staff interactions, and improvement; less frequent negative comments concerned food, comfort, and homesickness. Parent feedback was collected from January 2022 to December 2025: 283 of 805 parents/legal guardians responded (35.1%). Highest-rated domains were communication and therapeutic relationship (M = 4.42), perceived benefit and overall satisfaction (M = 4.19), and information/discharge preparation (M = 4.12). Participation and family involvement scored lowest (M = 3.47), while ward environment and dignity were moderate to high (M = 3.89).
Conclusions: Patients and parents reported high satisfaction with inpatient child and adolescent psychiatric care, especially staff communication, support, and perceived treatment benefit. Lower parent ratings for participation and family involvement indicate a need to strengthen shared decision-making. Routine, age-appropriate feedback guides service improvement.

Keywords: child and adolescent psychiatry, inpatient care, parent feedback, patient experience, service evaluation

LONG-TERM PROGNOSTIC VALUE OF STRESS ECHOCARDIOGRAPHY AND EXERCISE ECG FINDINGS

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Background and Aim: Stress echocardiography (SE) identifies inducible ischaemia, whereas exercise electrocardiography (ECG) may provide additional prognostic information. We aimed to assess long-term survival according to final SE result and exercise ECG findings.
Materials and Methods: The source database comprised 28,239 consecutive SE examinations performed at a single tertiary centre, Vilnius University Hospital Santaros Klinikos, between 2002 and 2023. After prespecified exclusions, 21,063 unique patients were included in the overall cohort. For the present analysis, final SE result and exercise ECG data were available for 9,529 patients examined between 2002 and 2016, allowing long-term follow-up with administrative censoring at 2,450 days (6.7 years). Patients were classified into four groups: SE-negative/ECG-negative (n = 1,153), SE-positive/ECG-negative (n = 502), SE-negative/ECG-positive (n = 6,480), and SE-positive/ECG-positive (n = 1,394). SE data were linked with all-cause mortality records from the national mortality registry.
Results: Long-term survival differed significantly across the four groups ($p < 0.0001$). During follow-up, 183 deaths occurred in the SE-negative/ECG-negative group, 112 in the SE-positive/ECG-negative group, 1,008 in the SE-negative/ECG-positive group, and 304 in the SE-positive/ECG-positive group. However, within SE-defined groups, ECG status did not significantly separate long-term survival: SE-positive/ECG-negative vs SE-positive/ECG-positive ($p = 0.78$) and SE-negative/ECG-negative vs SE-negative/ECG-positive ($p = 0.79$).
Conclusions: Long-term survival differed across categories defined by imaging and ECG findings during stress echocardiography. However, within SE-positive and SE-negative groups, ECG findings did not provide additional prognostic separation.

Keywords: electrocardiography, mortality, prognosis, stress echocardiography, survival

RADIOLOGICAL FEATURES OF ROOT RESORPTION ASSOCIATED WITH JAW CYSTS

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Background and Aim: Panoramic radiography is a widely used primary diagnostic method that enables the assessment of the localization and size of cystic lesions, as well as damage to surrounding structures. Therefore, this study aimed to identify and evaluate radiological signs of dental root resorption and their associations with jaw cysts by analyzing patients' orthopantomograms.
Materials and Methods: Following approval from the Bioethics Committee (No. 2024/9-1607-1065), panoramic radiographs performed between 2018 and 2023 at Vilnius University Hospital Žalgiris Clinic and showing jaw cysts were retrospectively analysed. Anonymised orthopantomograms were assessed, allowing identification only of the patient's age and sex. Sociodemographic and radiological data were analysed, including cyst type, localisation, size, and signs of root resorption. Diagnoses were classified according to ICD-10-AM. Descriptive statistical methods and non-parametric tests were used for data analysis. Statistical significance was assessed at a significance level of $p < 0.05$.
Results: Among 1,285 identified cases of jaw cysts, dental root resorption was recorded in 90 cases, including 41 women and 49 men. The mean age of study participants was 47 years. Signs of dental root resorption were identified in cases of radicular cysts (n = 73) and other jaw cysts (n = 17). The mean cyst size was 21 mm. By localisation, more cases of root resorption were observed in the maxilla—55 cases—compared with 35 cases in the mandible ($p = 0.035$). Segmental analysis showed that the highest number of root resorption cases occurred in the anterior maxillary segment (n = 47), with fewer cases found in the anterior mandibular segment (n = 13) and mandibular molar region (n = 15).
Conclusions: Root resorption was observed in cases of radicular cysts and other jaw cysts. This pathology was most frequently identified in the anterior maxillary region.

Keywords: jaw cysts, orthopantomograms, root resorption

NEUROCHEMICAL AND MORPHOLOGICAL CHARACTERIZATION OF INTRACARDIAC GANGLIA IN OVINE ATRIA USING IMMUNOHISTOCHEMISTRY

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Background and Aim: The heart receives innervation from a hierarchically structured and functionally interconnected network which includes elements of the central nervous system, intrathoracic extracardiac ganglia, and the intrinsic cardiac ganglia. The intrinsic cardiac neurons are mainly concentrated in intracardiac ganglia residing in specific regions of the heart, mostly in the atria, and each ganglion has a preferential region of action. The intrinsic cardiac nervous system plays an essential role in cardiac autonomic regulation. The aim of the study is to investigate the neurochemical and morphological characterisation of intracardiac ganglia in ovine atria.

Materials and Methods: 4 Ovine of either sex were used in the study. Intracardiac ganglia were taken from sheep atrial tissue and processed for fluorescent immunohistochemistry. The pan-neuronal marker PGP9.5 was combined with neuronal nitric oxide synthase (nNOS), tyrosine hydroxylase (TH), and calcitonin gene-related peptide (CGRP). All antibodies were diluted 1:500 ratio. Fluorescence and confocal microscopy were used to evaluate neuronal morphology and distribution of immunoreactive structures. Quantitative analysis included neuronal counts, percentage of marker-positive neurons, and neurons area fraction.

Results: PGP9.5 immunoreactivity demonstrated extensive neuronal networks composed of numerous neuronal somata and interconnecting nerve fibers. Subpopulations of neurons and nerve fibers exhibited nNOS immunoreactivity, indicating nitrergic neuronal components. TH-positive nerve fibers were frequently observed surrounding ganglionic neurons, whereas TH-positive neuronal profiles were less common. CGRP immunoreactivity was predominantly localised in fine nerve fibers distributed. In addition, SIF cells displaying strong fluorescence signals were identified in close proximity to ganglionic neurons.

Conclusions: Sheep atrial intracardiac ganglia exhibit pronounced neurochemical diversity composed of nitrergic, sympathetic, sensory, and SIF-like elements, suggesting complex local autonomic regulation within the intrinsic cardiac nervous system.

Keywords: fluorescent immunohistochemistry, intracardiac ganglia, ovine atria

VARIATIONS OF POPLITEAL ARTERY TERMINAL BRANCHING: A PILOT STUDY IN A SAMPLE OF VILNIUS UNIVERSITY BODY DONORS

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Background and Aim: Knowledge of the anatomy and variations of the terminal branches of the popliteal artery is essential for surgeons performing procedures in the popliteal region. Iatrogenic injury to the popliteal artery is a rare but serious complication that may result in limb amputation or even death. The aim of this study is to determine the topographic variations and diameters of the popliteal artery distal branches and to compare the results with data from the global literature.
Materials and Methods: A total of 9 adult human cadavers injected with 10% formalin solution were dissected. Eighteen popliteal arteries (PA) and distal branches were evaluated: the anterior tibial artery (ATA), posterior tibial artery (PTA), and fibular artery (FA). Identified variations were documented and photographed. Vessel diameters were measured using a digital caliper with an accuracy of 0.01 mm. Data were collected in MS Excel, and statistical analysis was performed using IBM SPSS and R Commander.
Results: The mean age of the subjects was 80.1±9.6 years, ranging from 68 to 93 years (females: n=7; males: n=2). The most common variant of popliteal artery distal branching was Type I-A according to the Kim et al. classification - n=16 (88.88%); Type II-A2 - n=1 (5.56%) and Type II-B - n=1 (5.56%) were also observed. The mean diameters of the popliteal artery and its distal branches were: PA — 8.24±1.87 mm; ATA - 5.09±0.75 mm; PTA proximal to the fibular artery bifurcation - 6.32±1.27 mm; PTA distal to the fibular artery bifurcation - 4.22±0.79 mm; FA - 4.42±1.04 mm.
Conclusions: The most common distal popliteal branching variant was Type I according to the Kim et al. classification. No statistically significant differences were found in lumen diameters according to sex or leg side.

Keywords: anterior tibial artery, cadaveric study, popliteal artery, posterior tibial artery

IMAGING THE DEVELOPING BREAST: A SONOGRAPHIC JOURNEY FROM NEONATES TO ADOLESCENTS

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Background and Aim: Everyone has breasts, going through different stages of development from newborns to adults, in both males and females.
Thelarche, breast lumps, pain – the main clinical concerns in pediatric breasts. The main sonographic findings in adolescent breasts are cysts and fibroadenomas. Most cases are discovered when symptoms occur.
Materials and Methods: Ultrasound of: 1. Clinically suspicious neonatal breasts. 2. Breast lumps in girls up to 7 years of age. 3. Painful or enlarged male breasts in adolescence. 4. 952 healthy volunteer girls aged 7 to 17 years underwent breast ultrasound from 2023 to 2026 as a part of biomedical research.
Results: 1. In neonates, only the normal spongious breast buds were revealed. In cases of neonatal mastitis, no surgery was required.2**.** The normal breasts remain quiescent from 2 years of age to puberty. Breast buds can persist until 7 years of age, with a typical sonographic immature breast pattern. No cases of precocious puberty were suspected on ultrasound of isolated thelarche until 7 years. 3. In males, the normal pubertal breast buds can be differentiated from gynecomasty or other masses. Very few cases of glandular gynecomastia were observed, with the prevalence of normal pubertal buds. 4. Breast cysts were found in 157 healthy girls (16.5%). The youngest were 10 years old (4 girls), the highest incidence was 12 – 15-year-olds. Mostly cysts were located subareolarly. Additionally, in 3 girls, mastitis developed around the cysts. Fibroadenomas were found in 13 girls (1.37 %) aged 14 to 17 years (Tanner B3-B5). Nine girls (Tanner stages B2-B5) had adipose breasts with limited glandular tissue. No other pathological entities were identified.
Conclusions: Breast cysts are common in asymptomatic adolescent girls, and their incidence is higher than expected. In contrast, asymptomatic breast fibroadenomas are rare. Adiposity can mimic breast development.

Keywords: adolescents, breasts, neonates, ultrasound

ADULT-ONSET STILL'S DISEASE – A DIAGNOSTIC CHALLENGE AND ECONOMIC BURDEN: A CASE REPORT AND LITERATURE REVIEW

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Background and Aim: Adult-Onset Still's Disease is a rare multisystem autoinflammatory disorder characterised by nonspecific clinical manifestations that often delay diagnosis. The disease may mimic infectious, autoimmune and malignant conditions, leading to extensive diagnostic workup and prolonged hospitalisation. The aim of this study was to present a clinical case of Adult-Onset Still's Disease and review the literature regarding its diagnostic complexity and associated economic burden.
Materials and Methods: A literature review was performed using the PubMed database, including English-language articles on Adult-Onset Still's Disease, diagnostic challenges, and economic burden. In addition, a clinical case of a patient treated at Vilnius University Hospital Santaros Klinikos was retrospectively analysed.
Results: A 46-year-old woman presented with episodic fever up to 39.5 °C, polyarthralgia, sore throat, and transient rash involving the chest and neck regions. Laboratory investigations demonstrated neutrophilic leukocytosis, elevated inflammatory markers, increased liver enzyme levels, and marked hyperferritinemia. Due to the nonspecific clinical presentation, infectious, autoimmune, haematological, and oncological diseases were considered during the differential diagnostic process. After extensive laboratory and instrumental evaluation and exclusion of other conditions, Adult-Onset Still's Disease was diagnosed and treatment with tocilizumab was initiated. The patient required a prolonged 36-day hospitalisation, reflecting the considerable diagnostic complexity of the disease. Literature analysis showed that the absence of specific diagnostic tests and the need for diagnosis by exclusion frequently result in delayed diagnosis, prolonged hospitalisation, increased complication risk and substantial healthcare costs.
Conclusions: Adult-Onset Still's Disease remains a diagnostic challenge due to its nonspecific clinical presentation and the need to establish the diagnosis by exclusion. Prolonged hospitalisation and the extensive diagnostic workup contribute to a significant healthcare cost burden.

Keywords: adult-onset still's disease, differential diagnosis, economic burden

UTILITY OF THE ANALGESIA–NOCICEPTION INDEX (ANI) IN ANESTHESIA

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Background and Aim: Under general anaesthesia, nociception is commonly assessed using indirect clinical signs such as tachycardia, hypertension, sweating, lacrimation, and pupillary dilation. However, these indicators are often nonspecific and may result in inappropriate analgesic dosing, potentially affecting perioperative outcomes. The Analgesia–Nociception Index (ANI) is a non-invasive monitoring tool that evaluates the balance between nociception and antinociception by analysing high-frequency components of heart rate variability. ANI values range from 0 to 100, with higher scores indicating adequate analgesia and lower scores suggesting insufficient analgesia. This review aimed to evaluate whether ANI-guided anesthesia improves opioid administration, hemodynamic stability, and perioperative pain management compared with conventional monitoring.

Materials and Methods: This literature review was conducted using the PubMed database. The following keywords and their combinations were used: *"analgesia nociception index", "ANI", "nociception", "pain monitoring"* and *"opioid anesthesia."* Non–full text and non-English publications were excluded.

Results: ANI has been shown to detect nociceptive events more accurately than traditional parameters such as heart rate and systolic blood pressure. Several studies suggest that ANI-guided opioid titration may reduce intraoperative and postoperative opioid consumption. ANI monitoring has also demonstrated value in predicting hemodynamic responses to noxious stimuli and identifying vagal stimulation during neuroendocrine tumour resection. Furthermore, it may help distinguish pain-induced hypertension from tourniquet-related blood pressure increases. Despite encouraging findings, the evidence regarding ANI's ability to improve clinical outcomes remains mixed.

Conclusions: ANI monitoring is an objective and non-invasive method for assessing nociception during anaesthesia. Although it shows promise for optimising opioid administration and improving perioperative pain management, current evidence remains insufficient to confirm a clear clinical benefit. Further high-quality studies are needed to establish its role in improving perioperative outcomes.

Keywords. Analgesia–nociception index, ANI, nociception, opioid anaesthesia, pain

ELECTRONIC CIGARETTE USAGE FREQUENCY AND PERCEIVED DEPENDENCY AS PREDICTORS FOR XEROSTOMIA

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Background and Aim: Across Europe, electronic cigarettes (EC) are growing in popularity as an alternative to traditional tobacco products. EC aerosol contains propylene glycol, causing dry mouth which promotes tooth decay, gum disease, and other oral health issues. This study aimed to evaluate the association between EC usage frequency, perceived dependency level, and self-reported xerostomia among Vilnius University students.
Materials and Methods: A cross-sectional study was conducted in 2025–2026 among 148 Vilnius University students (convenience sample) using an anonymous, test-retest validated 20-item questionnaire (intraclass correlation coefficient (ICC)=0.920). EC usage frequency (0=non-user; 1=<1-5 uses/day; 2=>6-20 uses/day) and perceived dependency level (0=never used; 1=former user; 2=current user who believes they could quit; 3=current user who cannot quit) were encoded ordinally. Xerostomia frequency (never / sometimes / often / always) was used as a dependent variable. Descriptive statistics, Spearman rank correlation were applied; $p < 0.05$ indicated statistical significance.
Results: Of 148 respondents 70.9% (N=105) were female, median age was 20 years (sd=2.1), and 35.1% (N=52) were EC users. While 9.4% of non-users experienced xerostomia often, 62.5% sometimes, and 28.1% never, the corresponding rates among EC users were 15.4%, 69.2%, and 15.4%. Perceived EC vaping dependency level was significantly correlated with xerostomia frequency (ρ=0.212; p=0.010), as was EC usage frequency (ρ=0.167; p=0.042).
Conclusions: Both EC usage frequency and perceived dependency level were significantly associated with xerostomia. Perceived dependency was the stronger predictor, suggesting that addiction depth — not only usage intensity — contributes to dry mouth risk. These findings highlight the need for dental professionals to assess EC use frequency and dependency when screening for xerostomia in young patients.

Keywords: dependency, electronic cigarettes, students, xerostomia

PHENOTYPING PRETERM BIRTH HETEROGENEITY: COMPOSITE NEONATAL ADAPTATION IN A LITHUANIAN COHORT

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Background and Aim: Preterm birth (PTB) remains difficult to predict and biologically heterogeneous, limiting the reproducibility of genotype–phenotype studies based on binary clinical outcomes. We aimed to develop and apply a quantitative composite neonatal phenotype — the Major Neonatal Outcome (MNO) score — to improve characterisation of preterm neonatal adaptation and support integrated genotype–phenotype analyses.
Materials and Methods: The MNO score was developed in a retrospective cohort of 208 preterm neonates using weighted multivariable regression of clinically relevant neonatal outcomes and applied to a study cohort comprising 71 preterm neonates and 25 term-born controls. Parent–offspring trios included 23 preterm neonates in the final *de novo* variant (DNV) analysis. Genomic data were obtained using SNP arrays and short-read whole-genome sequencing. Rare variants and DNVs were identified and evaluated in relation to MNO score variability.
Results: The MNO score integrated gestational age, birth weight < 5th percentile for gestational age, cord blood IL-6 levels, premature rupture of membranes, prolonged latency, and induction of birth into a continuous clinical severity phenotype. The model demonstrated good discrimination for MNO (AUC = 0.894, sensitivity = 0.90, specificity = 0.76). No significant association was observed between total DNV burden and MNO score ($\rho = -0.23$, $p = 0.28$). However, clinically severe cases with high MNO scores harbored rare coding and regulatory DNVs in developmental signaling, structural integrity, adhesion, and cellular process pathways, including *ROR2*, *MUC17*, *DNAH3*, and *ZAN*. Multiple regulatory variants frequently co-occurred within individuals rather than acting independently.
Conclusions: These findings suggest that quantitative composite phenotyping may provide a more informative framework for studying genomic heterogeneity in PTB than categorical outcome definitions alone. The MNO score may enable more refined genotype–phenotype analyses in future large-scale genomic studies of PTB.

Keywords: composite outcome score, *de novo* variants, genotype–phenotype integration, neonatal phenotype, preterm birth

CLINICAL MANIFESTATIONS OF ANCA-ASSOCIATED VASCULITIS DEPENDING ON ANCA SEROPOSITIVITY: UNIVERSITY CLINIC EXPERIENCE

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Background and Aim: Anti-neutrophil cytoplasmic antibody (ANCA)-associated vasculitis (AAV) affects small- to medium-sized vessels and is characterized by the production of ANCAs. The ANCA-negative term is used if the patient otherwise fulfills the definition for AAV but has negative results on serologic testing for ANCAs. The aim of this study was to compare the clinical manifestations of ANCA-positive and -negative patients and to assess the main differences possibly related to the presence of ANCA.
Materials and Methods: A cross-sectional study of 73 patients treated at the tertiary Rheumatology Centre of University Hospital from the 1 January, 2001, to the 31August, 2023, with diagnoses of AAV was carried out. Clinical characteristics and laboratory data were collected at the onset or at the first year of the disease.
Results: Forty-eight (65.8%) patients were ANCA-positive, while twenty-five (34.3%) were ANCA-negative. C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) were elevated for all AAV patients, but values were higher in ANCA-positive patients' group. A higher prevalence of kidney involvement 60.4% was observed in the ANCA- positive group compared with 24% in the ANCA-negative group ($p < 0.05$). Neurological involvement was more frequently found in the ANCA-positive patient group: 29.2% compared to 20%. Among patients with ANCA-negative vasculitis, 88% had pulmonary; 92% ear, nose, throat; 48% joint; and 28% skin presentation. In comparison, involvement of these organs was less common in the ANCA-positive patients' group, at 79.2%, 60.4%, 31.3%, and 25 %, respectively.
Conclusions: The clinical situation of ANCA-positive patients appears to be more severe in terms of laboratory changes and kidney damage. Our results support that diagnosis should be based on clinical features rather than ANCA assay results, as the differences in involvement of most organ systems between ANCA-positive and -negative patient groups were not statistically significant.

Keywords: ANCA-associated vasculitis, ANCA-negative, ANCA-positive

MATERNAL EXPOSURE TO TEMPERATURE EXTREMES AND IMPAIRED FOETAL GROWTH OUTCOMES: A SYSTEMATIC REVIEW

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Background and Aim: Climate change has increased the frequency and intensity of temperature extremes worldwide. Growing evidence suggests that thermal stress during pregnancy may adversely affect foetal growth. This review aimed to evaluate the association between maternal exposure to temperature extremes and impaired foetal growth outcomes, including foetal growth restriction (FGR), small-for-gestational-age (SGA) birth, and low birth weight (LBW).
Materials and Methods: A systematic literature review was conducted according to PRISMA guidelines. Articles published between 2018 and 2024 were identified in PubMed and Wiley Online Library. Studies assessing the effects of temperature extremes on FGR, SGA, and LBW were included. Six studies involving more than 1.97 million pregnancies and mother–infant pairs met the inclusion criteria.
Results: Most studies reported significant associations between temperature extremes and impaired foetal growth outcomes. High ambient temperatures and heatwave exposure were consistently associated with increased risks of FGR and LBW. A large prospective cohort study reported a 14–16% increase in FGR risk following high-temperature exposure during pregnancy. Heatwave exposure was associated with more than a twofold increase in FGR risk. Population-based studies also demonstrated increased odds of LBW among pregnancies exposed to extreme heat. Some studies identified adverse effects of unusually low temperatures, suggesting a non-linear relationship between ambient temperature and foetal growth. Associations were generally stronger among women with lower socioeconomic status.
Conclusions: Exposure to temperature extremes during pregnancy is associated with an increased risk of impaired foetal growth outcomes. These findings highlight temperature extremes as important environmental determinants of foetal growth and support the development of public health and antenatal care strategies aimed at reducing maternal vulnerability to climate-related thermal stress.

Keywords: climate change, foetal growth restriction, low birth weight, small for gestational age, temperature extremes

FACTORS INFLUENCING REPRODUCTIVE DECISION-MAKING AMONG YOUNG ADULTS: A LITERATURE REVIEW AND DIRECTIONS FOR FUTURE SURVEY RESEARCH

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Background and Aim: The total fertility rate in the European Union has declined in recent years, decreasing from 1.53 live births per woman in 2021 to 1.34 in 2024, while the mean age of women at the birth of their first child has increased. This study aims to identify factors most strongly associated with reproductive decision-making among young adults.
Materials and Methods: A narrative literature review was conducted using a search strategy informed by the PRISMA 2020 guidelines in the PubMed and ScienceDirect databases, yielding 4236 records. Five additional studies were identified through manual reference screening. Eurostat and the National Center for Health Statistics provided supplementary data. Open-access articles published in English and Lithuanian between 2015 and 2026 were included. Twenty studies were selected for the final analysis.
Results: Most young women intend to have at least one child, with fertility intentions ranging from 1.82 to 2.47 children across European countries, although voluntary childlessness appears to be increasing, particularly in the United States, where around 40% of nulliparous young women report no intention to have children. Fertility decisions are influenced by interconnected health, relationship, socioeconomic, educational, and identity-related factors. Psychological and physical well-being, supportive partner relationships, and socioeconomic stability predict stronger childbearing intentions. These determinants often interact; for example, positive body image may promote parenthood intentions through its association with mental health and self-esteem. Concurrently, educational commitments and identity development may contribute to delayed parenthood. To further explore established and underexamined determinants, such as family size or libido, and fertility intentions, the present study will employ an original survey questionnaire alongside validated measurement instruments.
Conclusions: High relationship quality, good health, financial independence, and socioeconomic stability emerged as key factors influencing positive reproductive decision-making. Meanwhile, education and identity development were linked to delayed family formation.

Keywords: parenthood, reproductive intentions, young adults

THE INFLUENCE OF FOETAL SEX ON THE FREQUENCY OF PREGNANCY COMPLICATIONS AND MODE OF DELIVERY

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Background and Aim: Foetal sex is gaining recognition as an independent determinant of pregnancy course and complications; yet no such studies have been conducted in Lithuania. This study examines associations between foetal sex and the most common pregnancy complications, caesarean section, and instrumental delivery, analysing 1995–2022 Lithuanian data.
Materials and Methods: A retrospective population-based analysis of Lithuanian Medical Birth Registry data (1995–2022) was performed, selecting cases meeting at least one defined criterion: maternal pre-eclampsia, eclampsia, gestational diabetes, placenta praevia or complicated delivery (elective or emergency caesarean section, forceps, vacuum extraction). Statistical analyses were performed in Python programming language: comparative methods were applied to identify associations with foetal sex, and logistic regression was used to assess the independent effect of sex after adjusting for neonatal weight, length, and head circumference (the latter available since 2001).
Results: Of 843,474 neonates born in 1995–2022, 196,688 met the criteria (53.54% boys). Delivery mode was analysed in 167,576 (53.85% boys) and complications in 43,321 cases (52.28% boys). Caesarean section (19.43% vs 17.92%), forceps delivery (0.22% vs 0.14%), and vacuum extraction (1.25% vs 0.86%) were more frequent among male neonates ($p<0.001$). Elective caesarean section predominated among female neonates (6.40% vs 6.19%, $p<0.01$) and emergency caesarean among males (11.90% vs 10.37%, $p<0.001$). Neonatal weight, length, and head circumference also influenced complicated delivery, yet male sex retained significance after adjustment. The prevalence of pregnancy complications did not differ by foetal sex except for gestational diabetes (4.31% in pregnancies with boys vs 4.09% with girls, $p<0.001$).
Conclusions: Male foetal sex was associated with higher rates of caesarean section and instrumental delivery, independent of neonatal anthropometric measurements. The prevalence of pregnancy complications did not differ by foetal sex, except for a slightly higher frequency of gestational diabetes in pregnancies with male foetuses.

Keywords: delivery methods, foetal sex, pregnancy complications

COMPARATIVE ANALYSIS OF MACULAR STRUCTURAL PARAMETERS AMONG GENETIC SUBTYPES OF ROD-CONE DYSTROPHIES

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Background and Aim: Macular structure is closely associated with best corrected visual acuity (BCVA) in patients with rod-cone dystrophies (RCDs). This study aimed to investigate whether macular structural alterations in RCDs differ by genotype.
Materials and Methods: Individuals with suspected RCDs underwent comprehensive ophthalmic and genetic examination at a tertiary referral center between 2013 and 2026. BCVA and macular optical coherence tomography parameters were compared across different genotypic groups. The analysed parameters included central retinal thickness (CRT), subfoveal choroidal thickness (SCT), ellipsoid zone length (EZL), outer nuclear layer thickness (ONLT), as well as the presence of hyperreflective foci (HRF), intraretinal fluid (IRF) and epiretinal membrane (ERM). Due to non-normal distribution of the data, group comparisons were performed using the Kruskal–Wallis test in R software. Linear regression models adjusted for age were used for continuous variables. Categorical variables were compared using the chi-square test.
Results: 91 probands with a confirmed molecular diagnosis were included. The most frequently affected genes were *USH2A* (n = 19), *RP1* (n = 17), and *EYS* (n = 14), while 41 individuals carried disease-causing variants in other genes. The median BCVA in the *RP1* group was significantly higher compared with the other groups ($p < 0.05$). In addition, the *RP1* group demonstrated a significantly greater EZL ($p < 0.05$). The *USH2A* and *RP1* groups showed a significantly higher prevalence of ERM ($p < 0.05$). No significant differences were observed in CRT, SCT, ONLT, or in the presence of HRF and IRF among the groups.

Conclusions: Individuals with *RP1* variants demonstrated a milder disease course, characterised by better-preserved EZ in the macula and higher BCVA. Both the *RP1* and *USH2A* groups showed a higher risk of developing ERM, which may warrant surgical intervention.

Keywords: macular structure, ophthalmic genetics, rod-cone dystrophies

MALE REPRODUCTIVE CHARACTERISTICS AND POSSIBLE CONTRIBUTING FACTORS (A LITERATURE REVIEW)

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Background and Aim: Concerns about declining male reproductive capacity have grown over recent decades. This review aimed to summarise male reproductive characteristics and their potential determinants.
Materials and Methods: The literature search was conducted in the MEDLINE database and included articles published between 2000 and 2026, with the selection criteria focused on publications examining male reproductive characteristics and associated factors.
Results: According to established criteria, 4,297 publications were identified. After automated exclusion of 3,960 records and title/abstract screening (285 excluded), 52 records were sought for retrieval, of which 50 were assessed for eligibility. Ultimately, 43 studies were included in the review. Notably, among studies on environmental exposure, one large multicentre study (n = 25,682) found that higher exposure to ambient air pollutants – PM2.5 (median 27.60 μg/m³), PM10 (47.70 μg/m³), SO2 (9.00 μg/m³), NO2 (29.60 μg/m³), and CO (0.80 mg/m³) – was associated with reduced progressive motility and normal morphology, and elevated male infertility risk (all $p < 0.05$), with stronger effects during spermatogenesis stages I and II. Regarding lifestyle habits, a cross-sectional study (n = 3,302) found that coffee abstinence was positively associated with sperm total and progressive motility, physical activity correlated positively with semen volume, and both healthy sleep onset and longer sleep duration improved motility. Regarding one of the clinical factors, a longitudinal study (n = 74) found that COVID-19 infection transiently impaired sperm quality: concentration fell from 78.91 to 39.22 $\times 10^6$/mL and progressive motility from 57.58% to 36.41% at one month post-infection, with a median recovery of 5 and 3 months, respectively.
Conclusions: Ambient air pollution, lifestyle habits, and clinical factors, including COVID-19 infection, significantly affect sperm quality and male fertility, highlighting the need for preventive measures targeting these risk factors.

Keywords: biological factors, environmental factors, lifestyle, male reproductive health, semen quality

ATTITUDES OF PREGNANT AND RECENTLY POSTPARTUM WOMEN TOWARD THE USE OF ARTIFICIAL INTELLIGENCE IN PREGNANCY AND CHILDBIRTH CARE

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Background and Aim: Artificial intelligence (AI) is increasingly explored in obstetric care, but patients' attitudes in the perinatal period remain insufficiently studied. This study aimed to assess pregnant and postpartum women's attitudes toward AI use in pregnancy and childbirth care and to identify associated factors.
Materials and Methods: A cross-sectional survey was conducted using convenience sampling. Participants were pregnant women and women who had given birth within the previous three years, recruited at Vilnius University Hospital Santaros Clinics and via online platforms (N = 253). A 31-item questionnaire incorporating a 14-item composite attitude index (Cronbach α = 0.927) on a five-point Likert scale was used. Statistical analysis included descriptive statistics, Spearman correlations, one-way analysis of variance, Wilcoxon signed-rank test, and hierarchical multiple regression.
Results: Overall attitudes were moderately favourable (mean (M) = 3.35/5.00, standard deviation (SD) = 0.68). AI for data monitoring and analysis was rated more favourably (M = 3.54) than AI for clinical decision support (M = 3.07, $p < 0.001$). Most participants (91.3%) considered physician-led decision-making essential, and 80.7% would trust AI recommendations confirmed by a physician. In the final regression model, more favourable attitudes were associated with higher education ($\beta = 0.159$, $p = 0.026$), AI use for health-related purposes ($\beta = 0.140$, $p = 0.007$), trust in AI decisions ($\beta = 0.332$, $p < 0.001$), and trust in physician-approved AI recommendations ($\beta = 0.327$, $p < 0.001$). Concern about incorrect AI assessment was negatively associated with favourable attitudes ($\beta = -0.304$, $p < 0.001$).
Conclusions: Attitudes were moderately favourable, with stronger acceptance of AI for monitoring than for decision-making. Physician oversight, transparency, and prior AI experience were key facilitating factors. AI integration into obstetric practice should be guided by patient-centered communication and physician-led decision-making.

Keywords: artificial intelligence, obstetrics, patient attitudes, pregnancy, perinatal care

COMPARISON OF TWO INDIRECT CALORIMETRY DEVICES IN CRITICALLY ILL PATIENTS

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Background and Aim: Among the available indirect calorimetry (IC) monitors, the Q-NRG+ is regarded as one of the most accurate and easiest to use. However, GE E-sCOVX, an IC module integrated into a mechanical ventilation monitoring system, has not been thoroughly investigated despite its practicality. This study aimed to evaluate the clinical interchangeability of Q-NRG+ compared with e-SCOVX in critically ill patients.
Materials and Methods: A retrospective study of 10 mechanically ventilated ICU patients was conducted. Repeated measurements (1–10 per patient) of REE, RQ, VO_2, and VCO_2 were simultaneously obtained using Q-NRG+ and E-sCOVX over the same period. Data were analysed using R Commander with a paired-samples Wilcoxon test, linear regression, and Bland–Altman analysis.
Results: Ten patients (33 measurements) were included. The mean difference of REE was -25.18±300.75kcal/day; RQ -0.006±0.13; VO2 -4.36±55.03 mL/min; VCO2 -1.48±27.54 mL/min, indicating slightly lower values from Q-NRG+. The paired-samples Wilcoxon test showed no statistically significant differences between devices at a group level (all $p > 0.05$). However, at the individual level, the 95% limits of agreement (LOA) for REE ranged from -615 to +564 kcal/day. No evidence of proportional bias in REE was observed ($\beta = -0.0966$, $p = 0.28$). The 95% LOA for RQ ranged from -0.26 to 0.25. A significant proportional bias was found for RQ ($\beta = -0.7208$, $p = 0.0038$), indicating that differences between devices varied with RQ magnitude.
Conclusions: Based on Bland-Altman analysis, wide LOA between methods at the individual measurement level may be clinically relevant. E-sCOVX may slightly overestimate REE in comparison with Q-NRG+, but no systematic overestimation was detected in our small sample. Given the role of IC in guiding nutritional therapy, such variability may influence energy prescription and nutritional management in the ICU.

Keywords: indirect calorimetry, intensive care, nutritional therapy

DIFFERENCES IN VITAMIN AND FATTY ACID STATUS BETWEEN TUBERCULOSIS PATIENTS AND HEALTHY CONTROL SUBJECTS

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Background and Aim: Tuberculosis incidence rates in Lithuania remain one of the highest in Europe. This study aimed to investigate potential nutritional indicators associated with increased disease risk and to identify deficiencies that should be corrected and monitored to reduce the probability of adverse drug reactions.
Materials and Methods: In a cross-sectional study, we enrolled 30 adult tuberculosis patients at Vilnius University Hospital Santaros Clinics and 16 healthy control subjects. Blood samples were drawn in the first week of tuberculosis treatment for patients. The control group consisted of readily available individuals. Analysis of the samples was performed in two accredited laboratories: HILA (Vilnius, Lithuania), MVZ Gemeinschaftslabor Cottbus GmbH (Cottbus, Germany).
Results: Vitamin C deficiency in the tuberculosis group was found in 76,67% of cases vs. 18,8% in healthy controls (False Discovery Rate (FDR)-adjusted p=0.04); vitamin K2 (MK-7) deficiency – in 33,33% tuberculosis patients vs. 0% healthy controls (FDR-adjusted p=0.009); folic acid deficiency – 53,33% in tuberculosis patients vs. 0% healthy controls (FDR-adjusted p=0.04). These differences were statistically significant and may be due to increased oxidative stress and metabolic demand during chronic inflammation, as well as to poor nutrition in tuberculosis patients. Lower-than-normal concentrations of vitamin A were found in 26,67% of tuberculosis patients vs. 0% in healthy controls (FDR-adjusted p=0.062), low vitamin K2 (MK-4) levels - in 63,3% of tuberculosis patients vs. 25,0% healthy controls (FDR-adjusted p=0.062). Increased omega-3 fatty acid concentrations were more common in healthy controls – 68,8% vs. 30,0% for alpha-linolenic acid (FDR-adjusted p=0.062) and 37,5% vs. 6,7% for eicosapentaenoic acid. These differences were only marginally significant after correction for multiple comparisons.
Conclusions: Nutrient deficiencies are common in tuberculosis patients. Lower concentrations of some vitamins and fatty acids may be part of the disease itself, or they may serve as predictors of disease development.

Keywords: fatty acids, nutrition, tuberculosis, vitamins

A SIX-YEAR CASE FOLLOW-UP ON FUNCTIONAL OUTCOME IN HUNTINGTON'S DISEASE: EFFECT OF ANNUAL INDIVIDUALIZED INPATIENT REHABILITATION COURSES

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Background and Aim: Huntington's disease (HD) profoundly affects body functions, independence, and work capacity, becoming a significant personal, social, and economic burden. Only symptomatic disease management is possible. With regular and sufficient physical activity, cognitive training and stimulation, slower disease progression is achieved, the patient's functionality is maintained. According to the survey data of the European Reference Network for Rare Neurological Diseases, and HD patients in Europe face the problem of access to rehabilitation services. In Lithuania, individuals with symptomatic HD are eligible for a multidisciplinary inpatient rehabilitation program once per year.
Materials and Methods: This case study analyses the biopsychosocial assessment results of a patient who participated in an annual inpatient rehabilitation program at Vilnius University Hospital Santaros Klinikos over six consecutive years.
Results: The patient- a 35-year-old man began rehabilitation in 2020 following a confirmed genetic diagnosis of HD. At the initial admission, scores were as follows: Barthel Index- 80, Functional Independence Measure (FIM)- 94, Mini-Mental State Examination (MMSE)- 21, and Tinetti Balance and Gait Test- 15. Each rehabilitation cycle resulted in statistically significant improvements in the aforementioned biopsychosocial scores ($p<0,05$). By 2022, the patient remained employed as a garage technician. Dysphagia symptoms were successfully managed through speech therapy and swallowing muscle electrostimulation. By 2025, functional decline was evident, with scores after individualised inpatient rehabilitation program of Barthel- 65, FIM- 89, and MMSE- 23, reflecting disease progression.
Conclusions: A consistent, multidisciplinary rehabilitation approach could help individuals with HD preserve functional independence, continue employment, enhance quality of life, increase participation in daily life, and reduce caregiver burden- even in the context of gradual neurodegeneration.

Keywords: Huntington disease, rehabilitation

THE EFFECT OF BILATERAL NON-INVASIVE VAGUS NERVE STIMULATION ON STRESS-RELATED SYMPTOMS IN HEALTHY ADULTS

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Background and Aim: Stimulation of the vagus nerve influences symptoms associated with both the hypothalamic–pituitary–adrenal (HPA) axis and the autonomic nervous system. The goal of the study was to evaluate the effect of transcutaneous vagus nerve stimulation on stress related symptoms and compare the effect of unilateral and bilateral stimulation.
Materials and Methods: Approval was obtained from the Vilnius Regional Biomedical Research Ethics Committee. 40 healthy subjects were randomly selected from primary care center. A total of 37 participants (8 men and 29 women) remained throughout the entire study, aged 21-64 y. Three questionnaires (Generalised Anxiety Disorder 7-item scale (GAD-7), Patient Health Questionnaire-9 (PHQ-9), Pittsburgh Sleep Quality Index (PSQI)) were used to evaluate anxiety and depressive symptoms as well as sleep quality during the study. The questionnaires were taken before the study and after four weeks of stimulation.
Results: Significant improvements were observed across all self-reported measures following four weeks of VNS. Depression symptoms (PHQ-9) decreased significantly in both unilateral ($n = 17$, $V = 136$, $p < 0.05$) and bilateral stimulation groups ($n = 20$, $V = 174$, $p = 0.002$). Anxiety symptoms (GAD-7) also showed significant reductions in both subgroups ($n = 17$, $V = 114.5$, $p = 0.002$ unilateral; $n = 20$, $V = 161$, $p = 0.008$ bilateral). Sleep quality, assessed via the PSQI, improved significantly unilateral ($V = 120$, $p < 0.05$) and bilateral stimulation conditions ($V = 186.5$, $p < 0.05$).
Conclusions: This study demonstrates that transcutaneous vagus nerve stimulation (tVNS), particularly bilateral stimulation, may effectively improve self-reported symptoms of depression, anxiety, and sleep disturbance. These findings support the potential of tVNS as a non-invasive intervention targeting physiological and psychological aspects of stress-related disorders.

Keywords: anxiety, depression, sleep quality, transcutaneous vagus nerve stimulation (tVNS)

BODY IMAGE DISSATISFACTION AND BODY MASS INDEX AMONG LITHUANIAN MEN BEFORE COVID-19 AND DURING QUARANTINE PERIODS

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Background and Aim: Men's body image concerns are understudied, despite their relevance to psychological well-being and health behaviours. This study assessed body mass index (BMI) and body image dissatisfaction among Lithuanian men aged 25–65 years before COVID-19 and during the first and second quarantines.
Materials and Methods: A cross-sectional online survey was completed by 133 men (n(25-44y)=106, n(45-65y)=27). Participants self-reported height and weight for BMI calculation and retrospectively evaluated body image for each period using the Stunkard Figure Rating Scale (1983). Body image dissatisfaction was calculated as the difference between current and ideal figure ratings, positive values indicating a desire for a slimmer body.
Results: Mean BMI remained stable across periods: 26.18–26.22(SD=4.06–4.20). Men aged 45–65 years had consistently higher BMI than men aged 25–44 years across all periods: 28.75–28.28 vs. 25.52–25.67, respectively. Body image dissatisfaction positive values indicated a desire for a slimmer body and it was consistently and significantly higher among men aged 45–65 years than among those aged 25–44 years: 1.26 (SD=0.86) vs. 0.75 (SD=1.31) before the pandemic, 1.37 (SD=0.88) vs. 0.86 (SD=1.45) during the first quarantine, and 1.26 (SD=0.90) vs. 0.82 (SD=1.43) during the second quarantine. Body dissatisfaction was highest during the first quarantine in both age groups, but within-group changes from pre-pandemic levels were not significant (25–44 y: p=0.103; 45–65 y: p=0.185). Higher BMI was consistently associated with greater body dissatisfaction across all periods (r=0.61–0.64, p<0.001).
Conclusions: BMI remained stable across pandemic-related periods. Body dissatisfaction was mainly expressed as a desire for a slimmer body and was more pronounced among older men and those with higher BMI. Although body dissatisfaction was highest during the first quarantine, changes from pre-pandemic levels were not statistically significant. These findings suggest that body dissatisfaction may be an under-recognised aspect of men's health.

Keywords: body dissatisfaction, body image, body mass index, COVID-19, men's health

ASSOCIATION BETWEEN MPPED2 GENE POLYMORPHISM AND PERIODONTAL POCKETS IN ADULTS WITH INTELLECTUAL DISABILITIES

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Background and Aim: Individuals with intellectual disabilities have poor periodontal health. The influence of genetic factors is unknown. The aim is to evaluate the association between MPPED2 gene polymorphism rs11031093 (G>A) and proportion of teeth with periodontal pockets in adults with intellectual disabilities.
Materials and Methods: A cross-sectional convenience sample study was carried out following Bioethics Committee's approval (No.2019/10-1162-652), acquisition of caregivers' written informed consents. Study included adults treated 2023-2025 under general anaesthesia at Vilnius University Hospital SK, Žalgiris Clinic. Sociodemographic data (age, gender) were collected using WHO Adult Oral Health Questionnaire (2013), Lithuanian version. Periodontal pockets were assessed using WHO (2013) criteria by calibrated examiner, then expressed as percentages of teeth with ≥4mm and ≥6mm probing depth periodontal pockets relative to the number of teeth present. Swab samples were collected by the same examiner. After isolation of DNA from them (automated magnetic bead–based extraction system), genotyping was carried out by qPCR. Statistical analysis was performed using Shapiro-Wilk, Chi-square, Kruskal–Wallis, and Dunn's post-hoc tests. $p<0.05$ was considered significant.
Results: Study included 60 adults with intellectual disabilities (mean age(±SD)31±8 years), 36 male (60.0%). The distribution of MPPED2 genotypes was GG-61.7%(n=37), GA-33.3%(n=20), AA-8.3%(n=5), which was comparable with European population's frequencies (GG-50.9%, GA-40.8%, AA-8.4%), p=0.36. The average proportion of teeth with ≥4mm periodontal pockets (±SD) was 27,8% (± 31,6), while 7.6% (±17.0) of teeth had ≥6mm periodontal pockets. The percentage of ≥6mm periodontal pockets differed significantly among MPPED2(rs11031093) genotype groups (p=0.003), with the highest values observed in GA group (14.2±22.3%) compared with GG (4.3±13.6%) and AA (4.1±5.6%). Post-hoc Dunn analysis showed significantly higher values in GA group compared with GG group(p=0.002). No significant differences were observed for ≥4mm periodontal pockets.

Conclusions: MPPED2 genotype was significantly associated with percentage of ≥6mm periodontal pockets, with the GA genotype showing higher values than GG genotype. However, further studies with larger sample size are needed to confirm these findings and clarify the potential role of MPPED2 in periodontal disease severity.

Keywords: intellectual disabilities, MPPED2 polymorphism, periodontitis

METABOLIC PREDICTORS OF MATERNAL AND NEONATAL OUTCOMES IN WOMEN WITH GESTATIONAL DIABETES MELLITUS: A PROSPECTIVE COHORT STUDY

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Background and Aim: Women with gestational diabetes mellitus (GDM) remain at increased risk of adverse maternal and neonatal outcomes. This study evaluated the association between maternal metabolic characteristics and pregnancy outcomes in women with GDM.
Materials and Methods: This prospective cohort study included 226 women with singleton pregnancies diagnosed with GDM according to International Association of Diabetes and Pregnancy Study Groups criteria and delivered at Vilnius University Hospital Santaros Klinikos, Lithuania, between 2019 and 2025. Clinical, anthropometric, and biochemical data were collected at 24–28 weeks of gestation.
Results: The mean maternal age was 31.9±4.0 years and pre-pregnancy BMI was 25.3±6.0 kg/m². Composite maternal and neonatal outcomes occurred in 16.8% and 14.6% of pregnancies, respectively. Pre-pregnancy BMI ≥25 kg/m² (OR 2.52, 95% CI 1.45–4.38; p=0.001), gestational weight gain (OR 1.08, 95% CI 1.03–1.13; p=0.001), fasting glucose at 24–28 weeks (OR 2.56, 95% CI 1.51–4.32; p<0.001), The Homeostatic Model Assessment of Insulin Resistance HOMA-IR (OR 0.86, 95% CI 0.74–1.00; p=0.046), and high-density lipoprotein cholesterol (HDLCh) (OR 2.27, 95% CI 1.23–4.18; p=0.008) were independently associated with neonatal complications. Early GDM was not associated with neonatal outcomes (OR 0.92, 95% CI 0.55–1.52; p=0.730). For maternal outcomes, early GDM was associated with lower odds of adverse outcomes (OR 0.43, 95% CI 0.26–0.73; p=0.002), whereas insulin therapy increased risk (OR 2.16, 95% CI 1.09–4.29; p=0.028).
Conclusions: Early GDM diagnosis was associated with lower odds of maternal complications, supporting the potential benefit of timely detection and management of hyperglycaemia during pregnancy. Maternal overweight, excessive gestational weight gain, and adverse metabolic profiles were associated with poorer pregnancy outcomes. Women requiring insulin therapy may represent a high-risk subgroup requiring closer antenatal surveillance.

Keywords: gestational diabetes mellitus, maternal outcomes, neonatal outcomes, pregnancy outcomes

MATERNAL MALNUTRITION AND HISTOMORPHOLOGICAL CHANGES IN CARDIAC AND SKELETAL MUSCLES OF FIRST-GENERATION RAT OFFSPRING: A PILOT STUDY

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Background and Aim: Maternal undernutrition before and during pregnancy is associated with diseases in the offspring. This study aimed to evaluate histopathological changes in the cardiac and skeletal muscles of first-generation rats born to food-restricted mothers.
Materials and Methods: Maternal rats were divided into three groups: control (CG; normal diet), first experimental (1EG; 50% restricted diet before pregnancy), and second experimental (2EG; 50% restricted diet before and throughout pregnancy). Offspring were fed normally. Heart (CG n=2, 1EG n=2, 2EG n=2) and skeletal muscle tissue (CG n=3, 1EG n=5, 2EG n=6) from the offspring were examined histologically. Muscle fiber diameter, adipocyte area and number, were measured using "CellSens" software. Statistical significance between groups was evaluated using ANOVA ($p<0.05$).
Results: The mean cardiomyocyte diameter was significantly lower in the EGs (16.79 and 14.58 μm) than in CG (17.18 μm) ($p<0.05$). The effects of undernutrition did not differ significantly by sex ($p=0.064$), although males showed a stronger decreasing trend. No myocardial lipocytes were detected in any group.
A decreasing trend in skeletal muscle fiber diameter was observed: CG (40.46 μm), 1EG (32.56 μm), and 2EG (31.23 μm) ($p>0.05$). Lipocyte size did not differ significantly between groups. However, the number of lipocytes was significantly higher in 1EG (51 per visual field) compared with CG and 2EG (22 and 34, respectively). No significant sex differences were found, although males showed higher mean values of fiber and adipocyte size.
Conclusions: Maternal malnutrition is associated with reduced muscle fiber diameter in offspring cardiac and skeletal muscles. In skeletal muscle, this was accompanied by increased lipocyte number and size. Changes in cardiomyocyte diameter, size and number of skeletal muscle lipocytes were more pronounced in males than in females, suggesting that male offspring may be more susceptible to prenatal environmental factors and to the development of metabolic diseases later in life.

Keywords: fetal programming, lipocytes, muscle fiber diameter, undernutrition

TRANSGENERATIONAL ASSOCIATIONS OF MATERNAL NUTRITIONAL INSUFFICIENCY WITH RENAL HISTOPATHOLOGICAL CHANGES IN RAT OFFSPRING

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Background and Aim: Developmental Programming of Fetal Growth claims that prenatal factors such as maternal malnutrition may impair fetal organogenesis and increase the risk of chronic disease. This study evaluates histopathological kidney changes in first (F1) and second generation (F2) rat offspring exposed to maternal dietary restrictions.
Materials and Methods: Maternal rats were divided into three groups: control group (CG; fed normal diet), first experimental group (1EG; receiving a 50% reduced diet before pregnancy), and second experimental group (2EG; receiving the same reduced diet before and throughout pregnancy). Kidney sections of F1 (CG: n=2, 1EG: n=6, 2EG: n=6) and F2 (CG: n=2, 1EG: n=6, 2EG: n=6) were examined microscopically across ten randomly selected fields per section using CellSens software. Renal corpuscle count (RCC) and size (RCS), Bowman's capsule size (BCS) were assessed. All analyses were performed using R statistical software package.
Results: In F1 generation, maternal diet restriction tended to reduce RCS compared with controls (CG:148,16±16,73 μm vs. 1EG:130,58±7,66 μm, 2EG:132,94±7,96 μm; p=0,069); RCC and BCS were also lower in the experimental groups, but the differences were not significant (p=0.324 and p=0.339). In F2 offspring, RCS and BCS remained lower in both experimental groups than in controls, although the differences were not significant (p=0,918; p=0,108), however both experimental groups had significantly fewer renal corpuscles versus controls (CG:11,4±0,85 vs. 1EG:9,58±0,87, p=0,009; 2EG:9,35±0,84, p=0,005). From F1 to F2, BCS and RCC increased (10,59% and 7,03%, respectively), while RCS decreased (9,53%). Significant sex-related differences were observed in F2 (males: larger RCS and BCS, p=0,016; p=0,039; females: higher RCC, p=0,003), with the same pattern present but non-significant in F1.
Conclusions: Transgenerational histopathological kidney changes in offspring were associated with maternal dietary restrictions. All F1 and F2 experimental groups showed reduced RCC, RCS, and BCS compared with controls. Notable sex-related differences were observed in F2.

Keywords: developmental programming, growth and development, kidneys, maternal undernutrition, rats

UNDERSTANDING RECURRENT PULMONARY EMBOLISM: POSSIBLE CAUSES

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Background and Aim: Pulmonary embolism (PE) is a life-threatening disease. Recurrent PE is associated with a higher risk of death and adverse clinical outcomes. Several risk factors for PE recurrence have been identified, and prolonged anticoagulant therapy recommended for selected patients. Nevertheless, recurrent PE still occurs. Therefore, the causes of recurrent PE are not fully understood. This study aimed to identify possible causes of recurrent PE.
Materials and Methods: A prospective study was conducted at Vilnius University Hospital Santaros Klinikos. Patients after a first episode of acute PE were enrolled. Follow-up visits were scheduled to guide anticoagulant therapy based on PE risk factors, thrombus resolution time, and complications of anticoagulant therapy. Recurrent PE events were recorded and analysed.
Results: A total of 201 consecutive patients were included (50.2% male; median age 65 years [IQR 53–75]). Recurrent PE occurred in 29 (14.4%) patients. The median time to recurrence was 26 months (IQR 10–53). Notably, more than one-third of all recurrences (37.9%) occurred during ongoing anticoagulant therapy. In 9 cases (31.0%), recurrence was associated with patient-initiated discontinuation of anticoagulant therapy, while in 2 cases (6.9%) it was related to inadequate anticoagulation with warfarin. The remaining 18 recurrences (62.1%) occurred after completion of anticoagulant treatment. Of these, 3 cases (10.3% of all recurrences) were associated with the absence of thromboprophylaxis following surgical procedures. In 15 patients (51.7%), no clear cause of recurrence was identified. Initial PE severity, comorbidities, and laboratory findings were not associated with PE recurrence in these cases.
Conclusions: Despite follow-up, recurrent PE occurred in 14.4% of patients. A considerable proportion of recurrences were associated with patient-initiated discontinuation of anticoagulant therapy, while others were related to the absence of appropriate thromboprophylaxis. These findings emphasise that prevention of recurrent PE requires not only assessment of established risk factors, but also patient education, treatment adherence, and appropriate thromboprophylaxis.

Keywords: anticoagulants, pulmonary embolism, recurrence, venous thromboembolism, treatment adherence

STRUCTURAL CARDIAC REMODELING: CARDIOMYOCYTE AND NUCLEAR MORPHOMETRIC CHANGES ASSOCIATED WITH TYPE 1 DIABETES AND CHRONIC PSYCHOLOGICAL STRESS

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Background and Aim: Cardiovascular disease is a major cause of morbidity and mortality in individuals with type 1 diabetes mellitus (T1DM), with diabetes-associated metabolic disturbances contributing to structural and functional cardiac abnormalities. Chronic psychological stress is also recognised as a contributing factor to both metabolic and cardiovascular dysfunction. This study aimed to investigate the individual and combined effects of Type 1 diabetes mellitus and chronic psychological stress on cardiac tissue remodelling.
Materials and Methods: Groups in this study were: Control (n = 9), Stress (n = 9), induced using a 28-day restraint stress protocol; T1DM (n = 7), induced using streptozotocin (65 mg/kg); and T1DM + Stress (n = 8). On day 29, the animals were anaesthetised, and the hearts were removed for histological analysis using H&E staining. Cardiac tissue sections were evaluated using QuPath (0.4.4). A total of 1,650 longitudinally sectioned cardiomyocytes and their nuclei were measured. Statistical analysis was performed using Microsoft Excel.
Results: A statistically significant increase in cardiomyocyte size was observed in all experimental groups compared with the Control (17 μm): Stress (20.25 μm), T1DM (21.86 μm), and T1DM+Stress (22.45 μm). Statistical analysis also revealed significant differences in cardiomyocyte nuclear size across all groups ($p < 0.001$): Control (6.96 μm), Stress (7.4 μm), T1DM (7.86 μm), and T1DM + Stress (8.88 μm).
Conclusions: The increase in cardiomyocyte and nuclear size in both the Stress and T1DM groups suggests that each condition alone is sufficient to induce myocardial hypertrophy. Since the T1DM group exhibited larger cardiomyocytes and nuclei than the Stress group, diabetes appears to have a more pronounced effect on cardiac remodelling. The T1DM+Stress group

demonstrated the greatest increases in cardiomyocyte and nuclear size, suggesting that chronic stress exacerbates diabetes-induced cardiac damage. These findings may indicate additive or potentially synergistic pathological mechanisms.

Keywords: cardiac morphology, cardiomyocytes, psychological stress, type 1 diabetes mellitus

IMPLICIT BIAS: AN INNATE ADAPTATION OR AN ACQUIRED CAPACITY?

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Background and Aim: Implicit bias refers to automatic, involuntary cognitive associations and affective evaluations that occur beyond conscious awareness, frequently leading to discriminatory behaviours toward social groups and their members. It is a highly pervasive phenomenon that contributes to poorer health outcomes by inducing chronic stress, while simultaneously perpetuating systemic injustices. To understand the persistence of this widespread issue, this study investigates the evolutionary origins of implicit bias.
Materials and Methods: A narrative literature review was conducted across medical, psychological, and philosophical databases using keywords related to evolutionary theory, social cognition, and predictive processing, with complementary articles identified through backward citation search, yielding 129 sources.
Results: This review first considers evolutionary psychology perspectives that conceptualise implicit bias as an innate capacity of the human brain. From this viewpoint, ancestral populations faced recurring selection pressures in specific social domains, driving the development of psychological adaptations – specialised brain circuits – to successfully address these pressures. This review critically evaluates such perspectives, demonstrating that they are highly speculative and lack support from current empirical neuroscientific evidence. An alternative explanation is presented that views the human brain as innately plastic, functioning to efficiently regulate internal physiological systems by anticipating metabolic demands through active modelling of the world. From this perspective, implicit bias emerges as a consequence of the brain predictively modelling a biased social environment.
Conclusions: This work concludes that evolutionary psychology interpretations of implicit bias lack theoretical validity and empirical grounding, proposing instead that implicit bias emerges as the brain's general-purpose systems learn statistical regularities from the environment.

Keywords: evolutionary psychology, implicit bias, predictive processing

THE HIDDEN COST OF STRESS: OVARIAN REMODELING UNDER CHRONIC PSYCHOLOGICAL STRESS

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Background and Aim: Chronic psychological stress contributes to female reproductive dysfunction through dysregulation of the hypothalamic–pituitary–gonadal axis. However, its direct impact on ovarian histomorphology remains poorly understood. This study investigated the impact of chronic psychological stress on ovarian morphology in female Wistar rats, focusing on follicular development, atresia, *corpus luteum*, and stromal–parenchymal composition.
Materials and Methods: Fourteen mature female Wistar rats (5–7 months; 253 ± 13.1 g) were assigned to Control (n = 9) and Stress (n = 5) groups. Chronic psychological stress was induced by a daily 2-hour restraint protocol for 28 days. Following carbon dioxide (CO_2) euthanasia, ovaries were fixed in 10% neutral buffered formalin, sectioned at 4 µm, and stained with hematoxylin and eosin (H&E). Digital morphometric analysis was performed using QuPath v0.5. Follicles (primordial, unilaminar, and multilaminar primary, secondary, tertiary, and atretic) and *corpora lutea* were quantified. Statistical comparison used the Mann–Whitney U test ($p < 0.05$).
Results: Unilaminar primary follicles were significantly increased in the Stress group compared with Control (1.366 ± 0.994 vs. 0.317 ± 0.196/mm²; p = 0.028). Primordial follicles showed a non-significant reduction under stress. Multilaminar primary and atretic follicles were rare in stressed animals, precluding meaningful comparison. No significant differences were observed in the number of secondary follicles, tertiary follicles, *corpus luteum*, or *corpus luteum* morphology. Stressed ovaries demonstrated a non-significant tendency toward reduced parenchymal and increased stromal fractions, suggesting mild stromal remodelling.
Conclusions: Chronic psychological stress primarily affected early folliculogenesis, with increased unilaminar primary follicles indicating altered follicular recruitment rather than follicular depletion. Effects on atresia and *corpus*

luteum were not demonstrable. Subtle stromal–parenchymal shifts suggest early ovarian structural remodelling under prolonged stress exposure.

Keywords: chronic psychological stress, follicular atresia, folliculogenesis, ovarian morphology, Wistar rats

EXPOSURE TO LABOUR AS A DETERMINANT OF LONG-TERM HYPOTHALAMIC-PITUITARY-ADRENAL (HPA) AXIS PROGRAMMING IN CHILDREN

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Background and Aim: Physiological labour represents a critical evolutionary process characterised by activation of the foetal hypothalamic-pituitary-adrenal (HPA) axis and neuroendocrine stress signalling necessary for successful transition to extrauterine life. Increasing evidence suggests that elective caesarean section before labour onset may alter these adaptive hormonal pathways and influence early-life neuroendocrine programming. This systematic review evaluated associations between absence of labour exposure and HPA axis-related biomarkers in offspring.
Materials and Methods: This systematic review was conducted according to PRISMA guidelines. Literature searches were performed in PubMed, Web of Science, ScienceDirect, ClinicalKey and Cochrane Library. Studies evaluating associations between delivery mode and HPA axis-related biomarkers in neonates, infants, or children were included. Elective caesarean delivery before labour onset was compared with vaginal delivery and emergency caesarean section following labour onset. Outcomes included cortisol, salivary and hair cortisol, cortisol reactivity, copeptin, vasopressin, glucocorticoid-related pathways, and stress-response biomarkers.
Results: Ten studies met the inclusion criteria, including neonatal, infancy, and childhood populations. Vaginal delivery was consistently associated with higher cortisol-, vasopressin- and copeptin-mediated stress responses compared with elective caesarean section. One cohort study demonstrated altered cortisol regulation at 6 months of age following caesarean delivery, while a recent longitudinal study identified persistent differences in hair cortisol concentrations among children born by planned caesarean birth. Mechanistic studies additionally reported altered foetal cortisol metabolism, glucocorticoid-related signalling, and stress-associated developmental pathways in offspring delivered without labour exposure.
Conclusions: Current evidence suggests that physiological labour constitutes an important neuroendocrine stimulus involved in early-life stress adaptation and HPA axis programming. However, available evidence remains limited by small study numbers and scarcity of long-term longitudinal data.

Keywords: birth stress, cortisol, HPA axis

EPILEPSY IN MULTIPLE SCLEROSIS: FREQUENCY, CLINICAL CHARACTERISTICS, AND POSSIBLE DISEASE ASSOCIATION IN A SINGLE-CENTRE COHORT

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Background and Aim: Epileptic seizures are uncommon but clinically relevant in patients with multiple sclerosis (MS), and their relationship with MS remains difficult to determine. This study assessed the prevalence of epilepsy, clinical features, treatment patterns, and probable MS-related epilepsy in a single-centre MS cohort.
Materials and Methods: We retrospectively reviewed 1530 patients followed at the Vilnius University Hospital Santaros Clinics MS Centre. Diagnostic codes identified 46 patients: G40 (n=28), R55 (n=16), R56 (n=2). Records were reviewed to confirm epilepsy, exclude provoked/ alternative diagnoses, assess disease-modifying therapy (DMT), and identify probable MS-related epilepsy, defined as unprovoked epilepsy without a clear alternative cause.
Results: In the G40 group, epilepsy was confirmed in 23 patients, excluded in 4, and considered post-traumatic in 1. Among confirmed cases, 16 were women, mean age: 49.0 ± 14 years, 16 had relapsing-remitting MS, 7 had secondary progressive MS. Median EDSS score was 4. Seizures preceded MS diagnosis in 7 patients; in 1 patient, seizure was probably the first MS manifestation. In 16 patients, seizures occurred after MS diagnosis. Seizures were generalised in 14, focal in 8, and unknown in 1. Electroencephalography showed epileptiform activity in 14 patients, mainly temporal or frontal. Brain atrophy was observed in 7 patients. At least 1 DMT was used in 21/23 patients; the median number of DMTs was 2. Treatment remained unchanged in 9 patients. S1PR modulators were used in 2 patients: 1 developed a first seizure during treatment, and ponesimod was stopped in another due to recurrent seizures. The most commonly used antiseizure medications were valproic acid (n=11) and levetiracetam (n=7). Probable MS-related epilepsy was identified in 17 patients (1.11%).
Conclusions: Epilepsy was uncommon but clinically relevant among patients with MS. In some patients, seizures preceded MS diagnosis and may represent an early clinical manifestation.

Keywords: epilepsy, multiple sclerosis, seizures

ANATOMICAL VARIABILITY AND MORPHOMETRIC CHARACTERISTICS OF THE HUMAN OPHTHALMIC ARTERY: A SYSTEMATIC LITERATURE REVIEW

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Background and Aim: Recently, there has been growing interest in the variations of various blood vessels, among which the ophthalmic artery (OA) has been relatively little studied due to its complex topography and course. The aim of this study was to systematically synthesise anatomical and morphometric evidence reported in human ophthalmic artery studies.
Materials and Methods: A systematic literature review was conducted according to PRISMA recommendations using PubMed, ScienceDirect, Scopus, and WoS databases. A total of 2880 records were identified, 30 human studies reporting original anatomical, radiologic, angiographic, microsurgical, or endoscopic OA data were included.
Results: Cadaveric or microsurgical methods were used in 26 out of 30 studies (26/30), while 5 also used radiologic imaging, 5 incorporated endoscopic anatomical evaluation, and 3 combined anatomical dissection with imaging or angiography. Beginning of the artery-related findings were reported in all studies (predominantly from internal carotid artery). Anatomical variants included OA arising from the middle meningeal artery, anterior cerebral artery, and persistent embryological configurations (persistent primitive ophthalmic artery) variants. The intracranial and/or intraorbital course of the ophthalmic artery was described in 29/30 included studies (96.7%). The relationship with the optic nerve was evaluated in 23/30 studies (76.6%). Superior crossing patterns were reported more frequently than inferior crossing (57-85% of cases). Branching sequence was analysed in 23/30 studies (76.6%). The central retinal and posterior ciliary arteries were among the most commonly reported early branches, although first-branch patterns varied substantially. Morphometric parameters were reported in 14/30 studies (46.7%). Adult CTA studies reported luminal diameters of approximately 1.35-1.38 mm. Anastomotic connections, especially involving the middle meningeal and lacrimal or recurrent meningeal pathways were described in 13/30 studies (43.3%).
Conclusions: The human OA demonstrates substantial anatomical variability regarding its origin, branching sequence, morphometry, and relationships with the optic nerve. This knowledge is particularly important when performing microsurgical, radiological and endovascular procedures.

Keywords: anatomy, internal carotid artery, morphometry, ophthalmic artery, optic nerve

COMPARATIVE ANATOMY OF THE MAMMALIAN OPHTHALMIC ARTERY: A SYSTEMATIC REVIEW OF ANATOMICAL, MORPHOMETRIC, AND METHODOLOGICAL TRENDS

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Background and Aim: Comparative anatomy studies are crucial for understanding human anatomy and the evolution of different structures, however, there is a lack of knowledge about comparing analogous structures between animals and humans. The aim of this study was to systematically review the available literature on the anatomy of the mammalian ophthalmic artery (OA) and its morphometric data in different mammalian species.
Materials and Methods: A systematic literature review was conducted according to PRISMA recommendations using PubMed, ScienceDirect, Scopus, and WoS databases. In total, 3572 records were identified, 2201 records were screened. Full texts of 95 articles were assessed for eligibility.
Results: Human-only studies constituted 1546 out of 2201 (70.3%), non-human mammalian studies 551/2201 (25%), and mixed or other non-mammalian species studies 104/2201 (4.7%). Artiodactyla and Carnivora represented the largest proportion of non-human mammalian studies, whereas several additional mammalian orders were represented only by isolated, uneven reports. Comparative analysis appeared feasible for beginning of the artery, course, branching pattern, and relationship to the optic nerve. However, quantitative morphometric synthesis was limited by inconsistent reporting in non-human mammals. Proximal OA diameter was reported in 7/41 (17%) non-human mammalian studies versus 21/54 (38.9%) human studies; distal diameter in 1/41 (2.4%) versus 10/54 (18.5%); and OA length in 2/41 (4.9%) versus 18/54 (33.3%), respectively. Non-human mammalian studies more frequently described arterial anastomoses (29/41; 70.7%) and rete mirabile-associated vascular patterns (20/41; 48.8%). Human studies more frequently used cadaveric dissection (32/54; 59.3%), whereas non-human mammalian studies more commonly used injection/corrosion cast techniques (28/41; 68.3%). Scanning electron microscopy was identified exclusively in non-human mammalian studies (7/41; 17.1%).
Conclusions: The available literature is lacking in non-human OA studies, but supports qualitative comparative analysis of mammalian OA anatomy; however, a generalised cross-species morphometric synthesis remains limited due to inconsistent morphometric presentation, methodological heterogeneity, and inconsistent taxonomic representation.

Keywords: comparative anatomy, mammalian species, morphometry, ophthalmic artery, systematic review

THE INFLUENCE OF TYPE 1 DIABETES AND CHRONIC PSYCHOLOGICAL STRESS ON HEPATIC FAT CONTENT AND HEPATOCYTE NECROSIS

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Background and Aim: Chronic psychological stress is a known cause of hepatic lipid accumulation, which manifests as steatosis and ballooning of hepatocytes, whereas the influence of type 1 diabetes on steatosis formation remains debated. Both chronic psychological stress and type 1 diabetes are shown to favour hepatocyte necrosis. This study aims to show the effects of chronic psychological stress in conjunction with type 1 diabetes on steatosis and hepatocyte necrosis, in contrast to both conditions being present independently.
Materials and Methods: Histological analysis of liver specimens was performed after an experiment involving groups of rats: Control group (n=9) (no type 1 diabetes, no stress); Stress group (n=9) was subjected to chronic psychological stress, induced using a restraint stress protocol; T1DM group (n=8) obtained streptozotocin-induced type 1 diabetes; T1DM+Stress group (n=9) was subjected to both type 1 diabetes and stress. After euthanasia, H&E slides were prepared and histological analysis was performed using the QuPath (0.4.4) programme. In each slide, 10 squares of 250x250μm were randomly selected, the nuclei of normal, steatotic, ballooned, and necrotic hepatocytes were manually marked and automatically counted. The percentage of fatty and necrotic hepatocytes was identified, and a t-test was performed.
Results: A statistically significant increase in steatosis and ballooning was observed in the Stress group (14.06%) compared with the Control (4.25%) and T1DM (3.21%) groups ($p < 0.05$). In hepatocyte necrosis, a statistically significant increase was found in all experimental groups (Stress: 17.61%; T1DM: 21.46%; T1DM+Stress: 18.94%) compared to the Control group (7.82%) ($p < 0.05$).
Conclusions: Type 1 diabetes appears to have an inhibitory effect on steatosis formation, both in stress-induced steatosis and in non-stressed animals, likely through the absence of insulin. Both conditions appear to cause necrosis of hepatocytes, potentially through indirect metabolic and inflammatory pathways.

Keywords: chronic psychological stress, liver, necrosis, steatosis, type 1 diabetes

RISK FACTORS ASSOCIATED WITH KIDNEY IMPAIRMENT IN DEHYDRATED CHILDREN

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Background and Aim: Dehydration-related kidney impairment is often underestimated. The study aimed to evaluate the risk factors for its development in dehydrated pediatric patients.
Materials and Methods: Children aged 1–17 years requiring intravenous rehydration for dehydration were prospectively enrolled and stratified by kidney function: Group A – eGFR < 90 mL/min/1.73 m², Group B – normal function. Exclusion criteria were chronic kidney disease, oncohematological disorders, and diabetes mellitus. A standardised anamnesis included age, birth weight, gestational age, pre-admission duration of dehydration-inducing symptoms, ibuprofen and paracetamol use and dose (mg/kg), chronic diseases, long-term medication use. Laboratory variables included blood pH, serum bicarbonate, potassium, sodium, haemoglobin, and hematocrit.
Results: 179 children were included (Group A: n=90, 49 males; Group B: n=89, 47 males) with median ages of 8.57 ± 4.5 and 8.09 ± 4.5 years. Acute kidney injury (KDIGO serum creatinine criteria, stages I-II) occurred in 36 (40%) Group A patients. Groups did not significantly differ in chronic diseases, long-term medication use, gestational age, birth weight, or laboratory parameters. Pre-admission ibuprofen and paracetamol use was more frequent in Group A (65.6% vs 47.2% and 52.2% vs 31.5%) and was associated with kidney impairment ($p = 0.013$ and $p = 0.005$), although combined versus single-drug use did not differ. Total ibuprofen dose was not predictive (AUC = 0.503), whereas paracetamol at 37.0 mg/kg showed borderline discrimination (AUC = 0.623, $p = 0.059$, sensitivity 47.8%, specificity 78.6%). Symptom duration was longer in Group A (58.0 vs 39.3 hours, $p = 0.020$) and showed modest predictive value at a cutoff of 38.5 hours (AUC = 0.655, 95% CI 0.575–0.734, $p < 0.001$). No correlation was found between age and symptom duration ($p = 0.424$).
Conclusions: A paracetamol dose of 37.0 mg/kg and symptom duration of ≥38.5 hours are predictive factors for kidney impairment in dehydrated children.

Keywords: children, dehydration, kidney impairment, risk factors

OPPOSING MORPHOLOGICAL EFFECTS OF CHRONIC STRESS AND DIABETES ON PERIVASCULAR WHITE ADIPOSE TISSUE

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Background and Aim: Perivascular white adipose tissue (PWAT) is an active endocrine tissue involved in vascular homeostasis by regulating inflammation, vascular tone, and metabolic balance. Chronic psychological stress and type 1 diabetes mellitus (T1DM) are associated with metabolic and hormonal disturbances that may alter adipose tissue structure and function. While the effects of stress and diabetes on systemic adipose tissue are widely studied, their impact on perivascular adipose tissue remains poorly understood, particularly when they occur simultaneously. The aim of this study was to assess structural alterations in PWAT under chronic psychological stress, T1DM, and combination of both.
Materials and Methods: 35 Wistar rats were randomly divided into 4 groups: Control (n=8), Stress (n=10), T1DM (n=7), and T1DM + Stress (n=10). Chronic psychological stress was induced using the restraint stress protocol. T1DM was induced by streptozotocin injection (65 mg/kg). The aorta with surrounding adipose tissue was collected under anaesthesia for histological evaluation. Morphometric analysis was performed with QuPath (v0.4.4). The surface area of 550 adipocytes was measured. Analysis was done using MS Excel.
Results: In the Control group, average adipocyte surface area was 453.82 μm², in Stress 506.52 μm², and in T1DM 159.09 μm². Adipose tissue was found to be absent in the T1DM+Stress group. Significant differences were found between all groups ($p<0.001$).
Conclusions: Chronic psychological stress and T1DM have distinct but important effects on PWAT architecture. Stress leads to adipocyte hypertrophy, likely via glucocorticoids, whereas T1DM induces atrophy through unrestrained lipolysis. Combined, these conditions resulted in complete loss of detectable PWAT, suggesting a severe catabolic effect likely driven by enhanced lipolysis and impaired adipose tissue maintenance.

Keywords: adipose tissue, chronic psychological stress, histomorphometry, lipolysis, perivascular fat, type 1 diabetes mellitus

RESUSCITATION STATUS AND CARDIAC ARREST LOCATION AS PROGNOSTIC DETERMINANTS IN ACUTE CORONARY SYNDROME: A SINGLE-CENTRE RETROSPECTIVE ANALYSIS OF SURVIVAL AND NEUROLOGICAL OUTCOMES

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Background and Aim: Cardiac arrest complicating acute coronary syndrome (ACS) carries high mortality and neurological morbidity, and the optimal invasive strategy remains uncertain. We evaluated whether resuscitation status on arrival at the catheterisation laboratory and the location of cardiac arrest were associated with in-hospital mortality and neurological outcome in patients with ACS undergoing coronary angiography.
Materials and Methods: In this retrospective single-centre study, ACS patients who underwent invasive coronary angiography between 2014 and 2025 were screened. One cohort (131 patients) was grouped by resuscitation status: already resuscitated before the procedure, or refractory arrest requiring a mechanical resuscitation device during angiography. A second cohort (159 patients) was grouped by arrest location: out-of-hospital, in-hospital, or in the catheterisation laboratory. Outcomes were in-hospital mortality and post-resuscitation neurological status; retrospective analysis was performed using IBM SPSS software.
Results: In-hospital mortality was 39.4% in already-resuscitated patients versus 86.4% in those requiring a mechanical resuscitation device during angiography ($p < 0.001$). The latter also had longer resuscitation times (mean 66.1 vs 21.9 minutes) and higher admission lactate (10.7 vs 7.7 mmol/L). By arrest location, mortality rose stepwise: 39.8% out-of-hospital, 60.4% in-hospital, and 78.6% in-laboratory ($p < 0.001$). Neurological outcome among survivors did not differ significantly by location; notably, all survivors of in-laboratory arrest were free of neurological disability.
Conclusions: Resuscitation status before catheterisation and cardiac arrest location were important determinants of survival in ACS. Ongoing mechanical resuscitation during angiography and in-laboratory arrest identified the highest-risk patients, supporting their use in early prognostic assessment and invasive decision-making.

Keywords: acute coronary syndrome, cardiac arrest, cardiopulmonary resuscitation, mortality, neurological outcome

ORAL HEALTH-RELATED QUALITY OF LIFE IN CHILDREN AND ADOLESCENTS WITH CLEFT LIP AND PALATE: A CROSS-SECTIONAL STUDY OF LITHUANIAN PATIENTS

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Background and Aim: Cleft lip, with or without palatal involvement, may adversely affect oral health-related quality of life (OHRQoL) through functional, esthetic, and psychosocial difficulties. This study aimed to evaluate OHRQoL among Lithuanian children and adolescents with cleft lip with or without palatal involvement according to cleft type and age group.
Materials and Methods: A cross-sectional study was conducted among 177 Lithuanian children and adolescents aged 7–18 years with repaired cleft lip with or without palatal involvement. Participants completed the Lithuanian version of the Child Oral Health Impact Profile–Short Form 19 (COHIP-SF 19), and parent proxy reports were obtained for 172 participants. OHRQoL was assessed across three domains: Oral Health Well-Being, Functional Well-Being, and Socio-Emotional Well-Being. Comparisons according to cleft type and age group were performed using non-parametric statistical tests. Parent–child agreement was assessed using intraclass correlation coefficients (ICC).
Results: The median total COHIP-SF 19 score was 55 (IQR 45–65). Significant differences in OHRQoL were observed according to cleft type. Children with unilateral cleft lip (UCL) reported significantly higher total COHIP-SF 19 scores than those with unilateral cleft lip and palate (UCLP) and bilateral cleft lip and palate (BCLP) ($p = 0.002$). The largest differences were observed in the Functional Well-Being domain ($p < 0.001$). Similar findings were reported by parents. No significant differences in OHRQoL were found among age groups in either child or parent assessments (all $p > 0.05$). Comparison of child and parent reports showed no significant differences in total COHIP-SF 19 scores ($p = 0.538$). Parent–child agreement was good for the total COHIP-SF 19 score (ICC = 0.81; 95% CI: 0.76–0.86).
Conclusions: OHRQoL was significantly associated with cleft type but not with age. Children and adolescents with UCL reported the highest OHRQoL scores, whereas those with BCLP reported the lowest scores, suggesting that OHRQoL decreases with increasing cleft severity. Good agreement between child and parent assessments supports the use of parent proxy reports when child self-reports are unavailable.

Keywords: adolescents, children, cleft lip and palate, COHIP-SF 19, oral health-related quality of life

AN UNUSUAL COMMON MEDIAN–ULNAR NERVE TRUNK IN THE CUBITAL FOSSA: A NINETEENTH-CENTURY ANATOMICAL SPECIMEN AND ITS CLINICAL IMPLICATIONS

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Background and Aim: Historical anatomical collections are a valuable yet underexplored resource for studying anatomical variability in past populations. Although modern anatomical literature extensively documents neural variations, little is known about their occurrence in earlier centuries. The aim of the present study was to analyse nerve variations in historical dry specimens preserved at the Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University.

Materials and Methods: Preparations more than 200 years old, attributed to the anatomist Adam Bielkiewicz and created using corrosion techniques, were investigated. These preparations allow detailed visualisation of anatomical structures and provide a unique opportunity to investigate morphological diversity in historical populations.

Results: A rare variation involving the median and ulnar nerves was identified in a preserved right upper limb. Normally, the ulnar nerve arises from the medial cord of the brachial plexus, while the median nerve originates from both the lateral and medial cords. Although communications between these nerves are well documented, the arrangement observed in this specimen differed markedly from previously reported patterns. The specimen, transected at the distal humerus, precluded assessment of the complete brachial plexus. The most notable finding was observed in the cubital fossa, where the ulnar nerve originated from a common trunk shared with the median nerve. To the authors' knowledge, this configuration has not been previously described. A separate nerve descending posterior to the medial epicondyle was interpreted as the dorsal branch of the ulnar nerve rather than its main trunk. Additional communications were observed between this dorsal branch and the ulnar nerve in the forearm, and between the ulnar and median nerves in the palm.

Conclusions: These findings highlight the importance of historical anatomical specimens for documenting rare anatomical variants and improving our understanding of long-term human morphological variability. Recognition of such variations remains clinically relevant for surgical procedures and for the interpretation of atypical neuropathic presentations.

Keywords: anatomical variation, median nerve, ulnar nerve

ACCURACY OF DYNAMIC NAVIGATION FOR FIBER POST REMOVAL: AN IN VITRO STUDY

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Background and Aim: Fiber post removal is a technically challenging procedure. Novel technologies have been introduced to improve the safety of fiber post removal. The aim of this study was to evaluate the accuracy of fiber post removal using dynamic navigation (DN).
Materials and Methods: Twenty-eight 3D printed maxillary central incisors underwent root canal treatment and were restored using fiber posts cemented with self-adhesive resin cement. Core build-ups were completed with fiber reinforced composite resin. Preoperative and postoperative cone-beam computed tomography (CBCT) scans were acquired. Drilling paths and preparation depths were virtually planned using the DN software system, and fiber post removal was performed under DN guidance. Accuracy was evaluated by comparing the planned and actual access cavity trajectories on CBCT images. Entry point deviation, apical 3D deviation, apical depth deviation, and angular deflection were calculated to assess accuracy. The preparation time and total DN procedure time were recorded. Data were analysed with significance set at $p < 0.05$.
Results: The mean entry point deviation was 1.16 mm (± 0.07), apical point 3D deviation 1.40 mm (± 0.09), apical point depth deviation 0.49 mm (± 0.09), and angular deflection 2.42 ° (± 0.24). The mean preparation time was 150.32 s (± 52.09), while the total DN procedure time was 9.79 min. (± 1.99). The total DN procedure time for the first third of specimens was significantly longer than for the second ($p = 0.001$) and third ($p < 0.001$) thirds. No statistically significant difference was observed between the second and third thirds ($p = 0.529$).
Conclusions: Dynamic navigation demonstrated high accuracy for fiber post removal under in vitro conditions. However, a learning curve is evident, indicating that training is required to optimise procedural efficiency.

Keywords: dynamic navigation, guided endodontics, post removal

FISH AND OMEGA-3 FATTY ACID INTAKE IN THE GENERAL POPULATION AND THEIR IMPACT ON HEALTH

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Background and Aim: This study examines the fish consumption habits and knowledge of polyunsaturated fatty acids among the Lithuanian population. It highlights the differences in knowledge and aims to draw attention to the fatty acid imbalance observed within the population, which is associated with a faster onset of chronic diseases.
Materials and Methods: The data were collected in November 2025 via an anonymous online survey administered through Google Forms. The study surveyed Lithuanian residents of various ages and included 180 respondents. The questionnaire consisted of sociodemographic data, information on daily dietary choices, and a summary questionnaire on knowledge of fatty acids.
Results: The results highlighted the varying levels of awareness among Lithuanian residents regarding the consumption of fish and omega-3 fatty acids. Two-thirds of respondents stated that their fish intake is insufficient to meet their body's basic needs. More than half of the respondents consumed fish less frequently than recommended by the WHO. Insufficient knowledge about omega-3 and omega-6 fatty acids was also observed. The study found that although people had heard of polyunsaturated fatty acids, this did not lead to changes in their diet. Therefore, the majority of Lithuanian residents stated that the main source of omega-3 in their diet is supplements, which highlights that Lithuanian residents lack omega-3 fatty acids obtained naturally through food.
Conclusions: Fish consumption in Lithuania remains insufficient, with omega-3 fatty acids obtained primarily through supplements rather than food sources. Limited public knowledge contributes to dietary choices that do not ensure an optimal balance of polyunsaturated fatty acids. These findings highlight the need to improve public awareness and strengthen education on the appropriate consumption of fish and omega-3 fatty acids to support overall health.

Keywords: fatty acids, fish, nutrition, omega-3

PERI-IMPLANTITIS AS A MODERN INFLAMMATORY BURDEN: AGEING, PERIODONTAL SUSCEPTIBILITY AND ORAL HYGIENE

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Background and Aim: Peri-implantitis may be interpreted as a modern inflammatory burden, where artificial oral rehabilitation in later life encounters cumulative susceptibility to biofilm-induced periodontal breakdown. This study aimed to determine whether age, periodontal disease severity and self-reported hygiene-related behaviours explain peri-implantitis risk in patients with osseointegrated dental implants.

Materials and Methods: A cross-sectional study was conducted in 2025 at the Institute of Dentistry, Faculty of Medicine, Vilnius University, and Periodont Dental Clinic. Patients with at least one osseointegrated dental implant were included. Ethical approval was obtained from the Vilnius Regional Biomedical Research Ethics Committee. Clinical and radiological assessments evaluated peri-implant status, periodontal disease stage and alveolar bone atrophy. In complete cases, toothbrushing frequency, interdental cleaning, dental visit frequency and implant-specific hygiene instruction were assessed. Associations were tested using chi-square, Fisher's exact and non-parametric tests where appropriate. Binary logistic regression identified independent predictors, with significance set at $p<0.05$.

Results: Among 184 patients, peri-implantitis was diagnosed in 46 patients (25%), peri-implant mucositis in 55 (29.9%) and peri-implant health in 83 (45.1%). Patients aged ≥60 years had a higher prevalence of peri-implantitis than younger patients (37.9% and 11.2%, respectively; $p<0.001$). In complete cases (n=110), 73.6% reported interdental cleaning, 78.2% brushed at least twice daily and 47.3% had received implant-specific hygiene instruction. In multivariable analysis adjusted for age, hygiene instruction and alveolar bone atrophy, periodontal disease stage remained independently associated with peri-implantitis (OR=2.58; $p=0.017$), while implant-specific hygiene instruction showed a protective tendency (OR=0.34; $p=0.056$).

Conclusions: Peri-implantitis was more prevalent in older patients, but adjusted analysis identified periodontal disease severity as the main independent determinant. The protective tendency of implant-specific hygiene instruction suggests that peri-implant disease risk is shaped by both biological susceptibility and modifiable maintenance factors. These findings support periodontal risk assessment and structured supportive implant care.

Keywords: ageing, dental implants, oral hygiene, peri-implantitis, periodontitis

CARDIAC TUMOURS: CHALLENGES IN DIAGNOSIS AND MANAGEMENT

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Background and Aim: Cardiac tumours are rare but clinically important because even benign lesions may cause haemodynamic obstruction, arrhythmias, or systemic embolisation, whereas malignant tumours are usually aggressive and carry a poor prognosis. This study aimed to analyse the diagnostic and therapeutic challenges of cardiac tumours and, based on recent evidence, identify practical evidence-based management directions relevant to Lithuania and Europe.
Materials and Methods: A structured narrative literature review was performed. Searches were conducted in PubMed/MEDLINE, Web of Science Core Collection, and Scopus. Peer-reviewed articles published in 2020–2026 and European society recommendations were analysed. Data on the epidemiology and clinical presentation of primary and metastatic cardiac tumours, as well as on the diagnostic value of echocardiography, cardiac magnetic resonance imaging (CMR), computed tomography, and fluorine-18 fluorodeoxyglucose positron emission tomography/computed tomography (18F-FDG PET/CT), treatment outcomes, prognosis, and multidisciplinary decision-making were reviewed.
Results: The main challenges arise from the rarity of cardiac tumours, non-specific symptoms, and difficult differential diagnosis, particularly when distinguishing tumours from thrombi, vegetations, or anatomical variants. Echocardiography remains the first-line imaging modality; however, CMR provides the highest value for tissue characterisation, with reported accuracy of up to 98.4% in suspected cardiac tumours. 18F-FDG PET/CT significantly improves differentiation between benign and malignant masses, with pooled sensitivity of 89.2% and specificity of 82.8%. Surgical treatment of benign tumours, especially myxomas, is associated with favourable prognosis, low early mortality, and rare recurrence, whereas primary cardiac sarcomas are characterised by delayed diagnosis and poor outcomes.
Conclusions: The diagnosis of cardiac tumours should rely on a sequential multimodality imaging approach, early assessment of malignancy risk, and careful differentiation from pseudotumours. Benign tumours require timely surgical management, whereas malignant tumours should be treated in specialised centres using multidisciplinary, individualised strategies.

Keywords: cardiac magnetic resonance imaging, cardiac sarcoma, cardiac surgery, cardiac tumours, echocardiography

BIOMARKERS OF AORTIC STENOSIS PROGRESSION: CLINICAL SIGNIFICANCE OF INFLAMMATION, CALCIFICATION AND MYOCARDIAL REMODELLING

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Background and Aim: Calcific aortic stenosis is the most common acquired valvular heart disease in older adults, and its burden is increasing with population ageing. Although severity is mainly assessed by echocardiography, haemodynamic parameters do not fully explain individual differences in progression. This narrative review summarised recent evidence on biomarkers of aortic stenosis progression and their value for assessing disease activity, myocardial injury and clinical risk.
Materials and Methods: A structured narrative review was performed using PubMed/MEDLINE, Web of Science Core Collection and Scopus. Original studies, systematic reviews, meta-analyses, European guidelines and expert consensus documents published in 2020–2026 were analysed. Sources were selected according to three pathogenic domains: inflammation, calcification and myocardial remodelling.
Results: The most promising biomarkers of aortic stenosis activity are related to valvular calcification. Lipoprotein(a) [Lp(a)] and oxidised phospholipids show the strongest prognostic potential, as they are associated with faster valve calcification and greater increases in transvalvular velocity and pressure gradient. Inflammatory markers, especially C-reactive protein (CRP), reflect systemic inflammation but lack specificity for predicting individual progression. Cytokine profiles may provide additional information but require prospective validation. Biomarkers of myocardial remodelling, including B-type natriuretic peptide (BNP), N-terminal pro-B-type natriuretic peptide (NT-proBNP) and high-sensitivity cardiac troponins (hs-cTn), primarily reflect left ventricular pressure overload, fibrosis, subclinical decompensation and adverse clinical risk rather than valvular narrowing alone.
Conclusions: Aortic stenosis progression is heterogeneous and should not be assessed using echocardiographic parameters alone. Lp(a) and calcification-related markers best reflect valvular disease activity, whereas natriuretic peptides and troponins reflect myocardial response and clinical risk. Integrated, standardised and prospectively validated prognostic models combining laboratory biomarkers and imaging findings may help identify high-risk patients earlier, individualise follow-up and optimise intervention timing.

Keywords: aortic stenosis, biomarkers, lipoprotein(a), calcification, myocardial remodelling

PERCUTANEOUS CRYOABLATION FOR PANCREATIC INSULINOMA: A TWO-CASE SERIES AND LITERATURE REVIEW

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Background and Aim: Insulinoma is the most common functioning pancreatic neuroendocrine tumour and typically causes endogenous hyperinsulinaemic hypoglycaemia. Surgery remains standard treatment for localised disease, but postoperative morbidity, advanced age, operative risk and unfavourable anatomy may limit its suitability. Evidence for endoscopic ablation is increasing, whereas data on percutaneous cryoablation remain scarce. This report evaluated the rationale, technical feasibility and early outcomes of computed tomography (CT)-guided percutaneous cryoablation in two selected patients with pancreatic insulinoma.
Materials and Methods: Anonymised clinical, biochemical, imaging, procedural and follow-up data were retrospectively reviewed. A narrative literature review was performed using PubMed publications from 2020 to 2026 and relevant European guidance documents, including ESMO and ENETS recommendations. Findings were synthesised in relation to surgical and endoscopic treatment strategies.
Results: Case 1 was an 82-year-old man with recurrent fasting hypoglycaemia and a small pancreatic head lesion adjacent to the main pancreatic and common bile ducts. Owing to advanced age, operative risk and unfavourable anatomy, primary percutaneous cryoablation was selected. Hypoglycaemia resolved, and no early complications were detected. Case 2 was a 33-year-old man with recurrent hypoglycaemia caused by a residual pancreatic head lesion after endoscopic ablation and distal pancreatectomy. Percutaneous cryoablation was technically successful; follow-up magnetic resonance imaging showed no residual enhancing tumour, and hypoglycaemic episodes became less frequent. Mild transient serum amylase elevation and fever were observed.
Conclusions: Percutaneous cryoablation may be considered as an individualised local treatment option for selected insulinoma patients when surgery is undesirable or residual disease persists. Its main technical advantage is real-time CT visualisation of the ice ball, enabling controlled monitoring of the ablation zone. Its role remains undefined and requires further multicentre evidence.

Keywords: hypoglycaemia, insulinoma, minimally invasive treatment, pancreatic neuroendocrine tumour, percutaneous cryoablation

VIRTUAL CT DOSE REDUCTION IN EARLY-STAGE LUNG TUMOUR DIAGNOSIS: PULMONARY NODULE DETECTION AND CHARACTERISATION

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Background and Aim: Chest computed tomography (CT) is central to pulmonary nodule detection and characterisation. In early-stage lung tumour diagnosis, diagnostic value depends not only on nodule visibility, but also on reliable assessment of size, density, margins, solid component and risk category. This review evaluated how virtual chest CT dose reduction affects image quality, nodule detection, measurement accuracy and radiological characterisation.
Materials and Methods: A narrative literature review was performed using PubMed publications from 2020 to 2026. Search terms included lung cancer, pulmonary cancer, chest CT, low-dose CT, ultra-low-dose CT, virtual dose reduction, image quality, radiologist assessment, dose optimisation and image reconstruction. Full-text systematic reviews, clinical studies, simulation studies and phantom-based experimental studies were included.
Results: Twenty publications were analysed. Low-dose and ultra-low-dose CT protocols often remained diagnostically sufficient for basic nodule detection, particularly for larger solid nodules. However, dose reduction increased image noise and mainly affected more complex tasks, including measurement, density assessment, margin evaluation and category assignment. Small nodules, especially 3–8 mm, and subsolid nodules were most sensitive to dose reduction. Virtual dose reduction studies showed that overall tumour visibility may be preserved after substantial dose reduction, but very low simulated dose levels can impair size categorisation, localisation and interpretation. Model-based iterative and deep learning image reconstruction may improve image quality and measurement reliability, but do not fully eliminate these limitations.
Conclusions: CT dose optimisation should not be guided only by the lowest achievable radiation dose. The acceptable dose depends on the diagnostic task, nodule size and nodule type. Advanced reconstruction technologies can help preserve diagnostic value, but careful protocol selection remains essential for small or subsolid pulmonary nodules.

Keywords: early-stage lung tumour, image reconstruction, low-dose computed tomography, pulmonary nodule, virtual dose reduction

EFFECTS OF CHRONIC PSYCHOLOGICAL STRESS ON AORTIC MORPHOLOGY IN A RAT MODEL OF TYPE 1 DIABETES MELLITUS

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Background and Aim: Type 1 diabetes mellitus (T1DM) substantially increases cardiovascular risk through endothelial dysfunction, oxidative damage, and chronic low-grade inflammation. Psychological stress may further aggravate these pathological pathways by altering neuroendocrine regulation and vascular homeostasis. Although stress-related vascular dysfunction has been explored functionally, structural changes in large elastic arteries under combined diabetic and chronic stress conditions remain insufficiently characterised. This study investigated whether chronic psychological stress (CPS) contributes to histomorphological remodelling of the aortic wall in an experimental T1DM model.
Materials and Methods: 35 Wistar rats were randomly assigned into four groups: Control (n=8), Stress (n=10), T1DM (n=6) and T1DM +Stress (n=8). T1DM was induced by a single intraperitoneal injection of streptozotocin (65 mg/kg). CPS was modelled using daily restraint stress for 28 days. On day 29, animals were anaesthetised, the aorta was excised and processed for analysis. The thickness of the *tunica media* and the fenestrated elastic laminae was measured using QuPath 0.4.4. Statistical analysis was performed using Microsoft Excel and SPSS 29.0.
Results: Fenestrated elastic lamina thickness differed significantly between groups ($p<0.001$), with the greatest thickness in the Diabetes+Stress (median 4.30 μm) and the lowest in the Control (2.53 μm). *Tunica media* thickness showed the opposite trend, being thinnest in the Diabetes+Stress (mean 66.47 μm) and thickest in the Control (88.70 μm; $p<0.001$). Stress alone did not produce statistically significant changes compared with Control.
Conclusions: The combination of CPS and T1DM produces significant aortic remodelling, characterised by thickening of the fenestrated elastic laminae and

thinning of the *tunica media*. CPS alone did not induce significant structural changes but exacerbated diabetes-related alterations, suggesting a synergistic effect that may increase vascular complication risk. Psychological stress assessment should be considered an important component of care for patients with T1DM.

Keywords: aorta, psychological stress, type 1 diabetes mellitus, *tunica media*

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