PROCEEDINGS OF THE LATVIAN ACADEMY OF SCIENCES. Section B,
Vol. 80 (2026), No. 1/2 (760/761), pp. 103–116.

DOI: 10.2478/prolas-2026-0011

INTERNAL MEDICINE: GASTROENTEROLOGY: INTERNATIONAL SCIENTIFIC CONFERENCE ON MEDICINE AND HEALTH SCIENCES OF THE UNIVERSITY OF LATVIA, 2026

On 26 April 2026, the University of Latvia, in Rīga, hosted the International Scientific Conference on Medicine and Health Sciences.

The oral presentations and posters of the Gastroenterology section aim to demonstrate the latest research results in a wide range of gastrointestinal and liver diseases. Two oral presentations deal with Barrett's oesophagus by highlighting risk factors, clinical, and endoscopic features as well as sharing experience of the implementation of an innovative treatment method to prevent malignant transformation. In terms of research findings on gastrointestinal-related diseases, three study results elaborate on malignant and premalignant gastric conditions by illustrating transcriptomic alterations in patients with autoimmune atrophic gastritis and gastric neuroendocrine tumour, the diagnostic accuracy of endoscopic evaluation of gastric intestinal metaplasia, and real-practice *H. pylori* diagnostic and treatment challenges. One study reports on validated patient-reported outcome tool for assessing gastroparesis severity in an endoscopy cohort. Concerning colorectal oncogenetics, a study covers K_{RAS} codon-specific mutation prevalence in certain anatomical subtypes of colorectal cancer. Two reports deal with the assessment of malnutrition and sarcopenia by applying different assessment approaches in patients with liver cirrhosis and inflammatory bowel disease. Authors from GISTAR study report on research evidence for the correlation of gut microbiota alteration with visceral obesity. One report analyses the impact of the adherence to the Nordic diet on the incidence of major chronic diseases. Two studies provide in-depth insight into potential common pathogenetic pathway between gastrointestinal tractand type 1 diabetes mellitus. One study results evaluate HBV infection impact on multiorgan damage in patients with diabetes mellitus. Regarding hepatobiliary disease research, one study addresses issue on *Toxoplasma gondii* impact on acute cellular rejection after liver transplantation, other evaluates ERCP intervention and reintervention rates in malignant biliary obstruction.

Aiga Stāka

ASSOCIATION OF GUT MICROBIOTA ALPHA DIVERSITY AND AKKERMANSIA MUCINOPHILA WITH ANTHROPOMETRIC INDICES OF VISCERAL OBESITY IN THE GISTAR STUDY

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Background. Visceral adiposity is a major clinical concern, as abdominal fat is metabolically active and triggers systemic inflammation and gut microbiota (GM) dysbiosis. Conversely, the GM plays a role in regulating fat distribution and the development of visceral obesity, as assessed by the sagittal abdominal diameter (SAD) and the waist-to-hip ratio (WHR).

Aim. The study analysed GM alpha-diversity and specific taxonomic shifts associated with obesity in other studies, including *Akkermansia muciniphila* (AM), *Christensenella minuta* (CM), *Parabacteroides distasonis* (PD), *Parabacteroides goldsteinii* (PG), *Megamonas hypermegale* (MH) in individuals affected by visceral obesity.

Methods. The analysis included 548 individuals (393 females, 159 males), aged 40–64, from the GISTAR study. Participants were categorised into four groups based on SAD or WHR values: non-obese females (NoF; SAD < 20.8 cm; WHR < 0.85) and obese females (OF; SAD ≥ 20.8; WHR ≥ 0.85); non-obese males (NoM; SAD < 22.8; WHR < 0.90) and obese males (OM; SAD ≥ 22.8; WHR ≥ 0.90). Shotgun metagenomic sequencing was used for GM analysis. A-diversity was measured using the Shannon index (SI) and the efficient number of species (ENS). The Mann–Whitney test was used to compare the data. Data analysis was performed using Microsoft Excel and IBM SPSS Statistics 29.0.2.

Results. For females, both SI and ENS were significantly higher in SAD-defined NoF ($p < 0.001$), and so was the relative abundance of AM ($p = 0.004$). SI and ENS were higher in WHR-defined NoF ($p = 0.004$), and so was AM ($p = 0.020$). For males, SI and ENS were significantly higher in SAD-defined NoM than OM ($p < 0.001$) and in WHR-defined NoM than OM ($p = 0.002$) (Table 1). No significant differences were observed in PD, PG, CM, and MH in any of the groups.

Conclusions. The findings reveal significantly lower α-diversity in both genders with visceral adiposity; however, the relative abundance of *A. muciniphila* is higher in the NoF group based on WHR and SAD, but shows no difference in the male groups.

Acknowledgements. European Commission programme "EU4Health" project "Towards gastric cancer screening implementation in the European Union (TOGAS)" funding from the European Union's EU4Health programme under grant agreement No. 101101252.

Table 1. Gut microbiota alpha-diversity indices and *Akkermansia muciniphila* median, minimum, and maximum values, stratified by sex and obesity status

	NoF (n = 158) SAD 20.8	OF (n = 235) SAD ? 20.8	NoF (n = 229) WHR 0.85	OF (n = 162) WHR ? 0.85	NoM (n = 66) SAD 22.8	OM (n = 93) SAD ? 22.8	NoM (n = 40) WHR .90	OM (n = 119) WHR ? 0.90
SI, median (min - max)	1.00 (0.57 – 1.54)	0.95 (0.58 – 1.41)	0.98 (0.57 – 1.54)	0.95 (0.60 – 1.39)	1.04 (0.73 – 1.38)	0.94 (0.51 – 1.29)	1.04 (0.73 – 1.24)	0.95 (0.51 – 1.38)
ENS, median (min - max)	2.72 (1.77 – 4.69)	2.59 (1.78 – 4.09)	2.67 (1.77 – 4.69)	2.59 (1.82 – 4.02)	2.82 (2.07 – 3.98)	2.55 (1.67 – 3.63)	2.83 (2.07 – 3.46)	2.59 (1.67 – 3.98)
AM, median (min -max)	0.30 (0 – 13.29)	0.10 (0 – 12.52)	0.24 (0 – 13.29)	0.10 (0 – 8.41)	0.01 (0 – 2.65)	0.003 (0 – 3.79)	0.03 (0 – 2.65)	0.002 (0 – 3.79)

ASSOCIATION OF MULTIMORBIDITY WITH ADHERENCE TO THE NEW NORDIC DIET

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Background. The New Nordic Diet (NND) is a healthy, environmentally sustainable dietary pattern based on traditional Nordic foods. It emphasises mainly plant-based, locally sourced foods, alongside fish and other natural products, while promoting water and milk over sugary drinks and limiting processed foods, refined grains, and added sugar. Multimorbidity is the presence of two or more chronic diseases in one person. It becomes more common with age and is linked to poorer health, lower quality of life, and greater healthcare use.

Aim. The aim of the study was to evaluate the association between adherence to the NND and multimorbidity among adults in the GISTAR study.

Methods. This retrospective analysis of the GISTAR study population from two towns in Latvia included 1815 respondents, aged 40–64. Adherence to the NND was assessed using an NND score derived from a food frequency questionnaire. The points are summed to create a total score ranging from 0 to 10. For descriptive analyses, NND adherence was categorised as low (0–3), medium (4–5), or high (6–10). Multimorbidity was defined as a simple disease count based on self-reported physician-diagnosed chronic conditions (range 0–8). Participants with extreme multimorbidity counts (8 chronic conditions; n = 11) were excluded. Data analysis was performed using Microsoft Excel and IBM SPSS Statistics 29.0.2.

Results. Of 1815 respondents, 65.5% were women. The mean age was 53.4 ± 6.6 years (±SD). Overall adherence to the NND was moderate, with the largest proportion showing medium adherence (41.4%), while 31.0% had high and 27.5% low adherence. Multimorbidity ranged from 0 to 8 (2.91 ± 1.85 (±SD). Adherence to the NND was not associated with multimorbidity in multivariable analysis, controlling for age and sex ($\beta = 0.003$, 95% CI –0.037 to 0.043, $p = 0.894$). The model demonstrated modest explanatory power (adjusted $R^2 = 0.127$). No significant correlation was observed between NND adherence and multimorbidity. Age was significantly associated with greater multimorbidity in linear regression ($\beta = 0.076$, 95% CI 0.063–0.088, $p < 0.001$), explaining 7.4% of the variance ($R^2 = 0.074$; adjusted $R^2 = 0.073$).

Conclusion. In this study, adherence to the NND was not associated with multimorbidity after adjustment for age and sex. However, age was a significant factor associated with the number of chronic conditions, with increasing age predicting a higher disease burden. These findings suggest that dietary pattern alone may not be a major determinant of overall disease burden in middle-aged adults.

Acknowledgements. European Commission programme "EU4Health" project "Towards gastric cancer screening implementation in the European Union (TOGAS)" funding from the European Union's EU4Health programme under grant agreement No. 101101252.

EVALUATION OF SUCCESS AND REINTERVENTION RATES OF ERCP IN MALIGNANT BILIARY OBSTRUCTION

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Background. Malignant biliary obstruction (MBO) is commonly observed as a result of pancreatic or biliary carcinomas or metastatic malignancy and can lead to severe complications including cholangitis, obstructive jaundice, malabsorption and hepatic dysfunction, all contributing to increased morbidity. In several patients, MBO is diagnosed at later stages when curative and surgical options are quite limited. Therefore, palliative biliary decompression plays an important role in relieving symptoms, preventing infectious complications, and improving quality of life.

Aim. To evaluate the success of therapeutic ERCP, the correlation with the cause of occlusion, the reintervention rate and to associate it with indicators requiring repeated procedures. By assessing real life cases of patients with MBO, it can be better understood that different types of options exist and optimise patient care.

Methods. In this retrospective study, digital endoscopy records of 48 MBO ERCP patients were acquired from the PSCUH Gastroenterology Department. The accumulated

data contained information on patient demographics, malignancy type and the location of obstruction. Other treatment factors were explored, including stent characteristics, success rate of stent placement procedure, amount of ERCP procedures for every patient and types and number of complications within cases. Additionally, reintervention rate and its causes were also analysed.

Results. From the 48 patients, 32 are female, making it 66.7%. The mean age is 74.2. The most common tumour type in ICD-10 codes is C25.0 'Malignant Neoplasm of Pancreatic Head' and that leading to the most frequent anatomical location being the pancreatic head with 45.8%. Metallic stents are the most common research suggests, 70.5%, with uncoated being the most common among them with 56.8%. Reintervention rates being 37.5%. Success rate with 77.1%. Chi square was performed, correlation between reintervention rate and stent type, was found out to be statistically significant with p value of 0.003725894868.

Conclusion. ERCP data collection revealed a high technical success rate in patients with MBO of which primarily resulted from pancreatic head neoplasms. Metallic stents, specifically the uncoated types, were most predominantly utilised and showed a statistically significant correlation with low reintervention rates. Therefore, making stent selection as a key factor that influences procedural outcomes and optimising overall clinical outcomes of patients.

Acknowledgements. Thesis supervisor: Aldis Puķītis, Dr. med., Associate Professor.

EOSINOPHILIC INFILTRATION IN THE GASTROINTESTINAL TRACT OF PATIENTS WITH TYPE I DIABETES MELLITUS, PRELIMINARY DATA

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Background. Gastrointestinal (GI) symptoms are commonly reported in individuals with type 1 diabetes mellitus (T1DM), yet underlying mucosal changes remain poorly characterised. While eosinophilic infiltration in GI biopsies is typically linked to allergic, infectious, or primary eosinophilic gastrointestinal disorders, its prevalence and significance in T1DM have not been systematically assessed.

Aim. The aim of this study was to determine the prevalence of eosinophilic infiltration in GI biopsy samples from T1DM patients and evaluate its association with histopathological features, endoscopic findings, and faecal calprotectin levels.

Methods. 21 T1DM patients with GI symptoms or elevated faecal calprotectin (> 50 μg/g) who underwent upper GI endoscopy and/or colonoscopy were included. Endoscopic biopsy specimens were examined by a histopathologist and assessed for eosinophils. Endoscopic findings were classified as normal (no detectable abnormalities) or pathological (visible mucosal changes). Faecal calprotectin levels were assessed. Associations between eosinophilic infiltration and histological or endoscopic parameters were analysed using χ^2, Fisher's exact, and Mann–Whitney U tests.

Results. Eosinophilic infiltration was detected in 8 of 21 patients (38%) and was present in both endoscopically normal and pathological mucosa. It more frequently co-occurred with other inflammatory changes, particularly lymphoid follicles/lymphoid aggregates (n = 7, 33%) and lymphoplasmacytic infiltration (n = 5, 24%), demonstrating a statistically significant association (p = 0.005, χ^2 test; p = 0.013, Fisher's exact test). Faecal calprotectin levels demonstrated a non-normal distribution and were therefore described using the median and interquartile range. The median faecal calprotectin level was 32.53 μg/g (Q25–Q75: 2.70–20.0). Faecal calprotectin levels did not differ statistically significantly between patients with and without eosinophilic infiltration of the colonic mucosa (p = 0.505, Mann–Whitney U test). Only two patients had faecal calprotectin levels above 50 μg/g. Eosinophilic infiltration occurred irrespective of macroscopic endoscopic appearance. Patients were divided into two groups based on endoscopic findings (normal mucosa versus pathological mucosal changes), and no statistically significant difference in eosinophilic infiltration was observed between these groups (p > 0.05, Fisher's exact test).

Conclusion. These findings suggest that eosinophilic infiltration in the GI tract of T1DM patients may occur subclinically and is not reflected by endoscopic findings or standard inflammatory markers, indicating possible underlying mucosal immune activation. Further studies are needed to clarify the clinical relevance and long-term implications of these histological changes

Acknowledgements. Project Lzp-2020/1-0138 "Association between glucose variability, intestinal disorders and progression of diabetic nephropathy in type 1 diabetes patients".

HELICOBACTER PYLORI TREATMENT AND DIAGNOSTICS IN GENERAL PRACTICE

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Background. *Helicobacter pylori* is one of the most common infections in the world. Prevalence of the infection varies in different regions ranging from 20 up to 90% of the population. The infection is acquired most often in childhood, and its prevalence is connected closely to the living conditions, hygiene level and socioeconomical status. *H. pylori* infection is still a significant public health problem in Latvia. According to the *H. pylori* epidemiological survey in 2012, where 3564 adults took part, the prevalence of the infection was 60%, which suggests a very high prevalence in the adult population. In later, broader analysis, which spanned from the period from 2010 until 2022, a slight decrease was observed — prevalence had decreased to 55.4%. These differences could be connected to the improvements in public health, broader accessibility of the diagnostics, improvement of the hygiene as well as possible increased awareness of the public about the significance of *H. pylori* 8. However, these indicators are still high compared to the other European countries, especially in Western Europe. The infection mainly is transmitted via faecal–oral or oral–oral routes, which means that insufficient hygiene and close contact in the household, for example, between parents and children, are significant risk factors. Oral cavity is considered the primary route of the *H. pylori* infection transmission in the human body. Since infection most commonly occurs in childhood, public-level prevention measures should place special emphasis on the family environment and early diagnosis.

Aim. To identify the diagnostic and treatment strategies for *Helicobacter pylori* infection and explore related challenges and barriers in general practice.

Methods. A qualitative research method was applied through interviews with general practitioners (n = 10), 10 gastroenterologists (n = 10), from which 8 (n = 8) perform gastrointestinal endoscopy between 10 November 2024 and 28 May 2025. The collected data were analysed using content analysis.

Results. The study revealed that general practitioners most frequently use non-invasive diagnostic methods (stool antigen test and urea breath test), whereas gastroenterologists prefer endoscopy with biopsy. In primary care, treatment is primarily based on the standard triple therapy, while gastroenterologists more often choose regimens tailored to resistance risks. Key challenges include the lack of access to antibiotic resistance testing, limited availability of bismuth-based medications, and insufficient familiarity with clinical guidelines.

Conclusions. There is a need for clear, easily accessible, and updated national guidelines for general practitioners, aligned with European recommendations. Access to resistance testing and effective therapies should be improved, along with enhanced interdisciplinary collaboration and continuing professional education to ensure more effective management of *H. pylori* infection.

DIAGNOSTIC ACCURACY OF ROUTINE ENDOSCOPIC ASSESSMENT OF THE PRESENCE OF INTESTINAL METAPLASIA IN THE STOMACH IN A SINGLE CENTRE IN LATVIA

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Background. Intestinal metaplasia (IM) is a precancerous condition of the stomach used for stomach cancer risk stratification, yet it is well known that its endoscopic recognition and reporting in routine practice is lacking. The importance of recognising IM and taking targeted biopsies by using virtual chromoendoscopy (NBI) for the most accurate histological mapping is unfortunately still underestimated by many professionals despite international guidelines.

Aim. To evaluate the diagnostic accuracy of endoscopic assessment of IM in the stomach after implementing the use of a validated endoscopic scoring system.

Methods. Single-centre retrospective analysis (Latvia; December 2023–December 2025) of patients undergoing upper endoscopy with complete five biopsy mapping (antrum lesser/greater curvature, incisura, corpus lesser/greater cur-

vature, incisura, corpus lesser/greater curvature). IM was graded with updated Sydney System (0–3). Endoscopists recorded suspicion (coded as yes/no) for IM during endoscopy using the EGGIM scoring system (endoscopic grading of gastric intestinal metaplasia), which had not been a requirement beforehand. Presence of IM was defined as grade ?1 at any site. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) were calculated.

Results. Among 334 patients, targeted biopsies identified IM in 121/334 (36.2%). Endoscopic suspicion of any IM had a sensitivity of 41.3% (50/121), specificity 88.3% (188/213), PPV 66.7% (50/75), and NPV 72.6% (188/259).

Conclusions. Based on the results, a non-suspicious assessment of gastric mucosa did not reliably exclude any IM. However, the requirement for using NBI to identify and EGGIM to score IM in the stomach substantially increased the use of targeted biopsies, the recognition and reporting of IM, as well as the assessment of its extent beyond the antrum. It would be valuable to assess differences between endoscopists as well as reassess accuracy after a longer period allowing more time for practice.

TWO-SYMPTOM SCREEN BASED ON ANMS GCSI-DD TO RULE OUT MODERATE-TO-SEVERE GASTROPARESIS SYMPTOM BURDEN IN AN ENDOSCOPY COHORT

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Background. The American Neurogastroenterology and Motility Society Gastroparesis Cardinal Symptom Index–Daily Diary (ANMS GCSI-DD) quantifies upper gastrointestinal symptom burden. In routine endoscopy workflows, a brief screener may reduce response burden by rapidly identifying patients unlikely to have clinically significant symptoms.

Aim. To evaluate the use of only two symptoms (early satiety, vomiting) as a screening tool for clinically significant gastroparesis symptoms using an adjusted questionnaire in Latvian based on ANMS GCSI-DD.

Methods. A retrospective cross-sectional analysis of adults undergoing diagnostic upper endoscopy at a centre in Latvia was conducted (October 2023–April 2025). Participants completed a single adjusted questionnaire in Latvian based on the ANMS GCSI-DD (0–4 response metric). Total GCSI-DD was calculated as the mean of nausea, early satiety, postprandial fullness, upper abdominal pain, and vomiting episodes (each 0–4) with a total score of ≥2 defining moderate-to-severe symptom burden (clinically significant), a threshold commonly used as a cut-off for inclusion in trials. The diagnostic yield of the total score was compared to the use of only two symptoms (early satiety ≥2 and/or vomiting episodes ≥2) by calculating sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) using 95% confidence intervals (CI).

Results. Among 951 participants (mean age 53.2 years; 76.1% female), 24 (2.5%) had total GCSI-DD ≥2. The two-symptom screen was positive in 101 (10.6%). Classification counts were true positives 24, false positives 77, true negatives 850, false negatives 0. Sensitivity was 100.0% (95% CI 85.8–100.0) and specificity 91.7% (95% CI 89.7–93.4). NPV was 100.0% (95% CI 99.6–100.0), while PPV was 23.8% (95% CI 15.9–33.3), reflecting the low prevalence of moderate-to-severe symptom burden.

Conclusions. A two-symptom screen (early satiety ≥2 or vomiting episodes ≥2) based on ANMS GCSI-DD was able to rule out moderate-to-severe total symptom burden in this low-prevalence endoscopy cohort, suggesting that a two-symptom screen can be used as a starting tool and the completion of the full questionnaire could be reserved for screen-positive patients. External validation in higher-prevalence settings and analysis against objective motility testing is warranted but is complicated by its limited accessibility in routine clinical practice.

MALNUTRITION AND SARCOPENIA IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE: ASSESMENT BASED ON NUTRITIONAL CRITERIA AND HANDGRIP DYNAMOMETRY

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Background. Inflammatory bowel diseases (IBD), ulcerative colitis (UC) and Crohn's disease (CD), are chronic, immune-mediated disorders where malnutrition is a common and clinically important complication and a major contributor to chronic weight loss, muscle loss, and is directly related to the development of sarcopenia.

Aim. To evaluate the prevalence of malnutrition and sarcopenia in IBD patients, to assess muscle strength using handgrip dynamometry, and to analyse the association between faecal calprotectin levels, disease activity indices, inflammation, nutritional status, and muscle function.

Methods. This cross-sectional study included 30 patients with IBD. Nutritional status was assessed using percentage weight loss and the Patient-Generated Subjective Global Assessment (PG-SGA). Muscle strength was evaluated by dominant handgrip dynamometry. Disease activity was assessed using the Mayo score for UC and CD Activity Index (CDAI). Intestinal inflammation was evaluated using faecal calprotectin and C-reactive protein. Statistical analyses performed using SPSS version 29.0.

Results. Thirty patients with IBD were included. Sarcopenia was present in 16.7% of patients. Weight loss > 5% occurred in 26.7% over one month and 40% over six months. Mean muscle strength was 34.03 kg, and mean BMI was 22.77; 50.0% of patients had normal body weight. The cohort comprised 60% men, 40% women, with a mean age of 34.4 years; 66.7% UC and 33.3% CD. No significant difference in grip strength was observed between patients with weight loss ≤ 5% and > 5% over six months ($U = 77.0$, $p = 0.200$). In UC patients, a weak, non-significant negative correlation was observed between Mayo score and grip strength ($r = –0.175$, $p = 0.460$). BMI showed a weak positive, non-significant correlation with muscle strength ($r = 0.267$, $p = 0.153$). A moderate, positive, and statistically significant correlation was found between PG-SGA score and Mayo score ($r = 0.460$, $p = 0.041$). Binary logistic regression showed that faecal calprotectin significantly predicted malnutrition (> 5% weight loss over six months) ($\chi^2 = 8.22$, $p = 0.004$), explaining 53% of variance (Nagelkerke $R^2 = 0.529$), with good model fit (Hosmer–Lemeshow $p = 0.78$). Higher calprotectin levels were associated with increased odds of malnutrition ($p = 0.005$). Calprotectin levels differed significantly between patients with > 5% and ≤ 5% weight loss ($t = –2.36$, $p = 0.036$). CRP levels were also significantly higher in patients with 5% weight loss ($U = 51.5$, $p = 0.015$).

Conclusions. Malnutrition and sarcopenia are common in patients with IBD. Muscle strength showed no significant association with disease activity, whereas nutritional status was associated with inflammatory burden, as indicated by faecal calprotectin and CRP levels. Faecal calprotectin was identified as a predictor of malnutrition. These findings support the importance of early nutritional screening in patients with IBD.

Acknowledgements. No conflict of interest.

CHRONIC HBV INFECTION AS A FACTOR OF MULTIORGAN DAMAGE IN PATIENTS WITH DIABETES MELLITUS

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Background. Diabetes mellitus and chronic hepatitis B virus (HBV) infection have a significant impact on morbidity, mortality, and quality of life. Chronic HBV infection is characterised by persistent viral replication, progressive hepatic inflammation, and the development of liver fibrosis.

Aim. The aim of this study was to investigate the effect of chronic HBV infection on the severity of liver fibrosis and multiorgan changes in patients with diabetes mellitus.

Methods. The study included 200 patients with diabetes mellitus, divided into two groups: patients without chronic HBV infection (n = 100) and patients with chronic HBV infection (n = 100). HBV viral load was assessed using polymerase chain reaction (HBV DNA). Liver fibrosis was evaluated using non-invasive indices. Statistical analysis was performed using SPSS Statistics software.

Results. The median age of patients in both groups was comparable and amounted to 55 years. In patients with diabetes mellitus and chronic HBV infection, the median haemoglobin level was lower (118–122 g/l) compared with patients without HBV infection (132–135 g/l; $p < 0.05$), while median red blood cell count (4.3–4.5 $\times 10^{12}$/l) and mean corpuscular volume (86–89 fl) were comparable. Median MCH and MCHC values were lower in the HBV group (27–28 pg and 310–320 g/*L* versus 29–30 pg and 330–340 g/l, respectively; $p < 0.05$), consistent with anaemia of chronic disease.

The median total leukocyte count was lower in patients with HBV infection (3.6–3.9 $\times 10^9$/l vs 5.4–5.8 $\times 10^9$/l; $p < 0.05$), accompanied by relative lymphocytosis (34–38% vs 26–30%; $p < 0.05$) with comparable neutrophil percentages. The median platelet count was significantly lower in patients with HBV infection (135–150 $\times 10^9$/l vs 240–250 $\times 10^9$/l; $p < 0.05$).

Biochemical liver function parameters showed higher median alanine aminotransferase levels (68–75 U/l vs 28–32 U/l; $p < 0.05$) and total bilirubin levels (24–28 μmol/l vs 12–15 μmol/l; $p < 0.05$). PCR analysis confirmed active HBV replication.

Conclusions. Chronic HBV infection in patients with diabetes mellitus is associated with progression of liver fibrosis and pronounced multiorgan damage affecting the hematopoietic system, immune status, and liver function.

Acknowledgements. The authors declare no conflict of interest. No funding was received.

BARRETT'S OESOPHAGUS: CLINICAL AND ENDOSCOPIC FEATURES AND RISK FACTORS

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Background. Barrett's oesophagus is a serious complication of long-standing gastroesophageal reflux disease (GERD) and is characterised by the development of intestinal metaplasia of the stratified squamous epithelium of the oesophagus under the influence of chronic acid reflux.

Aim. The aim of the current study is to evaluate clinical, endoscopic, and behavioural factors associated with the development of Barrett's oesophagus in patients with GERD.

Methods. The study included 43 patients examined at LS Clinic LLP within the framework of the compulsory social health insurance program: 37 patients with GERD and 6 patients with Barrett's oesophagus. All patients underwent upper gastrointestinal endoscopy. Statistical data analysis was performed using SPSS software. In parallel, a meta-analysis of risk factors was conducted based on the results of 100 original articles retrieved from the PubMed database.

Results. Barrett's oesophagus was detected in 13.8% of patients with GERD, which exceeds population-based estimates and may be explained by referral of patients with long-standing and severe GERD to an endoscopy unit. Clinical and/or endoscopic signs of GERD were identified in 100% of patients with Barrett's oesophagus. Age ≥ 52 years was associated with a higher prevalence of Barrett's oesophagus. No erosive changes of the oesophageal mucosa were detected in patients with Barrett's oesophagus. *Helicobacter pylori* infection was absent in all patients with Barrett's oesophagus. Late meals were reported by 100% of patients with Barrett's oesophagus and demonstrated the strongest association with the disease. The odds ratio for the presence of Barrett's oesophagus in patients with GERD was approximately 11.2, reflecting a strong association between the conditions. Low-grade or high-grade dysplasia was identified in 33% of patients with Barrett's oesophagus.

Conclusions. In the studied cohort, Barrett's oesophagus developed in the context of gastroesophageal reflux disease, confirming the key role of chronic reflux in the pathogenesis of Barrett's oesophagus. Older age and longer duration of GERD were identified as risk factors for Barrett's oesophagus. Barrett's oesophagus was predominantly associated with a non-erosive course of GERD, reflecting the chronic nature of mucosal injury. Late meals represent the most significant behavioural risk factor. The absence of *H. pylori* infection in patients with Barrett's oesophagus is consistent with the concept of a potential protective role of *Helicobacter pylori*-associated gastritis.

Acknowledgements. The authors declare no conflicts of interest.

MARKERS OF INTESTINAL BARRIER DYSFUNCTION AND GUT-DERIVED METABOLITES LINKED TO T1D NEPHROPATHY PROGRESSION

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Background. Type 1 diabetes (T1D) is associated with complications, among which chronic kidney disease due to diabetic nephropathy (DN) is one of the most common microvascular complications. DN is a leading cause of mortality in individuals with T1D and is associated with reduced quality of life and increased healthcare costs.

Previous studies have shown that the progression of DN is influenced by gut dysbiosis and increased small intestinal permeability. These findings highlight the importance of the gut–kidney axis in chronic kidney disease.

Aim. The aim of the study was to investigate the association between intestinal permeability markers and DN stages in T1D.

Methods. This collaborative study between the University of Latvia and the University of Helsinki used data from the LatDiane and FinnDiane cohorts. A total of 170 participants were included (87 FinnDiane, 83 LatDiane): 130 with T1D and 40 control individuals (20 per cohort). Participants were classified as normoalbuminuric (n = 77), microalbuminuric (n = 33), macroalbuminuric (n = 20), controls (n = 40). Five biomarkers were selected to assess endotoxemia and intestinal integrity, including trimethylamine N-oxide (TMAO), intestinal fatty acid-binding protein (FABP2), and lipopolysaccharide activity level (LPS) and calprotectin. Non-parametric analyses were applied; and data are presented as median (Q1–Q3). Biomarker comparisons across DN groups were conducted using ANCOVA models adjusted for age, sex, BMI, and cohort, with rank-transformed continuous variables. All statistical analyses were performed using R (version 4.5.2).

Results. TMAO concentrations increased with the progression of DN, with the highest levels observed in patients with macroalbuminuria ($p < 0.001$). Similarly, FABP2 levels increased with worsening kidney function, peaking in the macroalbuminuria group ($p < 0.001$). No statistically significant differences were observed in LPS levels between groups ($p = 0.195$).

Faecal calprotectin levels were increased in all diabetic nephropathy groups in comparison with the control group ($p = 0.038$). An increase in calprotectin levels was observed early in the disease course, as demonstrated in the normoalbuminuria group with diabetic nephropathy.

Conclusions. Biomarkers of intestinal integrity (FABP2) and dysbiosis (TMAO) were significantly increased compared with controls and were associated with the severity of DN. Elevated calprotectin levels were observed in all DN groups. In contrast, circulating endotoxin activity measured showed no significant differences between groups, possibly due to biological variability and limitations.

Acknowledgements. Funding has been received: European Regional Development fund, Project No. 1.1.1.8/1/24/I/003 "Strengthening the Research and Development Capacity of Doctoral Studies at the University of Latvia in the Fields of Smart Specialisation".

No conflict of interest to declare.

ASSOCIATION BETWEEN KRAS CODON-SPECIFIC MUTATIONS AND ANATOMICAL TUMOUR LOCALISATION IN COLORECTAL ADENOCARCINOMA

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Background. Colorectal adenocarcinoma (CRC) exhibits significant molecular and anatomical heterogeneity. KRAS mutations in codons 12 and 13 are primary oncogenic drivers; however, their distribution across anatomical segments remains a subject of investigation. Emerging evidence suggests that specific nucleotide substitutions may follow a non-random topographical distribution.

Aim. To evaluate the association between specific KRAS point mutations and primary tumour localisation using detailed ICD-10 (SSK-10) mapping.

Methods. A retrospective analysis was conducted on patients with CRC harbouring KRAS mutations (2022–2023). Tumours were classified by primary site using ICD-10 codes (C18.0–C21) and grouped into proximal or distal segments. Clinicopathological data, including pTNM stage, lymphovascular or perineural invasion, and histological grade, were recorded. Statistical associations were assessed using Fisher's Exact Test ($\alpha = 0.05$).

Results. Among 54 patients, the rectum (C20) was the most frequent primary site (31.5%). In the mutation-characterised subset (n = 16), the most frequent variants were G12D (50%) and G13D (25%). G12D mutations showed a distal predominance (62.5%), while G13D variants occurred exclusively in distal segments (100%; $p = 0.466$). All analysed cases demonstrated a moderately differentiated histological grade (G2). While the variant-specific distribution did not reach statistical significance in this cohort, the exclusive distal localisation of G13D aligns with observed biological trends in recent literature.

Conclusion. In this cohort, KRAS G13D mutations were localised strictly to distal tumour sites. These findings emphasise the molecular heterogeneity of CRC and support the integration of precise anatomical mapping in molecular pathology to improve risk stratification and personalised therapeutic approaches.

Acknowledgements. There are no conflicts of interest to disclose. A sincere thank you to the Rīga East Clinical University Hospital Pathology Centre for access to patient data.

TREATMENT OF BARRET OESOPHAGUS WITH THE NOVEL HYBRID APC TECHNIQUE, FIRST LATVIAN EXPERIENCE

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Background. Barrett oesophagus (BE) is a premalignant condition of the lower oesophagus which can increase the incidence rate of oesophageal adenocarcinoma, and is the 6th leading cause of cancer-related death worldwide. Hybrid argon plasma coagulation (H-APC) is a novel endoscopic ablation technique used for the treatment of BE which combines submucosal injection of saline and methylene blue solution to lift the mucosa followed by argon plasma coagulation, which delivers non-contact thermal energy to ablate the targeted epithelium.

H-APC technique is a relatively novel method which has shown its effectiveness in many studies, and to our knowledge, such an experience is the first in Latvia. Currently, there are only observational recommendations. The main advantage of H-APC is that it is safer than simple APC and is at least as effective as other endoscopic ablation techniques.

Aim. Preliminary data from a prospective observational study to evaluate the effectiveness of H-APC technique in patients with histologically confirmed BE, compare histological changes before and after coagulation and to assess the safety of the procedure, including complication rates and tolerability.

Methods. We prospectively collected data from 10 patients. All patients were confirmed by endoscopy and histology to have had long segment BE 3 cm and underwent H-APC ablation. During endoscopy all visible lesions were

initially sprayed with 1.5% acetic acid to enhance the visibility of the metaplastic tissue. First ablation was done by pulsed APC 50–60 W, then the coagulated surface was scrapped, and a second ablation was done at 40 W. Follow-up endoscopy was performed after 12–16 weeks. Complete eradications were confirmed visually and by histology.

Results. 6 out of 10 patients received a repeated endoscopic procedure in order to evaluate the effectiveness of treatment. 4 patients were scheduled for control endoscopy in few weeks' time. All 6 patients were found to have a full removal of metaplasia, confirmed histologically; only 1 patient required additional session of ablation. All procedures were well tolerated. No complications such as bleeding, dysphagia, or stricture formation were noticed.

Conclusion. Our preliminary results suggest that H-APC seems to be relatively safe and effective method for long segment BE treatment, however, considering the novelty of the procedure for treatment of patients with Barrett oesophagus in Latvia, a larger number of patients and longer time period are required to fully assess the safety and effectiveness of such a treatment.

Acknowledgements. Nothing to declare.

TRANSCRIPTOMIC ALTERATIONS IN PATIENTS WITH AUTOIMMUNE ATROPHIC GASTRITIS AND GASTRIC NEUROENDOCRINE TUMOURS

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Background. Autoimmune atrophic gastritis (AAG) is a rare autoimmune disorder with increasing prevalence, characterised by progressive gastric mucosal atrophy, hypergastrinemia, and hypochlorhydria, and associated with an increased risk of type I gastric neuroendocrine tumors (gNETs). Despite growing recognition, the molecular mechanisms driving AAG-associated gNET development remain poorly understood, as most gene expression studies focus on advanced disease stages. Transcriptomic profiling may provide critical molecular insights to support earlier diagnosis, risk stratification, and prevention.

Aim. The aim of the study is to investigate the transcriptomic alterations underlying the molecular mechanisms, which may be involved in the progression of AAG to gNETs.

Methods. The study used biopsies, collected during esophagogastroduodenoscopy, from patients with AAG (n = 19), gNETs (n = 10), and controls (n = 16) collected from Rīga East Clinical University Hospital between May 2022 and April 2025. The samples' RNA was extracted, and subsequently rRNA-depleted, strand-specific RNA libraries were prepared. Differential gene expression and pathway enrichment analyses were performed in order to identify the shared and distinct transcriptomic alterations.

Results. Transcriptomic analysis showed distinction between the controls and disease groups, with greater heterogeneity in AAG and tighter clustering in type 1 gNETs samples. Gene expression analysis revealed that gNETs and AAG share some transcriptional alterations compared with controls, but with distinct profiles. gNETs were enriched for genes related to secretory and neuroendocrine functions, whereas AAG predominantly showed changes linked to epithelial regeneration and mitochondrial processes. Comparison between AAG and gNETs revealed further activation of neuroendocrine and transport-related genes in gNETs.

Conclusions. The study demonstrates distinct transcriptomic profiles in AAG and gNETs. It provides new information regarding the molecular composition of these diseases, and provides deeper insight into the transcriptomic alterations, which contributes to the understanding of autoimmune gastritis and gNETs development.

Funding. Research was supported by the Latvian Council of Science grant "Targeting autoimmune mechanisms for prevention of gastric neuroendocrine tumours", No: lzp-2022/1-0102. Rihards Saksis was supported by the project No. 1.1.1.8/1/24/I/003 "Strengthening the Research and Development Capacity of Doctoral Studies at the University of Latvia in the Fields of Smart Specialisation".

Acknowledgements. The authors thank the Latvian Biomedical Research and Study Centre as well as the Genome Database of the Latvian Population for providing the infrastructure and equipment for the research. We also acknowledge the Rīga East University Hospital for material collection and patient recruitment.

The authors declare no conflict of interest.

ASSESSMENT OF MALNUTRITION IN PATIENTS WITH LIVER CIRRHOSIS USING MUST, RFH-NPT RISK ASSESSMENT TOOLS, AND GLIM CRITERIA

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Background. Malnutrition prevalence in patients with decompensated cirrhosis exceeds 50% and is associated with an increased risk of complications and mortality. Estimates of malnutrition prevalence vary depending on assessment tools used and are particularly challenging in the presence of fluid retention, which alters body composition, increases body mass index (BMI), and may mask underlying malnutrition. Consequently, the diagnosis of malnutrition remains a challenge in patients with liver cirrhosis.

Aim. The aim of this study was to assess the prevalence of malnutrition among hospitalised cirrhosis patients with normal and overweight BMI using Malnutrition Universal Screening Tool (MUST) and Royal Free Hospital–Nutritional Prioritizing Tool (RFH-NPT) screening tools and Global Leadership Initiative on Malnutrition (GLIM) diagnostic criteria, and to evaluate the ability of screening tools to identify malnutrition.

Methods. This is a prospective study conducted in hospitalised adult patients with liver cirrhosis and normal or overweight BMI. Nutritional risk was assessed using MUST and RFH-NPT. Malnutrition was diagnosed according to the GLIM criteria. Anthropometric measurements included body weight, height, BMI, and mid-upper arm circumference and presence of ascites or peripheral oedema was assessed from medical records and clinical examination. Data were analysed to evaluate the relationship between screening tools and GLIM criteria defined malnutrition. The statistical analysis was performed with IBM SPSS Statistics 29.0.

Results. A total of 22 patients (50%, n = 11 female) were included in the study. GLIM-defined malnutrition was present in 59.1% (95% CI: 38.5% to 79.7%) of patients with normal to overweight BMI. Among malnourished patients, severe malnutrition was more common than moderate, representing 61.5% versus 38.5% of cases.

MUST demonstrated specificity of 100% and sensitivity 69.2% for GLIM-defined malnutrition. RFH-NPT score demonstrated 100% sensitivity and 66.7% specificity. ROC analysis identified strong discriminative performance for both tools, with MUST demonstrating an AUC = 0.846 (p = 0.007) and RFH-NPT an AUC = 0.821 (p = 0.012). Fisher's exact test revealed a significant association between malnutrition and fluid overload (p = 0.026). A higher proportion of patients with fluid overload were malnourished (84.6%) compared to those without (15.4%).

Conclusion. Malnutrition is common among hospitalized cirrhosis patients with normal to overweight BMI. These findings indicate that MUST and RFH-NPT are reliable tools for malnutrition risk assessment in this population and should be implemented regardless of BMI.

Acknowledgements. The authors declares no conflicts of interest. This study has not received external funding.

IMPACT OF TOXOPLASMA GONDII IgG SEROPOSITIVITY ON ACUTE REJECTION AFTER LIVER TRANSPLANTATION: A SINGLE-CENTRE RETROSPECTIVE COHORT STUDY

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Background. Data from liver transplantation cohorts regarding the clinical relevance of pre-transplant *Toxoplasma gondii* serostatus are limited, and evidence for an association with acute rejection remains scarce. In Latvia, liver transplantation is performed in a single national centre, providing a unique opportunity to analyse outcomes within a well-defined cohort. Despite routine pre-transplant *Toxoplasma gondii* serological testing, its relevance for predicting biopsy-proven acute rejection in liver transplant recipients has not been evaluated in the Latvian population.

Aim. To evaluate the association between recipient *Toxoplasma gondii* IgG seropositivity and the risk of biopsy-proven acute rejection within 180 days after liver transplantation.

Aim. To evaluate the association between recipient *Toxoplasma gondii* IgG seropositivity and the risk of biopsy-proven acute rejection within 180 days after liver transplantation.

Methods. A retrospective cohort study was conducted using data from the National Liver Transplantation Registry of Latvia. Adult patients who underwent liver transplantation between 2018 and 2025 were included (n = 30). Patients were excluded if they had missing *Toxoplasma gondii* IgG serological data, post-transplant liver dysfunction due to surgical or vascular complications affecting graft function independently of rejection, loss to follow-up or death within 180 days after transplantation, or unavailable histological data for acute rejection assessment. After applying these exclusion criteria, 16 patients were excluded and 14 were included in the final analysis. Acute rejection was defined according to the Banff classification and assessed within 180 days post-transplantation. Patients were stratified by *Toxoplasma gondii* IgG serostatus (positive vs negative). The association between IgG seropositivity and biopsy-proven acute rejection was evaluated using Crosstabs analysis and Fisher's exact test due to the small sample size. A p-value < 0.05 was considered statistically significant.

Results. Among the 14 included recipients, 8 (57.1%) were *Toxoplasma gondii* IgG-positive and 6 (42.9%) were IgG-negative. Acute rejection occurred in 5 patients (35.7%). In the IgG-negative group, acute rejection was observed in 50.0% (3/6) of patients, whereas in the IgG-positive group it occurred in 25.0% (2/8). Fisher's exact test showed no statistically significant association between *Toxoplasma gondii* IgG seropositivity and acute rejection (p = 0.58).

Conclusions. In this single-centre retrospective cohort study, recipient *Toxoplasma gondii* IgG seropositivity was not associated with an increased risk of biopsyproven acute rejection after liver transplantation. These findings support the hypothesis that pre-existing *Toxoplasma gondii* immunity does not play a clinically significant role in acute rejection development in liver transplant recipients. Larger multicentre studies are needed to confirm whether routine *Toxoplasma gondii* screening in this population provides meaningful clinical benefit.

Acknowledgements. The authors declare no conflicts of interest. No external funding was received.

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