

that individuals with T2DM are 2–4 times more likely to develop AD, but definitive biochemical mechanisms remain unknown.

Aim of the study. This review has the intention to present that type 2 diabetes mellitus (T2DM) is a significant risk factor for cognitive dysfunction or dementia, especially those related to Alzheimer's disease

Materials and methods. For the study were used electronic medical platforms such as PubMed Databases, Hinary and other scientific libraries like Google Scholar. It have been selected and analyzed 40 articles including manuscripts, reviews, and publications for the last 10 years.

Results. Of the multiple intersection between T2DM and AD, the most pronounced is the insulin resistance, characterized by hyperinsulinemia and hyperglycaemia. Insulin resistance decreases glucose metabolism which in turn hyperphosphorylates tau protein causing neurofibrillary tangles. In AD, the extracellular accumulation of A β plaques, intracellular aggregation of hyperphosphorylated tau protein in neurofibrillary tangles (NFTs), and neuronal loss occur in the cortex and hippocampus, where are located insulin-dependent receptor GLUT 4 and insulin-independent receptors GLUT1 and GLUT3. Receptors are affected by the abnormal glucose metabolism, and not only, including enzymes like GSK-3, Cdk-5, CK-1 and others. The mechanism of influence does not stop here; hyperglycemia can activate K-ATP channels that increase cellular excitability and leads to an elevated ISF A β . Moreover, insulin alteration in diabetes can interrupt brain cholesterol metabolism leading to metabolic dysfunction.

Conclusions. T2DM and AD were earlier considered as two independent metabolic disorders. However, the present study has clearly stated the presence of common pathophysiological and epidemiological mechanisms, together with signaling pathways that associates a relation between these two pathologies. It might be possible that therapeutics for T2DM would be effective for AD, but in order to prove that, more investigations are needed. Recently, AD has been called Type 3 Diabetes.

Key words: Alzheimer's disease, hyperglycaemia, diabetes 2 mellitus, insulin resistance

290. TUMOR MARKERS - A NEW PERSPECTIVE

Author: **Dorina Cheibaș**

Scientific adviser: Veronica Sardari, PhD, Associate professor, Department of Biochemistry and Clinical Biochemistry, *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

Introduction. The incidence and prevalence of tumor pathology are constantly increasing both globally and in our country. The implementation of new sensitive, specific and easily applicable methods such as tumor markers offers new possibilities in diagnosis, personalized treatment and subsequent monitoring.

Aim of the study. Presentation of the latest and most promising tumor markers according to the latest international studies.

Materials and methods. It has been carried out the synthesis and analysis of the scientific information of the last years in the field of oncology and biomarkers. The targeted population studies are large and performed in the most endowed centers, with maximum truthful results. The markers with the best results were selected.

Results. Liquid biopsy is an alternative to current diagnostic methods due to its sensitivity, applicability, rapidity and harmlessness to obtain CTC, miRNA, RNA, DNA, exosomes,

metabolites, etc. In the diagnosis of breast cancer, we have highlighted a number of new markers such as hsa_circ_0001785, lncRNA HOTAIR, GATA 3, specific plasma lipid profile according to tables and a large miRNA panel. Pancreatic tumors due to asymptomatic evolution, require screening by risk groups, therefore the new markers periostin and circ-LDLRAD3 RNA complement CA19.9 in early diagnosis, especially in PDAC. The long known pyruvate-kinase M2 is determined to be effective in determining the prognosis in pancreatic cancer and EphA2 represents a diagnostic marker but also a therapeutic target. A number of metabolites are capable of differentiating chronic pancreatitis from pancreatic cancer. In the diagnosis of colorectal cancer, was developed a set of 16 RNAs that determine the tumor in its early stages. Likewise, the combination of eight serum biomarkers (CEA, CA19.9, AFP, Galectin3, TIMP1, ferritin, CRP, CyFra 21-1) allows efficient and rapid diagnosis.

Conclusions. Population studies in different countries and by different scientists have shown that biomarkers and biomarker panels studied allow early, rapid, specific diagnosis of the tumor pathologies. Diagnosis based on these tests will reduce the invasive diagnostic procedures and increase the survival rate due to personalized and specific treatment for each tumor. They also allow subsequent monitoring, relapses and prognosis.

Key words: tumor biomarkers, liquid biopsy, colorectal cancer, breast cancer, pancreatic cancer.

291. GLUTEN CAUSE OF OCCURRENCE CELIAC DISEASE

Author: **Anastasia Cherdivara**

Scientific adviser: Ala Fulga, PhD, University assistant, Department of Biochemistry and Clinical Biochemistry, *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

Introduction. Gluten is a nutritional term used to refer to certain cereal prolamins, rye, barley and oats. It refers to the combined gliadin (prolamin) and glutenin fraction of wheat and displays unique structure building properties, three-dimensional protein network-forming properties being utilized in baking applications to create viscoelastic dough matrices, includes water binding and viscosity yielding, which make gluten a widely used food additive. They are highly resistant to hydrolysis mediated by proteases of the human gastrointestinal tract. Large gluten peptides as gliadin escape gastric digestion and accumulate in the small intestine. These characteristics could help in breaking the tolerance to this food antigen, when the immune system is activated, as can happen during an enteric infection, affect the intestinal permeability and modify the gut microbial activity. Undigested gluten containing carbohydrates entering the colon may be digested within the colon by the colonic bacterial flora, leading to fermentation and an increased in colonic gas, causing bloating and excess flatus. Celiac disease (CD) is a common immune-mediated enteropathy, which occurs following exposure to gluten in genetically susceptible individuals.

Aim of the study. The purpose of the study is to determine the link between gluten and celiac disease by studying the protein properties of gluten.

Materials and methods. The study was performed on 7798 persons aged 6 years or older. Serum samples from all participants were tested for immunoglobulin A (IgA) tissue transglutaminase antibodies. Based on the results about prior diagnosis of CD and use of a gluten-free diet (GFD). CD was defined as having either double-positive serology or other health-care professional and being on a GFD (reported clinical diagnosis of CD).