

quick intervention of the physician may save the organ from necrosis. The first treatment option is to remove the cause of ischemia, but the studies revealed that the reperfusion is able to worsen the initial lesions that were only due to disrupted blood flow. The scientists propose postconditioning as a technique for reducing the reperfusion injuries.

Aim of the study. The aim of the study was to do a research of the specialized literature to assure a better understanding of the mechanisms of protection of postconditioning in the context of the diseases characterized by ischemia/reperfusion injuries.

Materials and methods. Were studied the articles from PubMed database over the last ten years describing the mechanisms of ischemia/reperfusion injury in different organs and the effects of postconditioning as a method of protection against reperfusion lesions. Were used the following keywords: postconditioning, ischemia/reperfusion injury.

Results. The reperfusion injuries are due to activation of different metabolic pathways that are related to toxic compounds formation, such as reactive oxygen species (ROS), with deleterious effects on cell components. The studies revealed that during reperfusion the level of malonic dialdehyde, a biomarker for membrane lipid peroxidation, increases, and this is due to a high level of ROS. Moreover, the literature related to reperfusion injury emphasizes the role of the increased intracellular calcium concentration with activation of different enzymes, the opening of the mitochondrial permeability transition pore, inflammation, increased endothelial dysfunction, and neutrophils activation. Postconditioning after ischemia involves short-term cycles of ischemia that alternate with reperfusion, at the onset of the restoration of the blood flow. It was established that the mechanisms of protection are considered to be related to a reduction of ROS production, inhibition of mitochondrial permeability transition pore, activation of ATP-dependent K-channel through adenosine, which affects the intracellular calcium levels, nitric oxide and pro-survival kinase.

Conclusions. Postconditioning which represents the gradual restoration of blood flow can reduce the extent of reperfusion injury by various mechanisms. The results of the experimental studies on different ischemic organs showed that the short episodes of interruption of the blood flow from the onset of reperfusion, essentially reduced the size of the lesion, compared to a normal revascularization. The postconditioning must be taken into account when there are ischemic diseases.

Key words: postconditioning, ischemia/reperfusion injury

289. THE LINK BETWEEN DIABETES MELLITUS AND ALZHEIMER'S DISEASE

Author: **Olga Moroza**

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

Introduction. Type 2 Diabetes mellitus (T2DM) represents a major public health burden and a growing prevalent chronic disease around the world. It is known that more than 425 million people have diabetes, and this number is expected to rise to over 642 million by 2040. Alzheimer's disease (AD) is the main cause of dementia, affecting over 26 million people worldwide, and its prevalence continues to increase. Both conditions are related to age, and in the last decades, an interesting link between them has appeared from various studies that affirm

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,