steps. However, there are many limiting factors in cancer-on-a-chip models that require further attention. Microfluidic platforms enable study of the metastatic process with unprecedented detail as it offers an opportunity to mimic multiple physiological conditions in a set up through the flexibility of design variations.

Conclusion: These studies show that microfluidic platforms are helpful to mimic and understand the cancer metastasis process and the mutual interactions between tumor cells and immune cells.

ISCHEMIA MODIFIED ALBUMIN AND ITS CLINICAL APPLICATION

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Introduction. Albumin is one of the most abundant proteins in the vertebrate, with about 40% circulating in the bloodstream. It is also a significant component of some extracellular fluids of humans such as lymph, interstitial, and cerebrospinal fluids. This multifunctional protein is very sensitive to intra- and exogenous factors leading to post-translational modifications of the protein, changing its properties with follow metabolic violations and diseases development. Currently, ischemia modified albumin (IMA) is of increasing interest among clinicians because the possibilities of its use in diagnostic of different pathological conditions. However, the perspectives of its clinical applications are associated with many questions.

Aim. To analyze the modern research on the clinical and diagnostic value of IMA in different human and animal pathologies and to evaluate the possibilities of its clinical application in monitoring acute coronary syndromes and drug therapeutic efficacy.

Materials and methods. The date base of Medline, PubMed, Embase, Research Gate, Web of Science, Scopus, and Google Scholar were analyzed using keywords: ischemia, albumin modifications, oxidative stress, disease, pregnancy, neurological defects, and acute coronary syndrome. For the study, serum samples (n=76) of patients with non-ST elevation myocardial infarction (NSTEMI) were obtained from the cardiology department of the emergency hospital. Each included person provided informed consent prior to the start of the study. A cardiologist examined all study participants and recorded their medical histories. The control group included 20 healthy persons with no history of coronary artery disease.

A model of collagenase-induced intracranial hemorrhage in rats with experimental T2DM (T2DM+ICH) was used in the study also. The impact of metformin (Met), edaravone (Eda) and vitamin D3 on IMA level was investigated in this model. The scheme of this experiment and doses of above-mentioned drugs were developed at the Department of Pharmacology of the Dnipro Medical University. Serum IMA was measured by albumin cobalt-binding test of Bar-Or. The results were expressed in arbitrary units (AU)/mg of protein or AU/mg of albumin (IMAR = IMA/albumin ratio).

Results. The review of research data from 2002 to 2022 years testifies to the high sensitivity of IMA as a marker of oxidative stress and associated pathology. Most of the works are devoted to the clinical and diagnostic significance of IMA in cardiovascular and neurological pathology, although more than 14 works with meta-analysis has demonstrated its efficacy in prognosis of diabetes mellitus complications, monitoring of hypo- and hyperthyroidism, pregnancy, and cancer. Despite this marker's low specificity, the evaluation of its content may provide valuable information regarding the duration of diseases and possible complications, and it can be used in the differential diagnosis of certain pathological conditions. IMA's advantage as a biomarker over other markers is its ability to detect ischemic conditions at earlier stages. The simplicity and availability of the techniques for its determination provide an opportunity to stratify patients and determine risk groups for adverse events after a stroke, heart attack, traumatic brain injuries, and spinal injuries and assess the state of patients with neurological disorders, diabetes, pregnancy complications, and other ischemia-associated diseases.

Our study of IMA in the blood serum of the patients with NSTEMI in dynamics of the disease (1st, 6th day, after 6 months, and after a year) showed a low sensitivity of this marker. Thus, the level of IMA was increased on the 1st day in 40% of patients only, on the 6th day – in 50%, and after 6 months its level decreased below the norm in 67% of patients. A comparison of this indicator with the other markers had shown that IMA alone measure has a limited value in monitoring of NSTEMI patients in hospital period. Moreover, this test should conduct no later than 3-4 hours after appearance of chest pain to evaluate the change of IMA level.

Noteworthy results were obtained in our model experiments. The study of IMA in rats with experimental T2DM demonstrated its increase by 1.3 times compared to those in intact rats. It was unexpectedly, this marker decreased in rats with T2DM+ICH to the level under that one in intact rats. The decrease in IMA and IMAR in rats with T2DM+ICH can be explained by changes in the activity of LDH and endogenous lactate level in these animals. Met administration was accompanied by an increase in IMA and IMAR levels to their means in T2DM rats, while the use of D3 led to return of both indices to the normal means, and Eda decreased these indices under their level in T2DM rats with ICH.

Conclusion. 1) IMA alone has a limited value to the monitoring of heart diseases including NSTEMI. However, measuring IMA alongside other standard markers for myocardial damage and electrocardiography could provide an effective tool for early diagnosis and timely cardiac care and help predict long-term heart failure. 2) Control of serum IMA may be useful for choosing of optimal drugs and evaluation of their therapeutic effect.

CLINICAL APPLICATIONS OF 18F-FDG AND 18F-PSMA PET-CT

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PRECİSE MODULATİON OF TRANSCRİPTİON FACTOR LEVELS REVEALS DRİVERS OF DOSAGE SENSİTİVİTY

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Transcriptional regulation displays extensive robustness, but human genetics indicate sensitivity to transcription factor (TF) dosage. Reconciling