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Конференція внесена до Реєстру заходів безперервного професійного розвитку, які проводитимуться у 2023 році №5500074

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Conclusions. CIM index decreased during treatment and observation in the total group (n=67) ($p<0,05$) and the distribution of PAPP -A ≥ 4,12 mIU/ L ($p<0,002$), for a specified output increase over CIM distribution PAPP -A ≥4,12 mIU/L ($p<0,001$), which were stored during treatment in the total group (n=67) in the distribution of average CMM for PAPP -A in the treatment of ≥4,12 mIU/L ($p<0,01$). The initial increase in CIM, which further decreases significantly in the treatment group (n=23) over the distribution of CRP <17,11 ≥ mg/l ($p<0,02$), also significantly reduce CIM consistent for CRP in the treatment group PSA ≥ 12.47 mg/l ($p<0,005$), as well as in atherosclerosis group for CRP (<16,55 ≥ mg/l) with decreasing rate CIM ($p<0,05$).

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THE PECULIARITIES OF INTERPRETATION OF D-DIMER TEST IN CLINICAL PRACTICE

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Introduction. D-dimer serves as a multifaceted biomarker of concomitant activation of coagulation and fibrinolysis, which is routinely used for ruling out pulmonary embolism (PE) and/or deep vein thrombosis (DVT) combined with a clinical pretest probability assessment (Thachil J., 2017; Lippi G et al., 2014;Jiaqi Fang et al., 2022). Other indications for D-dimer testing include assessing the risk of recurrent thrombosis, guiding anticoagulant therapy and monitoring disseminated intravascular coagulation (Adam SS et al., 2009;Tripodi A, 2011). D-dimeris elevated in most patients with thrombosis but also may be false-positive or false negative.

The aim of the study. Our aim was to analyze, according to the modern literature data, the peculiarities of interpretation of D-dimer test results in clinical practice.

Material and methods. The author conducted a short systematic literature search for relevant English-language publications published between 2003 and 2022 in MedLine, PubMed, and Google Scholar.

Results. Modern D-dimer assays have reported sensitivities ranging from 95% to 96%, with low specificities ranging from 45% to 61% and a negative predictive value (NPV) range from 97% to 99%.(Joshua FGilens et al., 2022). Increased D-dimer levels may also be observed in many conditions, such as infection, pregnancy, trauma, advanced age, malignancy, liver disease,heart diseases, immobility, as well as in hematomas or interstitial hemorrhages, after recent surgery, in central venous catheterization (Linkins, L.A., 2017; Jeffrey I. Weitz et al., 2017; Wendy L Wahl, 2003; Wanli Liu et al., 2021). Besides the thrombotic disorders, cancers, and infection, D-dimer is increased in autoimmune disease and joint diseases (So AK 2003,Weitz JI, 2017; Adam SS et al., 2009). Vascular injury and vascular thrombosis are found to be involved in inflammatory bowel diseases, resulting in an increase in D-dimer (Alkim H, 2011). Moreover, the D-dimer is elevated in ankylosing spondyloarthritis and is associated with the disease activity (Li Y et al., 2020). Jiaqi Fang et al., in 2022 reported that the elevated D-dimer is related to peripheral joint involvement and gut inflammation. So, authors suggest that serum D-dimer may be a potential biomarker for identifying patients with spondyloarthritis with suspected gut inflammation. Mohmed H., 2016 revealed that the D-dimer levels were statistically significantly higher in hyperthyroid patients.

D-dimer has been shown to increase with age, which can cause a lower specificity (i.e. more false positive tests) in older patients. Specificity can range from 49% – 67% in patients≤ 50 years of age, but in older patients (i.e.≥ 80 years of age) the specificity is quoted as 0% – 18% (Salim Rezaie, 2014). Rising levels of D-dimer with age can be explained in part by the high prevalence of pro-inflammatory conditions and the increasing burden of lipid abnormalities, anemia and obesity. These factors compromise the specificity of D-dimer levels as a diagnostic aid to thrombosis in older individuals. Tita-Nwa F et al. in 2010, using polychotomous logistic regression models, found that age, cholesterol, triglycerides, creatinine, erythrocyte sedimentation rate, hemoglobin and body mass index were independently associated with D-dimer level. The D-dimer test is positive in the diagnosis of aortic dissection (Mir MA, 2010). In 2022 Lan Cheng et al. investigated the

relationship of blood lipid and D-dimer. It was found that total-cholesterol and HDL-cholesterol were not significantly correlated with D-dimer, on the contrary, LDL-cholesterol showed an independent positive association with D-dimer.

Conclusion. Clinicians should consider these peculiarities when they weigh the usefulness of D-dimer testing for patients with suspected PE.The major advantage of the D-dimer test is the excellentNPV in the appropriate clinical setting. However, since the positive predictive value of the test is low, positive results cannot be used alone in the diagnosis of DVT/PE.

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A MODEL USING ARTIFICIAL INTELLIGENCE TO PREDICT 12-MONTH MORTALITY IN MYOCARDIAL INFARCTION PATIENTS

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Introduction. The leading causes of death and disability worldwide – affecting around 126 million people – are ischemic heart disease and acute myocardial infarction (AMI). Death results from AMI in about 30% of all cases. Depending on the source, 8% to 20% of AMI patients pass away within a year of the event, and every second patient requires rehospitalization. In order to manage and treat patients following an AMI, it is essential to evaluate the risk and forecast outcomes at the initial hospital admission. Innovative approaches, like artificial intelligence (AI) and deep learning (DL) methodologies, have the ability to give an accurate risk assessment and share decision-making in patients who experienced AMI because conventional risk rating scales and methods have several limitations.

The aim of the study. To create and verify a deep learning-based risk stratification model that can predict patients with AMI's 12-month mortality.

Material and methods. The study included a cohort of 250 AMI patients with Killip classes I–IV. The data, which comprised anamnesis as well as the outcomes of the physical and laboratory-instrumental examinations, was gathered on the admission day and a year following the occurrence (72 values). The validation cohort, which included 35 patients, and the derivation cohort, which included 215 people, were split up at random from the entire patient load. Our model, a convolutional neural network (CNN) with one input layer, four hidden layers, and one output layer made up of neurons with a sigmoid activation function, was developed in GoogleColab using the Python programming language. MaxAbsScaler and Adam were employed for data normalization and optimization, respectively. Additionally, we only evaluated the performance of the models for the validation cohort, which was not used for model development, and calculated the GRACE risk score.

Results. We developed our DL-based model using the derivation data during the 30 cycles of work, receiving the maximum value of training accuracy of 96.7%. The mortality risk, calculated by our model for the validation group was compared with real 12-months mortality, and the CNN “lied” only 2 times. The test of the validation cohort showed such results of our DL-based model: 94% - accuracy, 71% - sensitivity, 100% - specificity, 100% - positive, and 93% - negative prognostic value. These results significantly outperformed the GRACE scale, which showed 63%, 71%, 54%, 26%, and 94% respectively.

Conclusions. To summarize, we created and evaluated a risk stratification model based on DL to predict 12-month death in AMI patients. Compared to traditional risk scales, the newly developed model has a much higher accuracy (GRACE score). It has been established that deep learning algorithms may be more useful for predicting mortality and directing the care of cardiac patients.