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БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»

М А Т Е Р І А Л И

105-ї підсумкової науково-практичної конференції
з міжнародною участю
професорсько-викладацького персоналу
БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ
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Матеріали підсумкової 105-ї науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) – Чернівці: Медуніверситет, 2024. – 477 с. іл.

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У збірнику представлені матеріали 105-ї підсумкової науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

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findings, there is a notable absence of strategies for anticipating post-acute cardiovascular consequences of COVID-19, and a lack of scientific examination into these effects. It is imperative to address this knowledge gap to enhance the quality of post-acute COVID-19 care.

The aim of the study. To conduct a 12-month follow-up longitudinal observation study to explore potential long-term cardiovascular outcomes of COVID-19 and develop an AI-based predictive model.

Material and methods. In the period between November 2021 and January 2022, our study actively recruited 412 individuals diagnosed with COVID-19, providing a diverse representation of experiences. Within this cohort, the average age was 42.8 years, encompassing a broad spectrum of age groups. Notably, 57% of the enrolled individuals were female, contributing to a nuanced exploration of gender-specific implications in the long-term outcomes of COVID-19. Excluding individuals with severe comorbidities, prior major adverse cardiovascular events, and intra-hospital mortality, we monitored patients for 12 months. The data were randomly partitioned into derivation (n=201), validation (n=81), and an external cohort (n=47). Collected data encompass clinical records, laboratory and instrumental findings, and medical records over the year. Our AI model, a convolutional neural network (CNN) with sigmoid-activation-function neurons, underwent training using follow-up outcomes and was assessed on the external cohort for evaluation.

Results. In our longitudinal study, a significant number of patients experienced major adverse cardiovascular events. This included individuals with myocardial infarction, cerebrovascular disorders, and pulmonary embolism. Cardiovascular death occurred in a portion of the studied population. The total incidence of cardiovascular complications encompassed conditions such as first-detected hypertension, arrhythmias, and heart failure.

During the training phase of our CNN, both the derivation and validation datasets were employed. Rigorous evaluation through ROC analysis revealed the remarkable predictive prowess of our AI model for cardiovascular events during follow-up, boasting an impressive AUC of 0.891 with a 95% confidence interval ranging from 0.869 to 0.913 ($p<0.001$). The model exhibited a sensitivity of 92.4% and a specificity of 90.1%, underlining its precision in identifying cardiovascular outcomes. Further substantiating its efficacy, the external cohort data analysis demonstrated accurate predictions in 41 out of 47 patients, yielding an impressive accuracy rate of 87.2%. This noteworthy performance surpasses the capabilities of any other known methods for predicting cardiovascular outcomes within the 12 months following COVID-19, solidifying the significance of our AI model in advancing prognostic capabilities in post-COVID-19 cardiovascular care.

Conclusions. The imperative for special attention to cardiovascular health in COVID-19 survivors arises from the heightened risk of post-acute cardiovascular consequences associated with the virus. Recognizing this, the prediction of long-term outcomes for COVID-19 has found a valuable ally in AI-driven models. These sophisticated tools not only underscore the significance of proactive cardiovascular care for survivors but also offer a promising avenue for predicting and mitigating potential long-term complications associated with COVID-19.

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EARLY CARDIAC REHABILITATION OF PATIENTS WITH ACUTE CORONARY SYNDROME

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Introduction. Ischaemic heart disease (IHD) is the most common manifestation of coronary artery disease (CAD) with 3.6 million new cases and 34.9 million people living with IHD. IHD and cerebrovascular disease are the most common causes of cardiovascular death and IHD accounts for 1.67 million deaths corresponding to 17% and 18% of all deaths in men and women, respectively. CAD is the most common cause of death in Europe accounting for 4.1 million deaths (2.2 mil in females, 1,9 mil in males) each year. Two-thirds (66%) of the participants (men 63%; women 73%) in EUROASPIRE V were not achieving the defined physical activity target. Of the 46% advised to

participate in a cardiac rehabilitation program 69% attended at least half the sessions. One-third (35%) reported “performing planned physical activity to increase physical fitness”, but only 16% performed vigorous activities more than 20 min at least 3 times weekly.

The aim of the study. To evaluate the efficiency of early cardiac rehabilitation of patients with acute coronary syndrome.

Materials and methods. 206 patients with nonST elevation myocardial infarction (NSTEMI) were treated at Chernivtsi Regional Cardiology Center. The average length of inpatient treatment was 14 days. The age of patients was from 38 to 67 years old, on an average 52.2±2.7 years. 48 of them were with a provided PCI and 158 no PCI. Compared with patients without PCI, patients with PCI were significantly younger (56.5 vs. 62.4 years, $P<0.001$) and less likely to have diabetes, hypertension, or any risk factor (except smoking). Phase II of CR was optimally started in the second week after discharge from the hospital.

Results. Cardiovascular risk factors were compared in groups after rehabilitation. The indicators of patients after rehabilitation significantly improved in both groups in 12 months of rehabilitation ($p<0.05$). A higher outcome in the NSTEMI group with PCI is closely related to CR and adherence to treatment. A slight intensity of exercise in CR was sufficient to reduce cardiovascular risk factors. There were no significant differences in baseline characteristics including age, gender, body mass index, smoking, diabetes, hypertension, lipid profile, statin use, and complete blood count between the two groups. Maximal oxygen consumption (VO2max) improved significantly, especially in the group with 12 months ($p<0.001$). 18 patients underwent repeated CVG in 9-12 months. Rates of all-cause mortality, re-hospitalization for cardiovascular and cerebrovascular events, and intensive care unit hospitalization were significantly lower in CR participants than in nonparticipants. Relative risks were 0.76 (95% CI 0.60–0.95), 0.78 (95% CI 0.65–0.94) and 0.80 (95% CI 0.70–0.91) respectively. Overall, 44% and 51% of patients were considered adherent to polytherapy at 6 and 12 months of follow-up.

Conclusion. Patients with AMI should be referred to a rehabilitation program as soon as possible after the acute event, especially for those who have not received PCI in the absence of contraindications. Participation in the rehabilitation program: first of all, is associated with a reduced risk of all-cause mortality, re-hospitalization due to cardiovascular and cerebrovascular events, and emergency department admissions during long-term follow-up patients with NSTEMI who did not undergo PCI. Second, it is associated with significantly improved adherence to evidence-based therapy during both 6- and 12-month follow-up among patients with AMI who did not receive PCI at the time of hospitalization. The TSK-SV Heart scale could be used as a reliable, valid questionnaire to measure kinesiophobia in patients with CAD. High-frequency exercise in patients before and after treatment with elective PCV improved maximal aerobic capacity and muscle performance. The exercise program was tolerated and can be used as an alternative to traditional hospital exercise programs. The superiority of CR was determined, even in an unfavorable context, which confirms the recommendations of clinical practice, which consider CR as an integral part of the treatment of CAD.

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LONG-TERM CARDIOVASCULAR OUTCOMES OF COVID-19: ANALYSIS, PREDICTORS, PROGNOSIS.

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Introduction. The COVID-19 pandemic has unleashed a profound and far-reaching global health crisis, with repercussions that extend across the spectrum of society. Ongoing research indicates that COVID-19 may be linked to the emergence of a range of health problems, notably, cardiovascular disorders. However, at present, there is a notable dearth of effective strategies for forecasting the long-term cardiovascular consequences of post-acute COVID-19, and scientific investigations into these effects remain underexplored.