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17. Guo F, Xia T, Zhang Y, Ma X, Yan Z, Hao S, Han Y, Ma R, Zhou Y, Du X. 2019. Menstrual blood derived mesenchymal stem cells combined with Bushen Tiaochong recipe improved chemotherapy-induced premature ovarian failure in mice by inhibiting GADD45b expression in the cell cycle pathway. Reproductive Biology and Endocrinology. Vol. 17, I. 7, P. 56. DOI: 10.1186/s12958-019-0499-2.
18. Wang Z, Wang Y, Yang T, Li J, Yang X. 2017. Study of the reparative effects of menstrual-derived stem cells on premature ovarian failure in mice. Stem Cell Research & Therapy. Vol. 8, I. 1, P. 11. DOI: 10.1186/s13287-016-0458-1.
19. Kim J. 2022. Advances in regenerative surgery and tissue engineering. Journal of Translational Medicine.
20. Liu F. 2024. Stem cell engineering in regenerative medicine. Cells.

PREDICTORS OF SEVERE COURSE OF ST-SEGMENT ELEVATION ACUTE CORONARY SYNDROME IN OVERWEIGHT PATIENTS

Kovalenko Vladyslav
PhD
Department of internal disease 1
Zaporizhzhia state medical and pharmaceutical university, Ukraine

Abstract. In patients with ST-segment elevation acute coronary syndrome (STEMI) and elevated body mass index (BMI), the severity of the in-hospital course is often determined by a combination of metabolic, neurohumoral, hemodynamic, and electrocardiographic disturbances. Obesity is regarded as an important modifier of cardiovascular risk that contributes to enhanced inflammation, endothelial dysfunction, arrhythmogenicity, and adverse myocardial remodeling [1]. An assessment of the prognostic significance of selected clinical, laboratory, and instrumental parameters was performed in relation to the formed composite endpoint of severe STEMI course.

Aim. To assess the prognostic significance of clinical, laboratory, and instrumental parameters and to determine the most informative predictors of severe STEMI in overweight and obese patients.

Materials and methods. The study included 120 patients with STEMI stratified according to body mass index by groups as overweight, obesity group and control. For

practical assessment of disease severity, a composite endpoint of "severe STEMI course" was formed, including the presence of at least one of the following criteria: left ventricular ejection fraction <50%, critical stenosis of at least one coronary artery, >50% stenosis in three vessels, arrhythmia, or impaired consciousness with a Glasgow Coma Scale score ≤12. At the first stage, ROC analysis was performed for individual parameters: body mass index, leptin, caspase-9, troponin I, heart rate, respiratory rate, erythrocyte sedimentation rate, triglycerides, and ST-segment elevation. At the second stage, the predictive performance of combined models was evaluated, including a two-component model (leptin + caspase-9), an expanded early clinical-biochemical model, and a reduced model based on the most informative parameters.

Results. The ROC analysis showed that among biochemical markers, caspase-9 and leptin had the greatest prognostic value; however, as individual predictors they demonstrated only moderate discriminative ability. For leptin, the area under the ROC curve was AUC = 0.679, with an optimal cut-off value of 35.73 ng/mL, sensitivity of 61.5%, and specificity of 72.2%. For caspase-9, the prognostic performance was slightly higher: AUC = 0.705, cut-off 55.24 ng/mL, sensitivity 34.0%, and specificity 100.0%. These results are consistent with current evidence suggesting that leptin may be considered a promising biomarker of acute coronary syndrome, although its diagnostic value is greatest when combined with other indicators rather than when used in isolation [1,2].

Among clinical predictors, heart rate was the most informative. The area under the ROC curve for heart rate was AUC = 0.835, with an optimal cut-off value of 86/min, sensitivity 76.4%, and specificity 80.9%. Body mass index also demonstrated satisfactory prognostic performance: AUC = 0.748, cut-off 28.44 kg/m², sensitivity 58.3%, and specificity 85.1%. In contrast, ESR, triglycerides, respiratory rate, and troponin I showed lower discriminative power for this specific composite endpoint. This may be explained by the fact that these markers reflect individual pathogenetic components of STEMI—such as inflammation, metabolic burden, or extent of necrosis—but do not always directly determine the formation of an integrated severe in-hospital course. This approach is consistent with the modern concept of obesity-associated cardiovascular risk, according to which the highest prognostic informativeness is achieved by combining clinical, biochemical, and structural-functional parameters [1].

The detalised results of ROC analysis has shown at Figure 1.

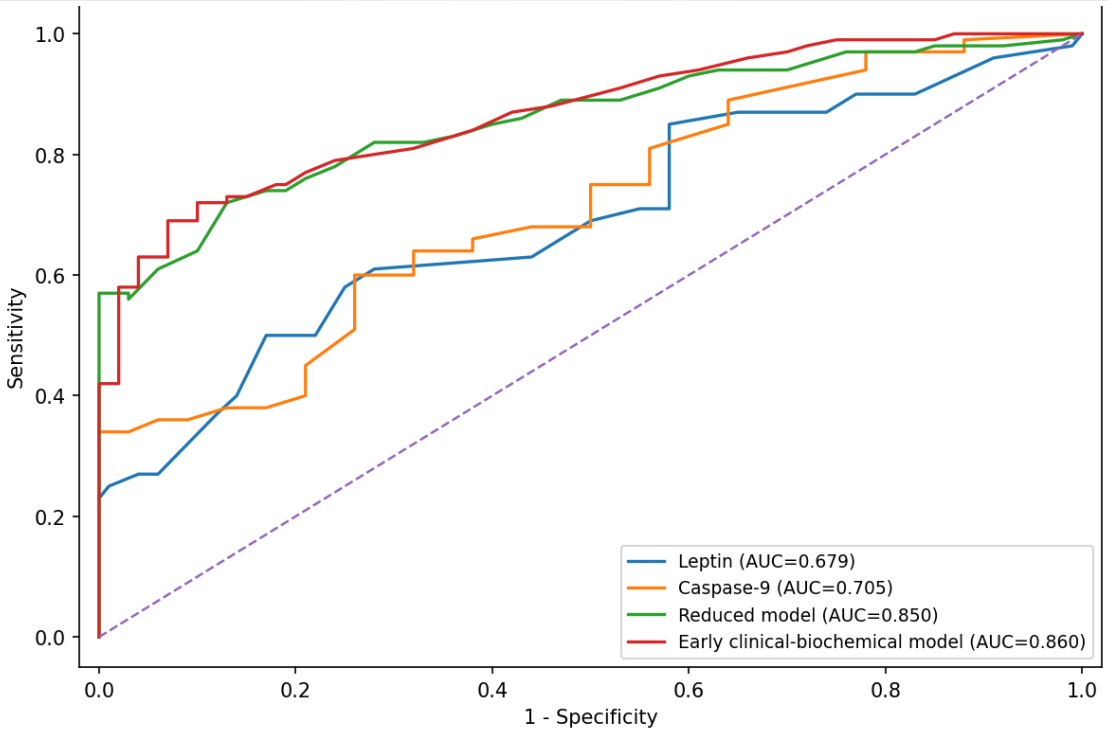

Figure 1. ROC analysis and AUC curves of STEMI severe course markers.

Analysis of combined models showed that the two-component "leptin + caspase-9" model had an AUC = 0.653, only slightly exceeding the predictive ability of the individual markers. In contrast, significantly better results were demonstrated by the early clinical-biochemical model, which included BMI, leptin, caspase-9, troponin I, heart rate, respiratory rate, ESR, triglycerides, and ST-segment elevation: AUC = 0.860, 95% CI 0.793–0.917, sensitivity 72.2%, and specificity 87.2%. Nearly identical results were obtained for the reduced model, which included only BMI, leptin, caspase-9, heart rate, and ST-segment elevation: AUC = 0.850, 95% CI 0.777–0.905, sensitivity 72.2%, and specificity 87.2%. This indicates that even a relatively compact set of parameters provides high predictive accuracy.

These findings are of important clinical relevance, as modern approaches to the management of obese patients with cardiovascular diseases emphasize the need for early identification of high-risk patients in whom a combination of metabolic burden, arrhythmogenicity, inflammation, and structural myocardial injury determines an unfavorable course of acute ischemia [1]. In addition, current evidence suggests that obesity is associated with a higher probability of arrhythmias and cardiac remodeling, which further enhances the importance of clinical and biomarker-based risk stratification [3]

Conclusions.

1. In patients with STEMI and elevated BMI, the most informative individual predictors of severe course are heart rate, body mass index, caspase-9, and leptin.

2. Caspase-9 is a more specific marker of severe STEMI course, whereas leptin is characterized by a more balanced sensitivity and specificity profile.

3. Combined clinical-biochemical models that integrate metabolic, neurohumoral, hemodynamic, and electrocardiographic parameters have the highest prognostic value.

4. The reduced model including BMI, leptin, caspase-9, heart rate, and ST-segment elevation has high practical value and may serve as the basis for a simple scale for early prediction of severe STEMI in overweight and obese patients.

References

1. Koskinas, K. C., Achenbach, S., Barbato, E., Benetos, A., Castiglione, V., Chioncel, O., .& Visseren, F. L. J. Obesity and cardiovascular disease: An ESC clinical consensus statement. European Heart Journal, 45(32), 2024. 2904–2991. https://doi.org/10.1093/eurheartj/ehae359
2. Ismaiel, A., Koutouzis, M., Misu, M., Neag, M. A., Dumitrascu, D. L., & Mocan, T.. Leptin unveiled: A potential biomarker for acute coronary syndrome? A systematic review and meta-analysis. International Journal of Molecular Sciences, 2025 26(9), 3925. https://doi.org/10.3390/ijms26093925
3. Wu, N., Shi, Y., & Zhang, H. Obesity and cardiac arrhythmias: A contemporary review. Frontiers in Cardiovascular Medicine, 11, 2024. 1292364. https://doi.org/10.3389/fcvm.2024.1292364

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ПОРІВНЯННЯ ВІДКРИТОЇ ТА ЛАПАРОСКОПІЧНОЇ МЕТОДИКИ АПЕНДЕКТОМІЇ

Козловська І.М.
доцент
Кафедра хірургії № 2
Лопошук Т.В.
здобувачка вищої освіти 5 курсу
Вакарчук О.Д.
здобувач вищої освіти 5 курсу
Буковинський державний медичний університет
м. Чернівці , Україна

Анотація: Гострий апендицит є однією з найпоширеніших причин невідкладних хірургічних втручань у світі. Протягом багатьох десятиліть традиційним методом лікування була відкрита апендектомія, однак із розвитком малоінвазивної хірургії все популярнішою широкого поширення набула лапароскопічна апендектомія. Попри значну кількість досліджень, питання щодо переваг кожного з цих методів залишається актуальним. Порівняння лапароскопічної та відкритої апендектомії дозволяє оцінити їхню ефективність, безпечність, частоту післяопераційних ускладнень, тривалість госпіталізації та відновлення пацієнтів. Кожна з них має свої переваги, недоліки та клінічні показання. Детальний порівняльний аналізу обох методик апентектомії з урахуванням сучасних клінічних даних, дозволить обґрунтувати вибір оптимальної тактики лікування та підвищити якість медичної допомоги пацієнтам із гострим апендицитом.