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Prognostic model of the development of the first atherothrombotic stroke

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Aim: The study of the relationship between various parameters: clinical-anthropometric, biochemical, metabolic, vascular-inflammatory, molecular-genetic and the development of the first ischemic stroke, and the development of a prognostic model for determining the probability of its occurrence.

Material and methods: 196 patients who underwent the first ischemic stroke and 119 people who did not suffer a stroke, corresponding to age, place of residence and nationality to a group of patients, were examined. The main anthropometric, clinical, biochemical and metabolic parameters were assessed; markers of vascular inflammation and endothelial dysfunction. Genotyping of single nucleotide polymorphisms of genes: IL8, ADIPOQ, ADIROR, APOB, APOC-IV, BDNF, GRM3 using ready-made TaqMan probes was carried out.

Results: Based on the results of the correlation analysis, the following parameters were statistically significant with the first ischemic stroke: weight, BMI, WC, homocysteine, insulin, adiponectin, cystatin C, ApoA1, Apo B, OHL, XC-HDL, LDL, TG, CRB-sh, glucose, uric acid, IL-1b, IL-4, IL-6, IL-8, TNF-a, VEGF-A. The binary logistic regression method was used to construct the forecast model. The final independent model includes the following independent variables: weight, diabetes, adiponectin, Apo A1, IL-1b, IL-4, ADIPOQ (rs17366743), GRM3 (rs2228595), R2 value of Nagelkerk was 0.839. The percentage of agreement between the model and the "training sample" was 90.7%. The percentage of consent of the model with the "independent sample" was 87.1%, the overall percentage of the model's agreement for all patients was 89.8%. In accordance with the received data, the ROC-curve (Receiver Operating Characteristic) was constructed, the area under the ROC-curve was 0.92.

Conclusion: Based on the data obtained in this study, a probability model for the development of the first ischemic stroke was obtained. Of all the parameters studied in the study, the largest contribution to the probability of development of the first ischemic stroke, according to the model obtained, is made by the parameters: diabetes, adiponectin, Apo A1, IL-4.