

## SUMMARY

Chronic subdural hematoma (CSDH) is a pathology known since ancient times. It was first described, together with its name, in the 17th century and already then it was found to be more common in the elderly. In general, it appears to be a well-known disease and less dangerous than other diseases encountered by a neurosurgeon. However, patients continue to die from a chronic subdural hematoma and even journals such as the opinion-forming "Lancet" still publish reports and studies on it.

There are many studies looking for factors potentially affecting the prognosis of hematoma patients. However, the insidious nature of the disease and the unexpectedly unfavorable course of the disease suggest that there can be many prognostic factors and they can also interact with each other. Therefore, a study was undertaken to apply a discriminatory retrospective analysis of 227 patients treated in the Department of Neurosurgery of the USK in Bialystok. The aim of the study was to identify a set of these factors that most determine the outcome of treatment of patients with chronic subdural hematoma.

The advantage of the discriminant analysis is the possibility of even unlimited inclusion of many variables into the model, without the necessity of checking beforehand the statistical significance of their influence on the value of the dependent variable. The algorithm, based on the principle of step-by-step backward analysis, rejects further less important (i.e. less discriminating) variables and finally leaves only those that have a significant impact on the discrimination of the dependent variable, which in this case is the final result of treatment. Moreover, the algorithm allows for easy introduction of new independent variables, the importance of which could be revealed in the course of the research, as well as multiple modifications of successive statistical models in order to obtain the best possible discrimination.

The study covered 227 patients with chronic subdural hematoma, hospitalized in the Department of Neurosurgery of the USK in Bialystok. On this material, "conventional" statistics were made by examining the links and dependencies of individual demographic and clinical factors, and the whole study was closed with a discriminatory analysis. The following parameters were treated as independent variables: patient's age and gender,

hematoma size, and location, displacement of middle structures, INR value, arterial pressure, type of surgery, reoperation. Another variable was the patient's condition on the day of admission, determined according to commonly used clinical evaluation scales, such as Glasgow Coma Scale (GCS), Bender and Markwalder's neurological evaluation scale, or ASA (anesthesia risk assessment scale). The status of patients on discharge assessed according to the Glasgow Outcome Scale (GOS) was established as a dependent variable.

The discriminatory analysis showed that the final outcome of the treatment is most (in order) affected by such parameters as the occurrence of epileptic seizure during hospitalization, the need to perform reoperation, the age of the patient, his neurological condition on admission (according to GCS) and blood clotting disorders. However, he did not take a significant part in the discrimination of the type of surgery performed, as well as its extent - craniotomy vs. single or bipolar trepanation. Although the age of the patient showed its statistically significant influence on the final result of the treatment, what is interesting and important, the results of the treatment of patients in the age group 70-80 did not turn out to be worse than the results obtained in the group of patients older than 80 years. Patients with the greater displacement of middle structures on admission, significantly more often required hematoma reoperation and thus also had a worse prognosis. Similarly, the prognosis was worse in patients with clotting disorders and those who had an epileptic seizure during hospitalization.

The results obtained showed that discriminatory analysis is a useful tool to identify the variables affecting the outcome of treatment of patients with chronic subdural hematoma. From a practical perspective, it is worthwhile to distinguish among the identified factors of predictive importance those "which the doctor has an influence on". Therefore, it should be vigorously pursued to normalize clotting disorders in patients treated with anticoagulants as soon as possible, the indications for craniotomy should be reduced to the necessary minimum, and the inclusion of antiepileptic prophylaxis should be considered in patients with profound unconsciousness and/or a history of alcoholism.