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ELSEVIER



SRN
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DEVELOPMENT OF A RISK SCALE FOR THE PREDICTION OF SIG IN PREDIALYSIS PATIENTS

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Background: The early identification of patients at risk for SIG is critical for optimizing dialysis outcomes and improving patient prognosis. Predialysis markers that can reliably predict the onset of SIG would enable proactive management and tailored therapeutic strategies.

Objective: To establish a risk scale for the development of SIG by identifying and evaluating predialysis markers associated with its occurrence in patients undergoing dialysis.

Methods: A comparative study was conducted to identify predisposition markers for SIG during the predialysis phase. Fifty dialysis patients were categorized into SIG+ and SIG- groups. For each potential marker, sensitivity, specificity, diagnostic significance, and the reliability of frequency differences between SIG+ and SIG- groups were calculated using the median as the cutoff point. Markers analyzed included total protein concentration, blood platelet count, heart rate (HR), and eight additional clinical parameters.

Based on the obtained results, we developed a risk scale for SIG in patients with chronic kidney disease stage 5 (CKD5d), applicable before the hemodialysis (HD) procedure. This scale allows for the prediction of complicated HD courses and the timely implementation of preventive measures. To facilitate its application, we developed a computer program capable of predicting the risk of SIG. The maximum possible score on the scale is 31 points, with the median score in this study being 11.5 points. Patients scoring above 11.5 points are considered to have a high risk of developing SIG.

Results: The analysis revealed that total protein concentration, blood platelet count, and HR were not significantly associated with the predisposition to SIG, showing no reliable diagnostic value. In contrast, eight other markers demonstrated potential utility in predicting SIG. These markers, when combined and weighted according to their relative risk (RR), provided a robust basis for a scoring system. This composite risk scale effectively quantified the contribution of each marker, enhancing the accuracy of SIG prediction.

In the present study, a total score of 12 points and above was recorded in 17 patients within the SIG+ group (100%) and in 8 patients within the SIG- group (24.24%). The risk scale demonstrated a sensitivity of 100%, specificity of 75.76%, and diagnostic significance of 78.00%. The risk of SIG with a score above 11.5 points was calculated to be 68% ($\chi^2_{2 \times 2} = 25.85$, $p < 0.001$).

Conclusion: While total protein levels, platelet counts, and HR do not serve as reliable standalone predictors for SIG, a combination of eight other predialysis markers, weighted by their relative risk, can form an effective risk scale for identifying patients at higher risk of developing SIG. The developed risk scale, supported by a user-friendly computer program, facilitates the early prediction of SIG, enabling timely preventive interventions. Implementing this risk scale in clinical practice can enhance personalized management strategies, improve dialysis tolerance, and ultimately lead to better patient outcomes.