

Prognostic Factors In The Neurosurgical Treatment Of Cerebral Arteriovenous Malformations

Florian Ioan Alexandru¹, Stan Horatiu Mircea¹, Florian Ioan Stefan¹,
Cheptea Marilena¹

¹Department Of Neurosurgery/ Cluj County Emergency Hospital Cluj-Napoca/ Romania

Purpose

Arteriovenous Malformations (AVMs) of the brain are highly vascularized lesions representing a surgical challenge. This study aims to test whether clinical aspects of AVMs contribute to the general outcome of patients undergoing neurosurgical treatment.

Materials And Methods

A one-center one-surgeon retrospective study was performed in a 10-year interval, on 106 patients harboring symptomatic AVMs. Examined parameters were condensed into an original grading scale. We then performed statistical analysis using the “F test” and Pearson/Spearman coefficient to verify the causality between each of these parameters with the Glasgow Outcome Score (GOS).

Results

Mean age was 37.26 years, with a standard deviation of 16.49 years and a 95% confidence interval of 35.6 ± 3.14 years. Male-to-female ratio was 1.12. Linear inverse-proportional low-intensity relationships between GOS and age ($r = -0.223$, $p = 0.021$), presenting symptom ($r = -0.287$, $p = 0.003$), and venous drainage ($r = -0.199$, $p = 0.041$) were obtained. Linear inverse-proportional correlations of moderate intensity were observed between GOS and state of consciousness upon admission ($r = -0.490$, $p = 0.000$), and hemorrhage volume ($r = -0.342$, $p = 0.000$). No other relationships between GOS and the other parameters studied were noticed.

Conclusion

The Spetzler-Martin grading scale remains a valid prognostic tool in the outcome of surgically treated cerebral AVMs. However, as neurosurgical resection of these lesions remains the only definitive curative option, new prognostic factors should be determined. Our study demonstrates that there is a correlation between patient outcome and neurological status upon admission, hemorrhage volume, as well as the presenting symptom and venous drainage of AVMs.