Ruptured Arteriovenous Malformation Grading Scale

Ruptured Intracranial Arteriovenous Malformation rupture is highly morbid. Outcomes after AVM rupture differ from other types of brain hemorrhage. There are no specific widely used grading systems designed to predict clinical outcome after AVM rupture.

To develop an all-comers scoring system to grade patients with AVM rupture and predict clinical outcome more accurately than grading systems currently in use.

Silva et al. retrospectively reviewed patients who presented to the Department of Neurosurgery, Brigham and Women's Hospital, School of Medicine, Harvard University, Boston, Massachusetts, and Department of Neurosurgery, Jackson Memorial Hospital, Miller School of Medicine, University of Miami, Miami, Florida. with a ruptured AVM. Using change in modified Rankin Scale (mRS) as the response variable, they generated an ordinal logistic regression model to test for significant predictor variables. The full model was sequentially condensed until the simplest model with the highest area under the receiver operating curve (AUROC) was achieved.

A total of 115 patients who presented with ruptured AVMs were included in the study, with a mean follow-up time of 4 yr. The Ruptured AVM Grading Scale (RAGS) consists of the Hunt and Hess (HH) score (1-5), patient age (<35 = 0, 35-70 = 1, and >70 = 2), deep venous drainage (1), and eloquence (1). The RAGS score outperformed other neurosurgical grading scales in predicting change in mRS, with an AUROC greater than 0.80 across all follow-up periods.

The RAGS score is a simple extension of the Hunt and Hess scale that predicts clinical outcome after AVM rupture more accurately than other grading systems [1].

[1]

Silva MA, Lai PMR, Du R, Aziz-Sultan MA, Patel NJ. The Ruptured Arteriovenous Malformation Grading Scale (RAGS): An Extension of the Hunt and Hess Scale to Predict Clinical Outcome for Patients With Ruptured Brain Arteriovenous Malformations. Neurosurgery. 2019 Oct 5. pii: nyz404. doi: 10.1093/neuros/nyz404. [Epub ahead of print] PubMed PMID: 31586199.