Angiographically negative subarachnoid hemorrhage outcome.

While generally more benign, angiogram-negative subarachnoid hemorrhage can have a complicated clinical course. Repeat DSA should be reserved for cases in which there is significant suspicion of occult vascular lesion. However, evidence-based guidelines are needed to aid the development of management protocols for angiogram-negative SAH and ensuring optimal patient outcomes [1].

Initial bleeding pattern strongly correlates with diagnostic yield and clinical outcome. Diffuse bleeding pattern is associated with significantly higher diagnostic yield, more in-hospital complications, and worse clinical outcome. Patients with initial imaging characteristics other than diffuse pattern SAH developed few disease related complications, with the majority of in-hospital adverse events treatment related [2].

They are generally considered to have a better prognosis than aneurysmal SAH. Angiogram-negative SAH subgroups include benign perimesencephalic SAH (PMH) and aneurysmal-type SAH. Outcome data for these subgroups differ from those for the group as a whole. We report data for 31 patients who presented to our institution from 2006 to the present. We performed a retrospective chart review, and report outcome data that include rates of rehemorrhage, hydrocephalus, vasospasm, permanent ischemic deficits, headaches, and outcomes based on modified Rankin Scale scores. We also performed a review of the literature and meta-analysis of the data therein. We compared rates of complications in the PMH subgroup and the diffuse-type hemorrhage subgroup. The chart review revealed no poor outcomes and no rehemorrhages in the patients with PMH. In the diffuse hemorrhage subgroup, 1 patient had a rehemorrhage and 2 patients had a poor outcome. Our literature review found an OR of 6.23 for a good outcome for PMH versus diffuse-type hemorrhage, and an OR of 2.78 for rehemorrhage in PMH versus diffuse-type hemorrhage. Angiogram-negative SAH is not a benign entity. Complications are present but are significantly reduced, and outcomes are improved, compared with aneurysmal SAH [3].

The purpose of Zhang et al. was to screen independent factors and establish a nomogram to guide the clinical therapy and assess post-discharge prognosis.

They identified 273 consecutive patients referred from 2013 to 2018 for AN-SAH. A nomogram to predict poor outcomes was formulated based on the multivariable models of independent risk factors. The accuracy and discrimination of nomograms were determined in training and internal validation cohorts.

The overall poor outcome rates of AN-SAH were 14.3% and 8.7% at 3 months and 12 months, respectively. In addition, perimesencephalic AN-SAH (PAN-SAH) presented with a more unfavorable prognosis compared with non-perimesencephalic AN-SAH (NPAN-SAH). The clinical prognosis was associated with the World Federation of Neurosurgical Societies scale (WFNS) (odds ratio, 3.82 [95% CI, 1.15-12.67] for 3-month outcome; and odds ratio, 31.69 [95% CI, 3.65-275.43] for 12-month

outcome), Subarachnoid hemorrhage Early Brain Edema Score (SEBES) (odds ratio, 10.39 [95% CI, 1.98-54.64] for 3-month outcome; odds ratio, 10.01 [95% CI, 1.87-53.73] for 12-month outcome), and symptomatic vasospasm (odds ratio, 3.16 [95% CI, 1.03-9.70] for 3-month outcome; odds ratio, 5.15 [95% CI, 1.34-19.85] for 12-month outcome). The nomogram was constructed based on the above features, which represented great predictive value in clinical outcomes.

Symptomatic vasospasm, high World Federation of Neurosurgical Societies grading for subarachnoid hemorrhage, cerebral edema, and NPAN-SAH after hemorrhage were associated with poor outcome of AN-SAH. The nomogram with WFNS (3-5), SEBES (3-4), vasospasm, and NPAN-SAH represented a practical approach to provide individualized risk assessment for AN-SAH patients [4].

Low complication rate, especially in the Perimesencephalic subarachnoid hemorrhage (p-SAH) group [5].

Cognitive outcome

Few studies investigate cognitive outcomes in patients with angiographically negative subarachnoid hemorrhage (anSAH), which is traditionally viewed as a condition with an excellent prognosis. The aim of a study was to assess neuropsychological outcomes in a prospective cohort of anSAH patients 1-year post-event.

This prospective case-controlled study of cognitive function in patients with anSAH (n = 38) recruited from the national centre for neurosurgery and compared matched controls (n = 28). The cognitive battery assessed memory, executive function, attention, visuo-spatial function, processing speed, social cognition, language, and mood. Patients were matched to controls on age, education, and premorbid intelligence.

Multivariate Analysis of Variance (MANOVA) were used. Patients performed significantly worse than controls on all cognitive domain composite scores. anSAH patients had a higher frequency of impairment within encoding, executive, and processing speed domains when compared to healthy controls. Discriminant Function Analysis (DFA) indicated high sensitivity and specificity to detect cognitive impairment between groups.

Although the majority of patients with anSAH make an excellent physical recovery, our data show a high rate of cognitive dysfunction in patients 1-year post-incident. Cognitive impairment in anSAH is not a universal feature, and its manifestations may be more heterogeneous than previously recognised. Some impairment may be mediated by impaired speed of processing which negatively influences other cognitive domains. The profile of cognitive impairment supports a neurotoxicity hypothesis, which suggests that blood in the subarachnoid space, rather than the bleed per se, results in a diffuse pattern of cognitive deficits [6].

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