Meningiomas Presenting with Spontaneous Intracranial Hemorrhage: A Case Series

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Background Spontaneous intracranial hemorrhage is a rare presentation of meningioma. We sought to review our experience with this rare presentation.

Methods We conducted a retrospective review of pathologically proven meningioma cases at our institution between 2001 and 2020 to identify cases that presented with intracranial hemorrhage. Patient demographics, imaging findings, treatments, and outcomes were recorded.

Results We identified four patients who presented with spontaneous (non-traumatic) intracranial hemorrhage attributed to a meningioma. Patient ages ranged from 36-82 years and two were female. Three patients had a history of hypertension and two were on anticoagulation medications at the time of presentation. Two patients presented with intraparenchymal hemorrhages, one with a subdural hemorrhage, and one with subarachnoid hemorrhage. All hemorrhages were adjacent to the respective meningiomas. Meningioma locations included convexity in three patients and sphenoid wing in one. All patients underwent successful surgical resection of the meningioma. Pathology results revealed grade I meningiothelial meningioma in two patients and atypical grade II characteristics in the other two patients. Additionally, the KI-67 and mitotic figures were highly varied, ranging from 1-30% and 0-10%, respectively. There was no tumor recurrence during follow-up periods ranging from 5-26 months.

Conclusion Meningioma is a rare cause of spontaneous intracranial hemorrhage and should be considered in the workup of intracranial hemorrhage.

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Treatment of Ruptured Intracranial Aneurysms Using Surface Modification: A Systematic Review and Meta-Analysis

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Background Surface modification of flow-diverters (FD) metallic struts has been explored as an alternative to reduce the thrombotic risk of these devices, without necessarily using potent antiplatelet therapy. Such feature, if efficient, could pose a promising alternative to the treatment of ruptured aneurysms that are not amenable to other modalities. We performed a systematic review of literature and meta-analysis of studies reporting the use of surface modified FDs to treat ruptured intracranial aneurysms to evaluate the characteristics of aneurysms treated with these devices, their periprocedural safety in the setting of SAH and outcomes.

Methods We performed a comprehensive systematic search of PubMed, MEDLINE, and Embase databases following the Preferred Reporting Items for Systematic reviews and Meta-analyses (PRISMA) guidelines. We included articles reporting the use of surface modified flow-diverters in the treatment of ruptured aneurysms. Demographics, severity of subarachnoid hemorrhage (SAH), aneurysm characteristics, devices used, complications, angiographic outcomes, and mortality were extracted.

Results Six studies comprising 59 patients with 64 aneurysms were included. Mean age of patients was 56.6 (SD ± 6.3 years) and 60.6% (95% CI 46.7%-72.9%) were women. Anterior circulation location was 60.4% (95% CI 45.5%-73.5%) of aneurysms. Aneurysms were saccular in 41.8% (95% CI 29.3%-55.4%), fusiform in 16.7% (95% CI 8.3%-30.8%), dissecting in 29.9% (95% CI 12.8%-55.4%), blood blister in 24.4% (95% CI 15.2%-36.7%) and mycotic in 5.7% (95% CI 2%-15.1%). Poor SAH grade was reported in 46.9% (95% CI 33.3%-60.9%). Adjunctive coiling was used in 33.2% (95% CI 12.4%-63.6%). Periprocedural thromboembolic and hemorrhagic complications occurred in 20% (95% CI 7.1%-45.1%) and 8.8 (95% CI 3.7%-19.5%), respectively. Complete occlusion was achieved in 76.4% (95% CI 58.1%-88.3%), no retreatments during follow-up were reported. Overall mortality rate was 15.1% (95% CI 7.7%-27.6%). There were no differences between single and dual antiplatelet regimens with regards to periprocedural ischemic (P=0.09) and hemorrhagic (P=0.834) complications, and mortality (P=0.312).

Conclusion Surface modified FDs for the treatment of ruptured aneurysms had high rates of ischemic complications and acceptable rate of hemorrhagic complications. A relevant proportion of aneurysms were either dissecting, fusiform or blood-blister like. Rates of complete occlusion were high and retreatment was low. There were no statistical differences between SAPT and DAPT regarding periprocedural complications and mortality.

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