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A True Intracranial Mycotic Aneurysm of the Posterior Cerebral Vasculature due to Aspergillus – Case Report and Review of the Literature

Chen Xu M.D.; Raj Kiran Nangunoori MD; Diana Jho MD, MS; Alejandro Castellvi MD; Cunfeng Pu M.D., Ph.D.; Khaled M. Aziz MD PhD

Allegheny General Hospital Department of Neurological Surgery, Pittsburgh, PA

Allegheny Health Network

Introduction

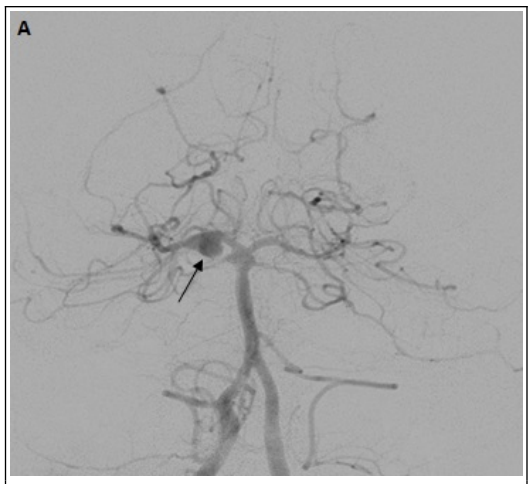
True intracranial mycotic aneurysms are rare and those that arise in the posterior circulation are even more uncommon. The most commonly involved locations are the smaller cortical branches of the middle cerebral artery (MCA), with only 5% occurring in the posterior cerebral circulation [2]. We report a patient who presented with an *Aspergillus*-infected mycotic aneurysm of the posterior cerebral artery with subarachnoid hemorrhage and subsequent development of a mycotic aneurysm of the superior cerebellar artery. A review of the literature was also performed to review all *Aspergillus*-related mycotic aneurysm cases with regards to their treatments and outcomes.

Literature Review

A review of the literature showed 29 reported cases of *Aspergillus*-infected intracranial aneurysms from 1970-2014. In the majority of cases treatment was not promptly directed at a fungal etiology and consequently patients suffered aneurysm rupture, subarachnoid hemorrhage, diminished neurological function, and eventual death with *Aspergillus* infections diagnosed post-mortem. Of all the reported cases, only 4 presented patients surviving after prompt surgical intervention with anti-fungal therapy [1, 3, 4, 5].

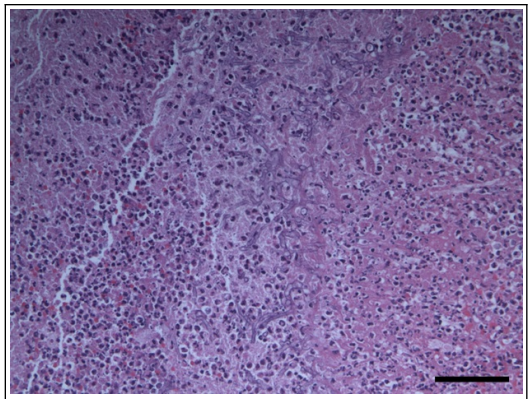
Case Report

The patient was a 30-year-old male with a history of intravenous drug abuse. Cerebral angiography showed a right posterior cerebral artery (PCA) aneurysm measuring 4 x 5 mm at the level of the P1-P2 junction with both saccular and fusiform components (**A**). Empiric broad-spectrum antibiotic therapy with Vancomycin, Flagyl, and Rocephin was instituted for presumed mycotic aneurysm. Acyclovir was added 2 days later. Daily cerebral angiograms were performed. Angioplasty, while considered for treatment was not attempted due to the possibility of sacrificing the PCA and basilar artery.

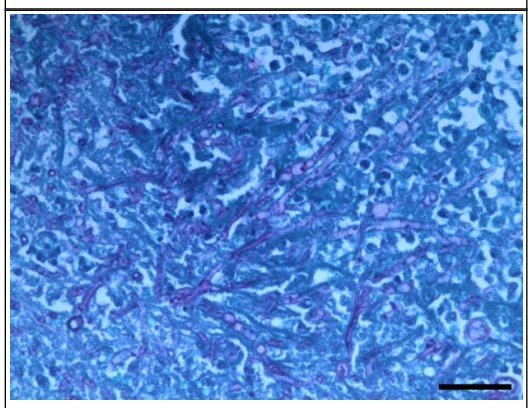


Right PCA (arrow) aneurysm at the level of the P1-P2 junction

The patient's neurologic exam continued to decline. Post-mortem evaluation showed a ruptured mycotic aneurysm of the right PCA and an intact mycotic aneurysm of the left SCA, both involving angio-invasive *Aspergillus* infection.



H/E Stain: Artery with marked acute inflammation and necrosis of the vessel wall. Scale bar, 100micrometers



PAS Stain: Branching fungal septate hyphae in vessel wall. Scale bar, 50micrometers

Conclusions

Aspergillus-infected intracranial aneurysm outcomes reported in the literature have been poor. However, cases where prompt implementation of anti-fungal therapy, in conjunction with surgical intervention, have shown more favorable outcomes. It is therefore reasonable to suggest that in addition to broad-spectrum antibiotic coverage in the setting of presumed mycotic aneurysm to cover for the more common bacterial sources, empiric anti-fungal therapy should also be incorporated to cover the serious, albeit rarer, fungal etiologies, and may serve to prevent enlargement of these lesions and the development of new aneurysms, decrease the incidence of ruptures, and ultimately improve patient outcomes.

References

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