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Ruptured Cerebral Mycotic Aneurysm Secondary to *Burkholderia cepacia*: A Case Report

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ABSTRACT

Mycotic aneurysms, rare and severe vascular lesions, account for 2.5-4.5% of all intracranial aneurysms, often leading to significant morbidity and mortality. We report a unique case of a 66-year-old male with a history of hypertension and diabetes mellitus, who presented with recurrent syncopal episodes. Imaging revealed an intracerebral hematoma, and further angiographic studies identified a small bilobed aneurysm in the left ophthalmic artery, indicative of a mycotic aneurysm. Blood cultures revealed *Burkholderia cepacia*, an unusual causative pathogen in such cases. The patient underwent successful surgical intervention with complete recovery, marking this as a rare instance of ruptured cerebral mycotic aneurysm due to *Burkholderia cepacia*, highlighting the importance of considering this pathogen in similar clinical scenarios.

INTRODUCTION

Mycotic aneurysms are rare inflammatory neurovascular lesions first described in 1855^[1]. Mycotic aneurysms account for approximately 2.5-4.5% of all intracranial aneurysms and are unique in their natural history, pathologic findings, location and common multiplicity^[1-5]. Their spontaneous rupture mostly results in subarachnoid and intracerebral hemorrhage, accompanied by morbidity and mortality as high as 60-90% in older case reports and 12-32% in more recent reports^[6,7].

Mycotic aneurysm is a rare intracranial vascular pathology. These aneurysms are typically located in the distal cortical vessels. Most of them remain asymptomatic due to its superficial location. They may present with subarachnoid or intracerebral hemorrhage which is associated with high mortality. Their presence is detected when the cause of intracerebral hemorrhage is investigated with CT angiography and or Digital Subtraction angiography to look for the site of bleed. Mycotic aneurysm secondary to *Burkholderia cepacia* is very rare and there is no case report of ruptured mycotic aneurysm due to this organism.

Case description: A 66 year old man, a known case of hypertension and Diabetes Mellitus on oral medications presented to the Emergency department of our hospital with complaints of syncopal attacks (lasting approximately two to three minutes) two times at a gap of 3 hrs apart for one day. There was no history of vomiting, convulsion. There is history of syncopal attacks for the past 3 years lasting approximately a few seconds but it used to occur only

once in few months with no sensory-motor deficit. On examination he was opening his eyes, confused and disoriented, obeying commands. Power in both his upper and lower limbs was normal (5/5). Deep tendon reflexes were normal. Patient was afebrile, there was no sensori-motor deficit. Chest was normal. CT scan of the brain showed an intracerebral haematoma in the left temporal pole with extension into the sylvian fissure. CT angiography showed an aneurysm possibly arising from the distal branch of left MCA. In order to better delineate the site of aneurysm DSA was done. It revealed a small bilobed aneurysm 5.8×3.07 mm from one of the distal branch of left ophthalmic artery likely recurrent meningeal branch of lacrimal artery showing delayed phase likely to be a mycotic aneurysm. Blood culture was sent which showed growth of *Burkholderia cepacia*. Antibiotic was started as per the sensitivity report. Patient underwent Left Pterional Craniotomy with evacuation of the hematoma and excision of the aneurysmal sac. Perioperative period was uneventful. He recovered completely without any sensori-motor deficit and was discharged home after 5 days (Fig. 1 and 2).

DISCUSSIONS

Intracranial infectious aneurysms are rare vascular lesions and were first reported by Church in 1876 and account for 0.7-5.4% of all intracranial neurysms. They are usually located on the middle cerebral artery or its distal branches in upto 70% of the cases. Less commonly on the anterior or posterior cerebral arteries. Their evolution is unpredictable even after commencement of antibiotic therapy. The mycotic aneurysms can either regress, develop de novo,

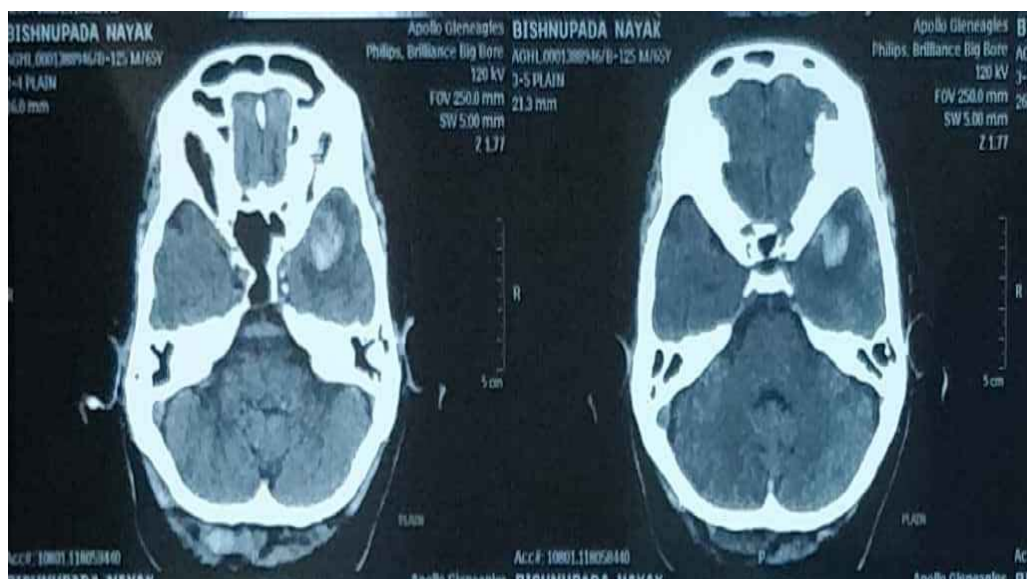


Fig. 1: Plain CT Brain showing Hemorrhage in left temporal lobe intracerebral hematoma

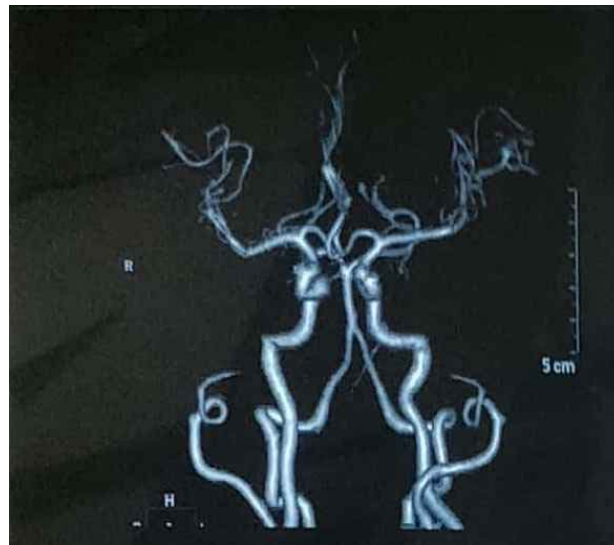


Fig. 2: CT Angiogram showing an aneurysm at the distal branch of Left MCA

persist, enlarge or rupture. Variable outcomes have been reported 3 with a mortality rate of upto 30% when unruptured and 83% with ruptured mycotic aneurysm^[8].

Mycotic aneurysms represent a rare but serious clinical condition characterized by significant morbidity and mortality. The most common causative pathogens of mycotic aneurysm are *Staphylococcus aureus* and *Salmonella* species. Also, other bacterias like *Pseudomonas* spp., campylobacter fetus, *Streptococcus* spp., *Clostridium* spp., corynebacterium spp. and *Klebsiella pneumoniae* have been noted as possible pathogens. Mycotic aneurysm develops as a consequence of bacterial emboli into the systemic circulation. There is no reported case of cerebral mycotic aneurysm caused by *Burkholderia cepcea*.

Burkholderia cepacea is a group of catalyse producing, lactose-nonfermenting, gram negative bacilli composed of atleast 20 different species including *B. cepcea*, *B. multivorans*, *B. cenocepacia*, *B. vietnamiensis*, *B. Stabilis*, *B. Ambifara*, *B. Dolosa*, *B. Anthina*, *B. Pyrrocinia* and *B. Ubonensis*. *B. cepacea* is an opportunistic pathogen that often causes pneumonia in immunocompromised individuals with underlying lung disease (such as cystic fibrosis or chronic granulomatous disease). *Burkholderia cepacea* organisms are typically found in water and soil and can survive for prolonged periods in moist environments. Diagnosis of BCC involves culturing the bacteria from clinical specimens, such as sputum or blood. In our case though the patient was afebrile, blood culture was sent when the angiography was suggestive of mycotic aneurysm. The blood culture showed the growth of *Burkholderia cepacea* which was treated according to the culture-sensitivity report.

CONCLUSION

Mycotic aneurysm should be suspected when the CT angiogram does not conclusively show any evidence of major cerebral vessel aneurysm in patients presenting with intracerebral hemorrhage in locations where one suspects aneurysmal vessel rupture. Digital Subtraction Angiography should be considered to better delineate the site of bleed which can show mycotic aneurysm very clearly. Blood culture should be sent before starting any antibiotic so that the causative organism can be identified and treated accordingly to prevent future recurrence of aneurysm.

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