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Mycotic Aneurysm from Abiotrophia Defectiva Causing Subdural Hematoma with Herniation

Nihit Mehta[1], Matthew Baskind[2], Keith Collins[2], Jose Maria Acostamadiedo[3]

[1]Family Medicine Residency, Champlain Valley Physicians Hospital, University of Vermont Health Network, Plattsburgh, NY, USA
[2]Champlain Valley Physicians Hospital, University of Vermont Health Network, Plattsburgh, NY, USA
[3]FitzPatrick Cancer Center, Champlain Valley Physicians Hospital, University of Vermont Health Network, Plattsburgh, NY, USA
Email: nmehta@une.edu

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Abstract

This case describes a ruptured mycotic aneurysm from Abiotrophia defectiva that led to a subdural hematoma and subsequent herniation. In the current literature, there have been cases highlighting mycotic aneurysms leading to subdural hematoma. Several others describe similar topics; however, none were caused by Abiotrophia defectiva, leading to a herniation event. Abiotrophia defectiva, while not common, is an insidious bacterium that is difficult to detect and leads to a poor prognosis. In their paper, Ding *et al.* described a hematoma formation from a ruptured aneurysm of the distal middle cerebral artery [1]. Similar cases include two instances published by Boukobza *et al.* [2]. These prior articles and our report summarizes that this diagnosis typically warrants careful evaluation of etiologies and close management of the patient.

Keywords

Abiotrophia Defectiva, Subdural Hematoma with Herniation, Mycotic Aneurysm

1. Introduction

Mycotic aneurysm, initially coined by William Osler, was a term that described infectious aneurysms of the aorta [3]. These lesions are typically challenging to manage, and early intervention is generally beneficial. Ding *et al.* described the fragility of such neurovascular mycotic aneurysms, as they are prone to rupture [1]. They outline two management routes. Those that ruptured require immediate surgical and neurovascular intervention [1]. For those unruptured aneurysms, the medical intervention is intravenous antibiotics, which require long-term fol-

low-up to monitor changes in the lesion. The two most common organisms are Staphylococcus aureus and Salmonella, with Staphylococcus being the more common among the two [4].

Boukobza *et al.* presented a similar case report with ruptured mycotic aneurysms; however, their case reports show several stark differences from our case [2]. First and foremost, their patients do not have Abiotrophia defectiva, a unique bacterium [2]. Second, out of the two instances, only one patient developed a hematoma, which improved with surgery [2]. A third and more interesting case report is presented by Matsuda *et al.,* in which a patient with multiple mycotic aneurysms is managed with a surgical endovascular coil for one lesion and antibiotic treatment for the rest [5].

2. Case Report

A 56-year-old male was referred to hematology/oncology after a 65 lb weight loss starting in May, along with fatigue, chills, sweats, night sweats, hot flashes, altered vision, shortness of breath with exertion, and intermittent chest pain. Since the onset of symptoms, multiple visits to his PCP and other providers and numerous tests were done without arriving at a diagnosis. Eventually, after several months, he called with complaints of a fever of up to 103 F and night sweats. He was immediately brought in and had blood cultures were drawn, which grew gram-positive organisms within a day. He was referred to the emergency room for evaluation. While in the emergency room, the patient had a lumbar MRI with and without contrast that revealed possible lesions of L2 and L3 for osteomyelitis versus discitis [**Figure 1**]. Given the history, he was started on intravenous vancomycin, and a transthoracic echocardiogram was ordered.

His transthoracic echocardiogram was unremarkable, thus followed by a transesophageal echocardiogram [TEE], which revealed mild mitral anterior valve thickening; however, no clear vegetation. Blood cultures by this time resulted in Abiotrophia defectiva, and he was transitioned to intravenous gentamicin and ampicillin.

Given the patient was developing an acute kidney injury, likely due to gentamicin, he was transitioned back to vancomycin. He had a PICC line placed for a six-week antibiotic use. The patient was eventually found to have worsening neurologic symptoms in the subsequent days, with worsening visual changes, headaches, and diaphoresis. The patient became unresponsive, and an emergent brain CT without contrast was ordered that revealed a subdural hematoma with a midline shift and evidence of uncal herniation [**Figure 2**].

As he remained unresponsive, he was intubated and transferred to the intensive care unit. While in the intensive care unit, the case was discussed with the University of Vermont Medical Center (UVMMC) Department of Neurosurgery. The patient was transferred to a higher level of care for further management. At UVMMC, the Department of Neurosurgery saw the patient, discussed his poor prognosis, and recommended palliative care. The patient was extubated and passed away within the next two days.

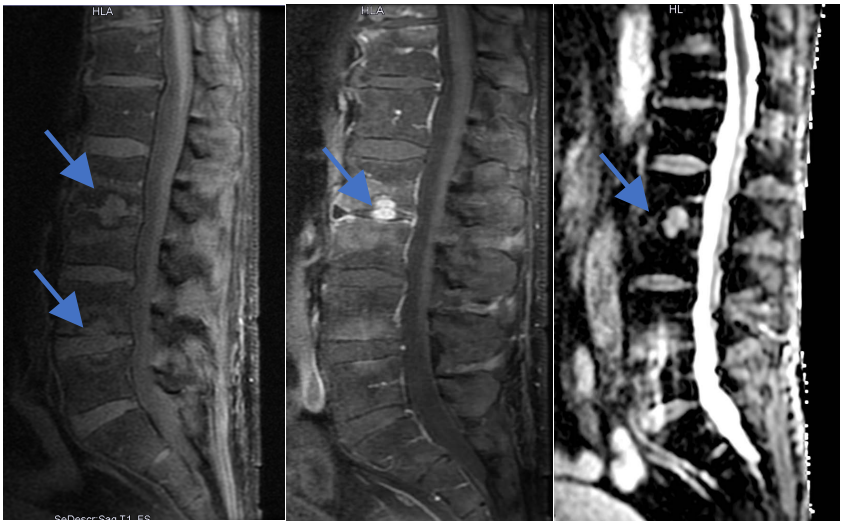

Figure 1. Lumbar MRI with and without contrast [Shows an acute enhancement in lumbar spine specifically around L2-3 and L4-5, with differential that includes acute Schmorl's nodes; associated inflammation/degeneration discitis/osteomyelitis is also within the differential].

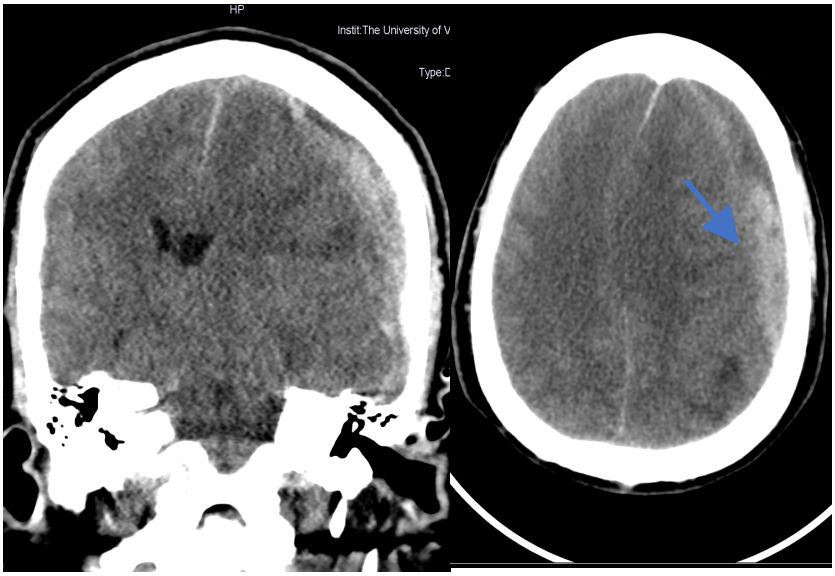

Figure 2. CT Brain without contrast [2 cm in width acute left subdural hematoma compressing the left cerebral hemisphere and causing a rightward midline shift of 1.7 cm]. **Pertinent Lab Values: 11/2/2021** CBC: 1) WBC = 9.76, Hgb = 9.3, ANC = 8.15, Chemistry: 2) Sodium = 132; **11/18/2021** CBC: 1) WBC = 18.18, Hgb = 7.3, Chemistry: 2) Creatinine 1.65, eGFR = 46, TP = 6.2 and Alb = 2.9.

3. Discussion

Our case is unique compared to other cases due to the following points. Most published cases in our study showed a clear etiology, such as an endocardial lesion. Yamakawa *et al.*, in their case report, describe a severe mitral valve regurgitation and left atrial vegetation [6].

Another unique aspect of the case was the rare follow-up to an uncal hernia-

tion, which we only saw in two other cases. A pediatric case documented by Khormi *et al.* describes a 13-year-old male in which the patient underwent two unilateral craniotomies on the right and left sides, respectively, due to symptoms and a new aneurysm. The other case was that of an adult by Lee *et al.* with an adult male having subdural hematoma due to ruptured mycotic aneurysm and uncal herniation [7] [8].

Through our research, Kohok *et al.* published the most similar case, where the authors describe an 89-year-old female admitted with month-long symptoms similar to our patient [9]. Their patient also ended up passing away from a subarachnoid hemorrhage caused by Abiotrophia defectiva endocarditis [9]. The rupture of a mycotic aneurysm should have active and acute interventions performed. However, the rupture of such aneurysms following a full course of antibiotics is rare [10].

4. Conclusion

There are certain important implications from our case report. Patients should have a careful evaluation for "culture-negative organisms" like Abiotrophia defectiva with worsening prognosis [11] [12]. In addition, mycotic aneurysms deserve aggressive management. Though rare, they can have consequences such as uncal herniation. Abiotrophia defectiva infection often has mild to moderate symptoms; however, per our Infectious Disease provider, it also has the capability to cause mycotic aneurysms. Patients infected with this bacterium would benefit from a thorough workup and avoid any delay in diagnosis, which can lead to negative consequences for the patient.

The diagnosis of mycotic aneurysm should involve careful evaluation, as these require acute interventions [13]. Surgical intervention in these patients, regardless of approach, is beneficial in the long term [13].

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Statement of Ethics

The study is exempt from ethics committee approval. It is a retrospective case report. Written informed consent was obtained from the patient's substitute decision-maker for publication of this case report and any accompanying images.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Author Contributions

Jose Maria Acostamadiedo, MD, contributed to conceptualization, methodology,

software, reviewing and editing, and supervision.

Data Availability Statement

Data are not publicly available in accordance with HIPAA.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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