

# Ruptured intracranial mycotic aneurysm with abiotrophia defectiva bacteremia in a patient with appendicitis

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## Abstract

**Background:** Abiotrophia defectiva was known as a member of the nutritionally variant streptococcus (NVS). It's a part of the normal flora of mouth, genitourinary and intestinal tracts. But it can cause various and rare infections such as bacteremia, infective endocarditis, septic embolization, central nervous system infection and septic arthritis.

**Case Presentation:** The 25-year-old previously healthy young man presented to the hospital because of headache, fever and abdominal pain for a few days. The physical examination showed McBurney's point tenderness and abdominal CT revealed early stage appendicitis. Emergency appendectomy was performed. But neurological deterioration (impaired of consciousness, right-sided hemiplegia and dilatation of left-sided pupil) occurred suddenly on postoperative day 2. The brain computed tomography angiography showed mycotic aneurysm, which was favored due to an enhancing nodule located in distal branch of the left middle cerebral artery. Craniotomy for removal of hematoma was performed. The initial blood culture on admission yielded Abiotrophia defectiva. Antibiotic therapy with penicillin and gentamycin was given intravenously. Infective endocarditis was excluded due to negative finding of vegetation on transthoracic and transesophageal echocardiography.

**Conclusion:** Mycotic aneurysm caused by Abiotrophia defectiva is quite rare. Whether Abiotrophia defective of our case came from acute appendicitis but not from endocarditis was difficult to discern.

## Keywords

mycotic aneurysm; abiotrophia defective; bacteremia; appendicitis

## Introduction/Background

Abiotrophia defectiva was known as a member of the nutritionally variant streptococcus (NVS). It's a commensal organism in humans. But it can cause various and rare infections such as bacteremia, infective endocarditis, central nervous system infection, ophthalmological, orthopedic and skin infections.

## Case Presentation

A 25-year-old previously healthy young man of Indonesian foreign worker presented to the

hospital because of headache, fever and abdominal pain for a few days. The physical examination showed McBurney's point tenderness and abdominal CT revealed early stage appendicitis. Emergency appendectomy was performed. But neurological deterioration (impaired of consciousness, right-sided hemiplegia and dilatation of left-sided pupil) occurred suddenly on postoperative day 2. The brain CT revealed intracerebral hemorrhage (4.8x4.8\*3.7cm) (Fig. 1) in left parietal area with midline shift. Brain computed tomography angiography showed an enhancing nodule (0.7\*0.3 cm) at distal branch of the left middle cerebral artery (Fig. 2). Suggesting septic embolism related mycotic aneurysm. Craniotomy for removal of hematoma was performed. However, because of aneurysm rebleeding, craniectomy was performed to clip the aneurysm on post craniotomy day 9. The operation finding showed a mycotic aneurysm about 0.7 \* 0.3 cm in left MCA branch. The initial blood culture on admission yielded *Abiotrophia defectiva*. Antibiotic therapy with penicillin and gentamycin was given intravenously. Infective endocarditis was excluded due to negative finding of vegetation on transthoracic and transesophageal echocardiography. No organism was found in cerebrospinal fluid (CSF) culture. Pathology for the removed hematoma revealed blood clots and many polymorphonuclear leukocytes, supporting the diagnosis of ruptured infected vessels. His consciousness became clear, and he was then transferred to the ordinary ward.

## Discussion

*Abiotrophia defectiva* was known as a member of the NVS, and it was isolated from patients with endocardial inflammation and otitis media by Frenkel and Hirsch on early 1961 [1]. *Abiotrophia* spp. are part of the normal flora of mouth, genitourinary and intestinal tracts [2]. A variety of infections by *Abiotrophia defectiva* have been reported, included endocarditis with bacteremia [3-4], CNS infection [5-7], ophthalmological infection [8], septic arthritis [9] and bullous impetigo [10]. It's a fastidious organism, because it difficult grow in common culture medium and required add pyridoxal and other agents for successful laboratory isolation [1,11]. *Abiotrophia defectiva* may be isolated from blood cultures, CSF or vascular graft specimens in immunocompetent patients with endovascular infections [12] and previously healthy persons [5-7]. However, association with inflammatory appendicitis has not been reported.

Adherence to fibronectin may be an important factor involved in the pathogenesis of *Abiotrophia defectiva* endovascular infections [12]. Only 1% of all cases of endocarditis are caused by *Abiotrophia defectiva* [4]. Case of cerebral mycotic aneurysm caused by *Abiotrophia defectiva* bacteremia was first reported by Leonard [7]. Yang et al also described a case of cerebral mycotic aneurysm caused by *Abiotrophia defectiva* endocarditis [6]. Infected cerebral aneurysms are more common in the anterior circulation than the posterior circulation and they tend to be peripherally located [13]. Brain CTA showed similar findings in this study and Yang et al described.

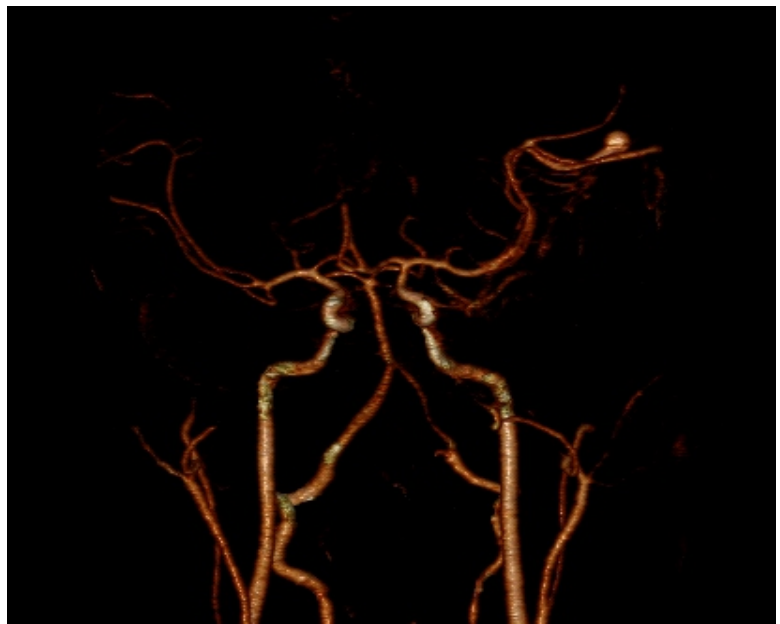
Antibiotic treatment regimen of *Abiotrophia defectiva* endocarditis should include penicillin or ampicillin plus an aminoglycoside for 4 to 6 weeks, and it also had a high success rate [4]. Mycotic aneurysm caused by primary *Abiotrophia defectiva* bacteremia without endocarditis is not reported before. The first-line treatment for mycotic aneurysm was also antimicrobial therapy [14]. However, unruptured mycotic aneurysm is difficult early detect before neurological deterioration, thus these patients should be observed during antibiotic therapy and followed up with cerebral angiography [15].

Surgical treatment should be pursued for rupture of mycotic aneurysm and should be considered if the aneurysm enlarges [15]. Whether Abiotrophia defective of our case came from acute appendicitis but not from endocarditis was difficult to discern.

## Figures



**Figure 1:** Brain CT revealed intracerebral hemorrhage (4.8x4.8\*3.7cm) in left parietal area with midline shift



**Figure 2:** Brain computed tomography angiography showed an enhancing nodule (0.7\*0.3 cm) at distal branch of the left middle cerebral artery.

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