

## A Case Report: Malignancy Mimicking Mycotic Aneurysm

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### Abstract

A 45 year old female with an acquired brain injury who presented to ED with recurrent falls, epigastric pain radiating to the left lower chest and constitutional symptoms was initially commenced on empirical antibiotic treatment for a suspected mycotic aneurysm. Laboratory testing revealed leukocytosis and computer tomography (CT) imaging showed an unusual paraaortic soft tissue mass further increasing the suspicion of mycotic aneurysm. However, due to the unusual appearance on CT and negative blood culture, an endobronchial ultrasound guided transoesophageal biopsy was performed to confirm the diagnosis. Histological findings were consistent with poorly differentiated adenocarcinoma and a diagnosis of malignancy secondary to possible cancer of the pancreas, biliary or gastrointestinal tract was made. The patient was subsequently palliated and passed away peacefully 27 days after admission.

### Keywords

mycotic aneurysm; paraaortic mass; malignancy; abdominal pain

### Introduction

Mycotic aneurysms are relatively rare and can progress rapidly with severe complications if left untreated. The aorta is the most commonly affected vessel with patients usually presenting with sepsis and pain associated to the location of the mass [1,2,5,7,9-11]. The appearance of a soft tissue paraaortic mass on CT imaging (Figure 1) suggests the presence of a mycotic aneurysm with a differential diagnosis of an abscess, necrotic mass or malignancy.

### Case Report

A 45 year old female with a past history of traumatic brain injury presented to the Emergency Department with chest and abdominal pain along with fever, lethargy and malaise.

The patient had presented to the emergency department 11 months prior with abdominal pain, lethargy and urinary frequency with elevated inflammatory markers (white cell count 144.2g/dL, CRP 63mg/L). She was diagnosed with a urinary tract infection and discharged home on Trimethoprim. In this current episode, she presented to the emergency department after a fall with reports of intermittent right upper quadrant and left lower chest pain radiating to the epigastric and thoracic spine regions. There was no loss of consciousness, dizziness, respiratory distress or hypoxia. In addition, she also reported having dysuria with increased urinary frequency, lethargy, malaise, functional decline with intermittent fevers and chills as well as several falls over a one month period.

On examination, the patient was tachycardic (heart rate 110bpm) and hypertensive (blood pressure 140/80mmHg). Abdominal examination revealed epigastric and right upper quadrant tenderness with localized guarding.

Laboratory testing revealed leukocytosis ( $27.2 \times 10^9/L$ ), neutrophilia ( $23 \times 10^9/L$ ), anaemia (Haemoglobin 11.3g/dL, baseline 12-12.5g/dL) and raised CRP (270mg/L). However, blood cultures were negative and chest X-ray was unremarkable. CT scan of the abdomen and chest revealed a large left paraaortic mass with slight rim enhancement measuring 7.5x6.9x10.4cm encompassing the thoracic descending aorta from T8-T11 with extension into the left pleural cavity (Figure 1). The central fluid dense mass suggested a mycotic aneurysm or abscess with a differential diagnosis of a large necrotic mass and the patient was commenced on intravenous Ceftriaxone.

In this case, the identified para-aortic mass showed no conclusive aortic involvement although the abnormality could not be separated from the vessel wall. It appeared to be a stable mass on repeat CT one week post admission with preserved aortic intimal layer and no evidence of periaortic gas or oedema was reported. This unusual appearance on CT compounded with a negative blood culture led to the decision to perform an endobronchial ultrasound and a transoesophageal fine needle aspirate prior to any further surgical planning. Rapid on-site cytology examination was suggestive of a tumour and histological results showed malignant epithelioid cells (Figure 2).

A diagnosis of poorly differentiated adenocarcinoma involving multiple lymph nodes secondary to possible primary upper gastrointestinal tract, pancreas and biliary tract carcinoma was made. Additional laboratory testing showed elevated serum tumour markers (CA125 250U/ml, CA19.9 39U/ml) and the patient was persistently hypercalcaemic despite intravenous fluid therapy. Retrospectively, no primary tumour was visible on CT imaging.

Given the patient's severe decline in cognitive state, functional capacity and extent of malignancy spread, she was deemed an unsuitable candidate for curative treatment and subsequently referred to palliative care. The patient passed away peacefully 27 days after admission.

## Discussion

Mycotic aneurysms are uncommon with only 2.6% of aneurysms occurring as a result of an infectious process causing dilatation and out-pouching of the vessel wall [10,11]. The most commonly affected artery is the aorta (1,2,5,7,9-11) with aneurysms documented at the ascending aorta (6%), descending thoracic aorta (23%), thoracoabdominal aorta (19%) and abdominal aorta (51%) [10].

Although the term "mycotic" is used, infected aneurysms rarely stem from fungal causes, instead 80% of cases arise from bacterial arteritis with *Staphylococcus aureus* and *Salmonella* species the most common causative agents [1,2,4,5,8-11]. When mycotic aneurysms were first described by Osler (1885), the source of sepsis was closely linked to bacterial endocarditis [12]. However, in the post-antibiotic era other causes and predisposing risk factors for mycotic aneurysms were identified including coarctation of the aorta, invasive intravascular procedures, general invasive procedures as well as infection at other sites such as urinary tract infections [1-3, 10, 11].

Multiple factors contributed to the initial diagnosis of mycotic aneurysm. Firstly, the most common presentation in cases of infected aneurysms is fever followed by abdominal, chest or back pain

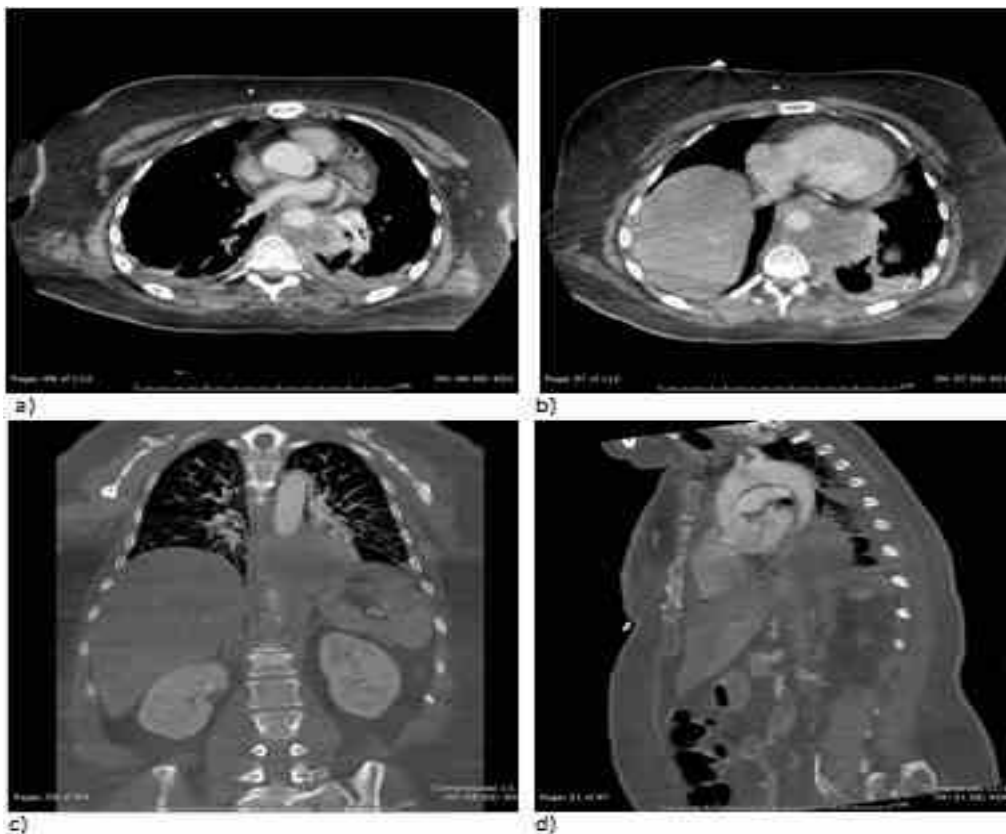
correlating to the location of the aneurysm [1-3,5,7-11]. 90% of patients are symptomatic with the average symptomatic period of 38 days (range 1-220 days) prior to diagnosis [2]. In this case, the patient was symptomatic for approximately 40 days before an initial diagnosis of mycotic aneurysm was made and empirical antibiotic treatment commenced. Sepsis evidenced by leukocytosis and raised inflammatory markers was also a consistent finding in studies done over the last 60 years [1-4,6-11] however blood culture results are not as reliable with 18-50% [1,5] of patients reporting a negative result.

CT remains the imaging modality of choice for diagnosis of infective aneurysms. Four studies have shown that paraaortic soft tissue mass is a typical feature seen in up to 48% of patients with a mycotic aneurysm along with other findings such as periaortic oedema and periaortic gas [1,5,7,9]. As mycotic aneurysms can often lead to severe complications including uncontrolled sepsis, fistula, rupture, perforation and bleeding if left untreated, rapid intervention including preoperative antibiotic treatment has shown to improve prognosis [3, 5-8, 10, 11].

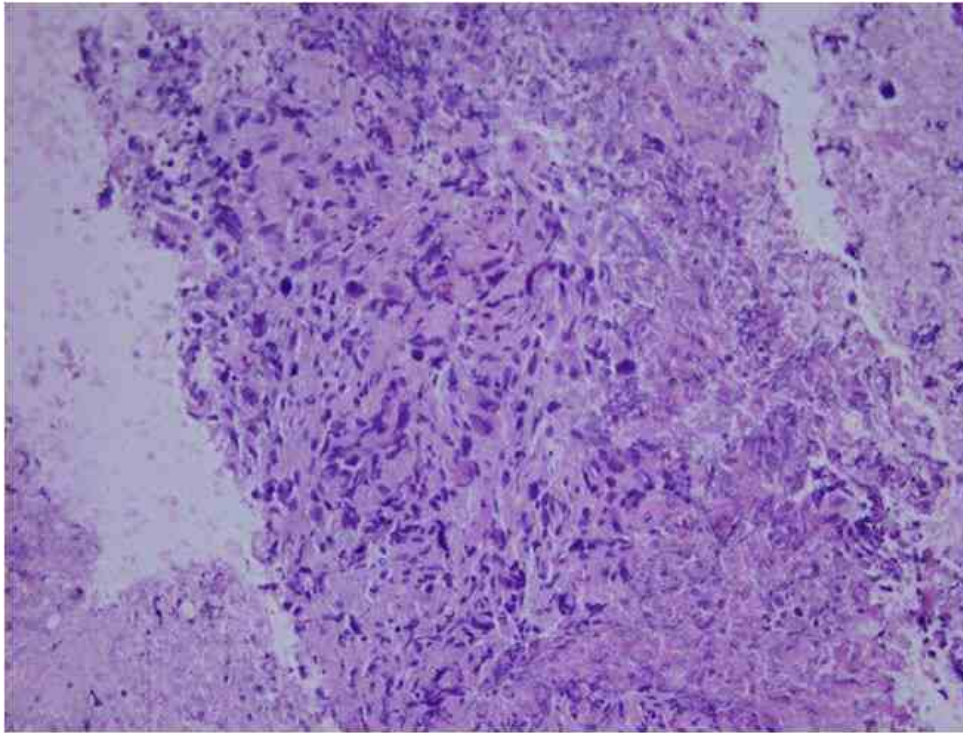
## Conclusion

In conclusion, several factors in this case raise suspicion of a mycotic aneurysm given CT findings of a rim enhancing soft tissue paraaortic mass in a setting of constitutional symptoms with corresponding pain, raised inflammatory markers and a possible source of infection from recent urinary tract infection. Given the potential for severe complications and rapid deterioration, a clinical diagnosis was sufficient to commence antibiotic treatment. However, further investigations to confirm the diagnosis eventually revealed a malignant mass of unknown origin. Therefore, even with a convincing clinical description, malignancy should not be ruled out as a differential diagnosis for mycotic aneurysms.

## Figures



**Figure 1:** 45 year of female who presented with right upper quadrant and left lower chest pain with constitutional signs initially diagnosed with a mycotic aneurysm had a computer tomography (CT) angiogram of chest (contrast-enhanced volume acquisition). a) Large mass immediately left of the descending aorta, measuring 7.5x6.9x 10.4 cm. It is of central fluid filled density with peripheral soft tissue density, which is subtly enhancing. The adjacent aorta is subtly distorted. b) More inferiorly, the large mass has low density material posterior to the aorta and diaphragmatic crura, possibly reflecting lymphadenopathy or extension of the collection across the aortic hiatus. c) Coronal section illustrates involvement of thoracic aorta and d) mass extending into the posterior mediastinal space.



**Figure 2:** 45 year of female who presented with right upper quadrant and left lower chest pain with constitutional signs initially diagnosed with a mycotic aneurysm had an endobronchial ultrasound guided transoesophageal fine needle aspirate showing histological malignant epithelial cells consistent with poorly differentiated necrotic adenocarcinoma.

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