



# Infectious aortitis from pyogenic spondylitis and psoas abscess: Case report

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## ABSTRACT

Infectious aortitis has various causes, presents mainly with an aneurysm, and is fatal without surgical intervention. This case report describes an 89-year-old woman who developed fever and back pain which initially diagnosed infectious aortitis confirmed through contrast-enhanced computed tomography (CT). Pyogenic spondylitis and psoas abscess, which were not visible through CT at admission, were identified as the cause of infectious aortitis confirmed through positron emission tomography (PET). After percutaneous drainage and intravenous antibiotics, the patient was discharged in good condition and without surgical intervention. This case report emphasizes the critical role of PET in identifying the cause of infectious aortitis and demonstrates the effectiveness of successive treatment with antibiotics and timely radiologic intervention.

**Keywords:** Aortitis; case report; psoas muscle abscess; pyogenic spondylitis.

## INTRODUCTION

Aortitis is an abnormal inflammatory disorder of the aortic wall with or without an extension to the aortic branches. It is a rare but life-threatening condition that most commonly affects the abdominal aorta and is often associated with an abdominal aortic aneurysm.<sup>[1]</sup> In this report, we describe a rare case of infectious aortitis from metastatic infection of adjacent pyogenic spondylitis, which spread to the psoas muscle and resulted in an abscess. Informed consent was obtained from the patient.

## CASE REPORT

An 89-year-old woman, after a visit at the primary orthopedic clinic, was transferred to the emergency department (ED) due to the risk of sepsis and for further diagnostic workup. The patient reported back pain for 2 days, febrile sensations, and occasional vomiting after meals.

The patient had a history of hypertension, osteoporosis, Alzheimer's dementia, and multiple spinal compression fractures, including at the T12 and L1 level, which were regularly followed up at the primary orthopedic clinic after vertebroplasty.

The initial physical examination in the ED revealed an ill-appearing woman who seemed in no acute distress on presentation; she was awake and responsive to verbal stimuli but appeared lethargic. Vital signs were as follows: Body temperature by mouth, 37.2°C; blood pressure, 119/56 mm Hg; pulse rate, 87 beats/min; respiratory rate, 20 breaths/min; blood oxygen saturation without supplemental oxygen, 99%; and glucose level, 83 mg/dL. Further examinations revealed that the lungs were clear, and the abdomen was soft, mildly distended, and minimally tender, with no evidence of rebound or guarding. However, the patient was chronically incontinent and had a diaper in place.

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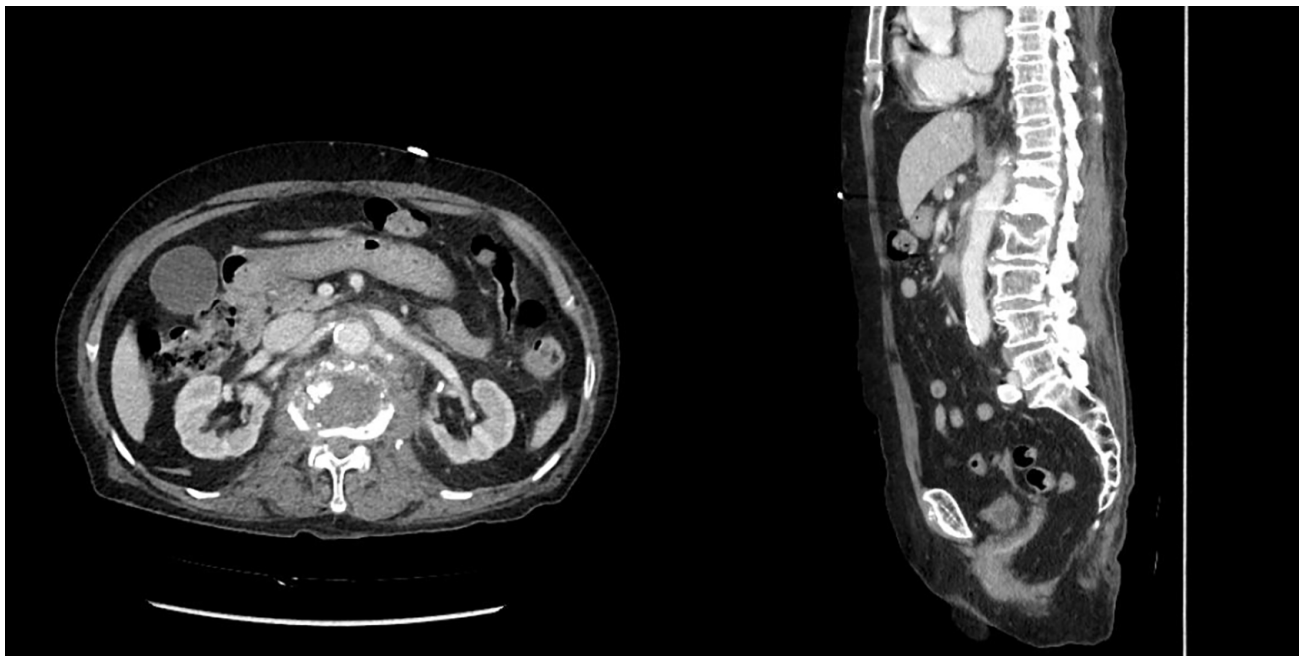
Laboratory values were as follows: White blood cell count, 18.8 K/ $\mu$ L; hemoglobin and hematocrit, 6.7 g/dL and 22.2 g/dL, respectively; platelet count, 127,000  $\text{mm}^3$ ; neutrophils, 91.5%; lymphocytes, 3.6%; sodium, 127 mmol/L; potassium, 3.7 mmol/L; chloride, 98 mmol/L; serum total  $\text{CO}_2$ , 16 mmol/L; BUN/creatinine ratio, 64/2.4 mg/dL; ALT, 23 U/L; AST, 11 U/L; alkaline phosphatase, 52 U/L; total bilirubin, 0.6 mg/dL; albumin, 3.4 g/dL; amylase, 28 U/L; lipase, 29 U/L; initial creatinine kinase, 126 U/L; CK-MB, 2.3 ng/mL; troponin, 0.2 ng/mL; and C-reactive protein, 28.5 mg/dL. The urinalysis showed negative leukocyte esterase, 3+ blood, 6–10 WBCs/HPF, many RBCs/HPF, and 0–2 squamous epithelial cells/HPF. A chest X-ray study diagnosed cardiomegaly with no infiltrates, while an electrocardiogram showed a normal sinus rhythm at 91 beats/min and no acute ST or T changes.

Due to the leukocytosis and elevated C-reactive protein level, evidence of an anion-gap metabolic acidosis, and history of

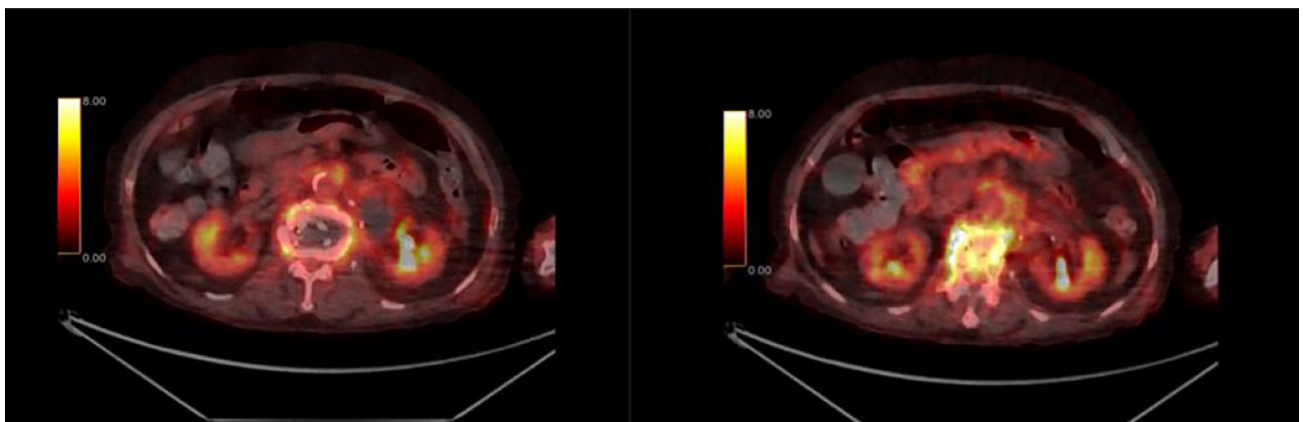
abdominal pain and distension, a computed tomography (CT) scan of the chest and abdomen-pelvis with intravenous (IV) contrast was performed in the ED.

The CT scan showed the presence of aortitis at the renal artery level with diffuse infiltration from the superior mesenteric artery bifurcation level to the infrarenal aorta level, including small lymph nodes around the pararenal and aortocaval spaces without a definite aortic aneurysm. The T12 and L1 vertebrae were protruded anteriorly due to a compression fracture and resulted in close contact with the descending aorta, but spondylodiscitis was not clear through CT. There was also a scanty infiltration around the psoas muscle (Fig. 1).

The patient was admitted to the thoracic surgery department with a diagnosis of suspected infectious aortitis. The woman was first treated with the antibiotic ceftriaxone, but



**Figure 1.** Abdominal computed tomography showed diffuse infiltration around the aorta in close contact with the ruptured T12 and L1 discs.



**Figure 2.** Positron emission tomography showed diffuse hypermetabolism along the abdominal aorta from the celiac axis to the infrarenal level, left psoas muscle with fluid collection, and L1–2 spines.

a switch to cefazolin was necessary due to the blood culture revealing the presence of methicillin-sensitive *Staphylococcus aureus*. Although continuous IV antibiotic was used, the patient's fever was consistently high. On the 5<sup>th</sup> day of hospital admission, a positron emission tomography (PET) and echocardiography confirmed a pyogenic spondylodiscitis at the T12 and L1 vertebrae, which spread to the left psoas muscle and resulted in an abscess, with the perivascular space infection invading the aortic wall and causing the aortitis (Fig. 2). The echocardiography revealed no endocarditis or valvular heart disease. Percutaneous catheter drainage (PCD) for the psoas abscess was performed, and the inflammatory markers decreased after 2 weeks of IV antibiotics. The patient was discharged in good condition after 35 days.

## DISCUSSION

Aortitis is broadly divided into infectious and non-infectious etiologies. Infective aortitis arises by several mechanisms. The disrupted or atherosclerotic aortic intimal wall can become vulnerable to infections and mycotic aneurysms, leading to aortitis. Moreover, normal vessels can be involved due to the contiguous infection extending to the aortic wall and the direct bacterial inoculation at the time of trauma, for example, in a penetrating injury.<sup>[2]</sup> While *S. aureus* is the most common Gram-positive organism, infections due to Gram-negative bacilli have also been described, including *Salmonella* and *Proteus* spp. and *Escherichia coli*.<sup>[3,4]</sup> Clinically, aortitis is characterized by non-specific symptoms, leading to a complex diagnostic process; therefore, the condition is often overlooked during the initial workup of patients with constitutional symptoms and systemic disorders. In addition, the differential diagnosis of aortitis is challenging due to the non-specific constitutional symptoms of patients.<sup>[5,6]</sup> Aortic aneurysms or aortic dissections accompany most aortitis; therefore, CT angiography and echocardiography should be performed. Patient must be closely followed with short intervals as aortitis and/or aneurysmal dilatation due to progressive degenerative process may continue resulting in unwarranted rupture. Aortitis without aneurysm formation is rare and more challenging to identify. Optimal management for infectious aortitis requires complete surgical excision and reconstruction of the infected aorta, with prolonged antibiotic administration.<sup>[5]</sup> The patient in this case presented with aggravated pyogenic spondylitis, which infected the psoas muscle. To the best of our knowledge, only one similar case has previously been reported in the literature.<sup>[7]</sup>

The initial CT scan showed that the aortitis progressed more than the psoas abscess or the spondylodiscitis; therefore, it

is possible that a mycotic infection of the aorta gave rise to aortitis and spread to the adjacent protruding disc and psoas muscle. However, PET showed severe hypermetabolism at the L1 level, continuous to the nearby psoas muscle and aortic wall.

The mortality rate of infectious aortitis can be as high as 90% with conservative treatment,<sup>[5]</sup> and as the reported patient was too old for surgery under general anesthesia, only antibiotics were used. However, additional PET scans revealed adjacent sources of infection not detected initially. The timely insertion of PCD into the psoas abscess, coupled with appropriate antibiotic use according to blood culture results, allowed us to discharge the patient in good condition.

## Conclusion

This case report showed that patients with inoperable infectious aortitis should further investigated using tools, such as PET, to find the source of the infection and allow rapid intervention.

**Informed Consent:** Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

**Peer-review:** Internally peer-reviewed.

**Authorship Contributions:** Concept: K.Y.J.; Design: K.Y.J.; Supervision: K.Y.J.; Data: K.Y.J.; Analysis: K.Y.J.; Literature search: K.Y.J.; Writing: K.Y.J.; Critical revision: H.C.

**Conflict of Interest:** None declared.

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OLGU SUNUMU - ÖZ

## Piyojenik spondilit ve psoas apsesine bağlı enfeksiyöz aortit: Olgu sunumu

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Enfeksiyöz aortitin çeşitli nedenleri vardır; esas olarak anevrizma ile kendini gösterir ve cerrahi girişim olmaz ise ölümcüldür. Bu olgu sunumu, ateş ve sırt ağrısı gelişen ve başlangıçta enfeksiyöz aortit tanısı konan ve tanısı kontrastlı bilgisayarlı tomografi (BT) ile doğrulanan 89 yaşında bir kadın hastayı tanımlamaktadır. Başvuru sırasında BT ile görülemeyen ve pozitron emisyon tomografisi (PET) ile doğrulanan piyojenik spondilit ve psoas apsesi, enfeksiyöz aortit nedeni olarak tanımlandı. Perkütan drenaj ve intravenöz antibiyotik tedavisi sonrası hasta cerrahi müdahale yapılmadan iyilik hali ile taburcu edildi. Bu olgu sunumu, enfeksiyöz aortit nedenini belirlemede PET'nin kritik rolünü vurgulamakta ve antibiyotiklerle ardışık tedavinin ve zamanında radyolojik görüntülemenin etkinliğini göstermektedir.

Anahtar sözcükler: Aortit; olgu sunumu; piyojenik spondilit; psoas kası apsesi.

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