

# An Aortic Abscess Associated with Psoas Abscess: A Case Report

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## Abstract

In this article, we report a case in which a psoas abscess opened into the aneurysmatic abdominal aorta, and abscess formation was observed in the aortic lumen containing a stent. A 57-year-old male patient presented to the emergency department with a complaint of abdominal pain. During the abdominal examination of the patient, tenderness and defense were detected in the right lower quadrant. Contrast-enhanced computed tomography (CT) angiography of the abdominal aorta was ordered because the patient had a history of previous stenting and right lower quadrant deficiency. In the right iliopsoas muscle, there was an increase in size suggestive of abscess formation with air densities. The diameter of the ascending aorta was 44 mm. At the level of the descending thoracic aortic bifurcation, an aneurysmatic appearance was noted in a segment of approximately 140 mm extending to the proximities of both main iliac arteries, and USG showed air in the wall in the aneurysmatic section and mural wall thickening with thrombus. In this case, although the abscess eroded the aneurysmatic aortic wall, acute bleeding did not develop due to the presence of a stent. We wanted to share the rare image on computed tomography (massive air-fluid level around the stent in the aortic lumen), especially in our case with the medical literature.

**Keywords:** Psoas abscess, aortic abscess, aneurysmatic

## Introduction

A psoas abscess is an accumulation of inflammation in the iliopsoas muscle [1]. It can occur primarily or secondary. It may present with nonspecific symptoms such as abdominal pain, fever, loss of appetite, weight loss, and limping [1-7]. The most common pathogens detected in the abscess fluid are *Staphylococcus aureus* (88.4%), *Streptococcus* (4.9%), and *Escherichia coli* (2.8%) [6]. The best diagnostic method is computed tomography [1, 7-10]. After the diagnosis of an abscess is confirmed, the best treatment method is drainage of the abscess and then initiation of antibiotic therapy. A psoas abscess may rarely cause aortic rupture. Its prognosis is quite poor [11].

In this article, we report a case in which a psoas abscess opened into the aneurysmatic abdominal aorta, and abscess formation was observed in the aortic lumen containing a stent.

## Case Report

A 57-year-old male patient presented to the emergency department with a complaint of abdominal pain. During the

abdominal examination of the patient, tenderness and defense were detected in the right lower quadrant. No significant pathology was observed in other system examinations.

It was learned that the patient had a history of prostate malignant neoplasm, coronary artery disease, diabetes mellitus, hypertension, three percutaneous coronary interventions (PCI), one coronary artery bypass grafting (CABG), and one year ago, stenting of the abdominal aorta and both main iliac arteries with Endovascular Aneurysm Repair (EVAR). His medications were Sitagliptin+Metformin 50/1000 mg, Nebivolol hydrochloride 5 mg, Pentoxifylline 400 mg, Bicalutamide 50 mg, Perindopril arginine+Amlodipine 10/5 mg, Acetylsalicylic acid 150 mg, Alfuzosin 10 mg.

The patient's vital signs were as follows: arterial blood pressure 100/65 mm Hg, heart rate 84 beats/min, respiratory rate 16 breaths/min, oxygen saturation 96%, body temperature 37.7 °C. In the blood tests of the patient, hemoglobin: 8.55 g/dl (13-17), (control Hb after 2 hours: 8.95 g/dl), lymphocyte: 0.32  $10^3/mm^3$  (1-5), platelets:  $109 \times 10^3/mm^3$  (150-500), CRP: 8.86 (0-0.5), except for complete blood count, blood glucose level, liver function tests, renal function tests, were within the normal reference ranges, including highly sensitive cardiac troponin-I.

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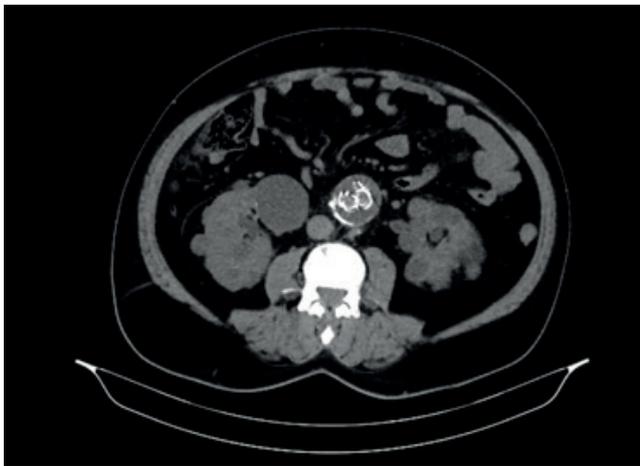
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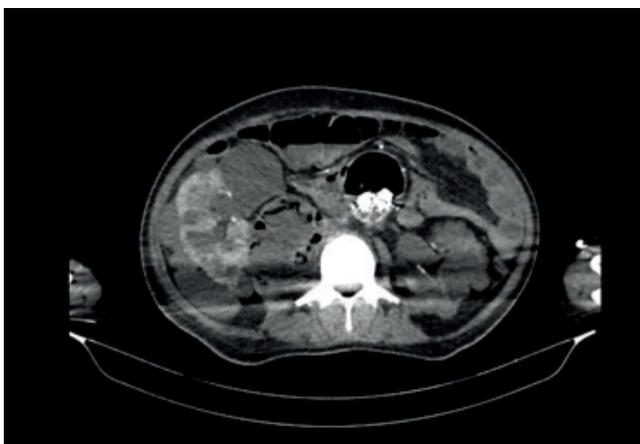
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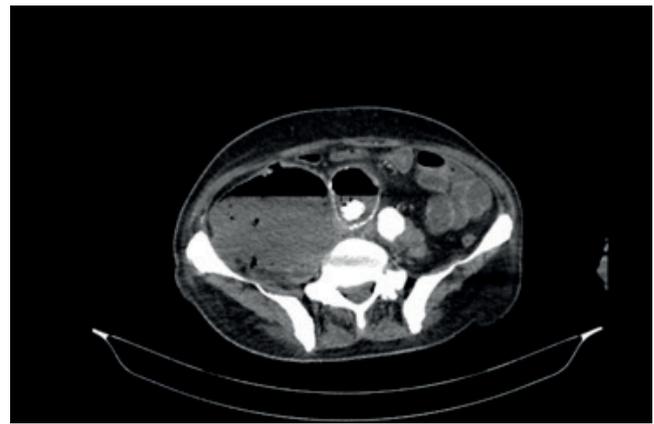
Contrast-enhanced computed tomography (CT) angiography of the abdominal aorta was ordered because the patient had a history of previous stenting and right lower quadrant deficiency. CT angiography imaging of the abdominal aorta revealed stent images in both main iliac arteries after bifurcation in the abdominal aorta. There was also a 110x96 mm suspicious penetrating area with multiple air images around the external iliac artery on the right. In the right iliopsoas muscle, there was an increase in size suggestive of abscess formation with air densities. The diameter of the ascending aorta was 44 mm. At the level of the descending thoracic aortic bifurcation, an aneurysmatic appearance was noted in a segment of approximately 140 mm extending to the proximities of both main iliac arteries, and USG showed air in the wall in the aneurysmatic section and mural wall thickening with thrombus. The images were compared with the images taken one year ago (Figure 1&2&3).



**Figure 1.** A non-contrast abdominal CT scan one year ago showed an aneurysmatic aorta, mural thrombus in the lumen, and a stent image of the EVAR procedure. No prominent infective findings were detected.



**Figure 2.** Contrast-enhanced abdominal CT scan performed at the patient's last admission revealed abscess formation in the right psoas and massive air and fluid level in the true lumen of the aorta.



**Figure 3.** Contrast-enhanced abdominal CT scan performed at the patient's last admission showed massive air and fluid level in the lumen of the aortic true lumen and right iliac artery due to abscess in the right psoas.

Blood and urine cultures were obtained, and Ceftriaxone 2x1 gr and Moxifloxacin 1x400 mg were started empirically. Since the patient had an intra-abdominal abscess, general surgery and infectious diseases were consulted for drainage and antibiotherapy. Cardiovascular surgery was consulted because air image and thrombus were observed in the aneurysmatic section at the level of the abdominal aortic bifurcation. General surgery and cardiovascular surgery did not consider emergency surgery.

The patient was consulted to department of infectious diseases for antibiotherapy. Urine and blood cultures were sent with the recommendation of infectious diseases, and Piperacillin-tazobactam 4x2.25 gr was started empirically. Urine and blood cultures grew *Escherichia coli*. Due to deterioration in the patient's general condition, he was asked to be re-evaluated by infectious diseases for a change in antibiotherapy. Piperacillin-tazobactam treatment was stopped, and meropenem 2x500 mg, levofloxacin 750 mg loading dose, and maintenance 500 mg every 48 hours were recommended. After three days, the patient underwent percutaneous abscess drainage by interventional radiology. A 14F drainage catheter was applied to the abscess pouch, fistulizing into the aorta from the right lower quadrant lateral section. The next day, the patient's oxygen saturation decreased to 70. There was no response to Noninvasive Mechanical Ventilator. The patient was intubated. He was transferred to the intensive care unit. After one day of intensive care unit follow-up, he died.

## Discussion

A psoas (or iliopsoas) abscess is an accumulation of pus in the iliopsoas muscle compartment [1]. It can occur due to contiguous spread from adjacent structures or hematogenous

spread from a distant site. The incidence is low, but the use of computed tomography has increased the frequency of this diagnosis, with most cases diagnosed postmortem<sup>2</sup>.

Iliopsoas abscess (IPA) can be classified as primary or secondary. Primary IPA results from an organism's hematogenous or lymphatic spread from a distant site. Risk factors include diabetes, intravenous drug use, human immunodeficiency virus (HIV) infection, renal failure, and other forms of immunosuppression [1,2]. Secondary IPA occurs when a nearby infectious/inflammatory process extends directly into the iliopsoas [3,4]. Secondary psoas abscess occurs due to the direct spread of infection from a neighboring structure into the psoas muscle. It may be unclear whether the involvement of a neighboring structure is a cause or a consequence of the psoas muscle abscess [5].

In this case, diabetes mellitus, history of malignant prostatic neoplasm, and previous EVAR (2 years ago) were considered personal risk factors for IPA. Symptoms and signs of psoas abscess include abdominal pain, back or flank pain, fever, groin mass, anorexia, limping, and weight loss [1,6,7]. Common pathogens of primary psoas abscess are *Staphylococcus aureus* (88.4%), *Streptococcus* (4.9%), and *Escherichia coli* (2.8%) [6]. Computed tomography (CT) is the most appropriate radiographic modality to evaluate a psoas abscess, but sensitivity may be limited early in the disease [1,7-10]. In most cases, the abscess is apparent; other findings may include a focal hypodense lesion, infiltration of surrounding fat, and a level of gas or air-fluid within the muscle [9,11]. Primary psoas abscess has a better prognosis with a mortality rate of 2.4%. Mortality in untreated cases is 100% [1]. The association of the psoas abscess and the abdominal aortic aneurysm is infrequent. When aortic rupture occurs, the prognosis of aortic infection secondary to psoas abscess is very poor. Immediate abscess drainage following correct diagnosis and arterial reconstruction before aortic rupture is mandatory [11].

In our case, *Escherichia coli* was grown in a blood culture. It was thought to have progressed to the aorta by direct dissemination. Contrast passage was observed in the stent of the EVAR procedure in the aorta, but the diffuse gas image and air-fluid level were observed in the actual lumen of the aorta surrounding the stent. Our case was mortal despite drainage and antibiotherapy.

## Conclusion

The association of psoas abscess and aortic rupture is infrequent. It can be rapidly fatal due to acute hemorrhage

after rupture. In this case, although the abscess eroded the aneurysmatic aortic wall, acute bleeding did not develop due to the presence of a stent. We wanted to share the rare image on computed tomography (massive air-fluid level around the stent in the aortic lumen), especially in our case with the medical literature. We should remember that this association, which is very rare even in the world of medical literature, has a high mortality rate in emergency departments, we should remember what we should do when we encounter it.

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