Inflammation and infection

An infected thoracoabdominal aortic aneurysm mimicking the symptoms of urinary tract infection: A case report

Takahisa Yamashita a, b, Makoto Morozumi a, Morihiro Higashi b, Shuji Momose b, Jun-ichi Tamaru b, *

a Departments of Urology, Saitama Medical Center, Saitama Medical University, 1981 Kamoda, Kawagoe-shi, Saitama, 3508550, Japan
b Departments of Pathology, Saitama Medical Center, Saitama Medical University, 1981 Kamoda, Kawagoe-shi, Saitama, 3508550, Japan

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1. Introduction

Infected aortic aneurysms are rare, accounting for about 0.7%–3.4% of all aortic aneurysms.1,2 They have high morbidity and mortality because of the difficulty of making the diagnosis and rapid progress to the late stage, with fulminant sepsis and aneurysm rupture. A case of an infected aortic aneurysm with left hydronephrosis and hydroureter that was difficult to differentiate from a urinary tract infection is reported.

2. Case

A 62-year-old Japanese man visited his previous doctor with a high-grade fever and left abdominal pain. He was only prescribed antipyretic analgesics there. As there had been no change of the fever without the drug, he was admitted to our hospital after a while. Other than the above, physical exam findings such as untreated hypertension were observed. The initial impression was a urinary tract infection because of left hydronephrosis on ultrasonographic examination. CT showed a mildly dilated thoracic aorta, a left common iliac artery aneurysm (38 × 36 mm), arteriosclerosis, left hydronephrosis, and hydroureter (Fig. 1). Since the hydroureter was in contact with the aneurysm, the hydronephrosis and hydroureter were thought to be caused by the aneurysm. A vascular surgeon commented that these vascular lesions did not constitute an emergency at that time. Laboratory values were notable for WBC of 14800/μl and CRP of 13.2 mg/dl, but there was no microhematuria or pyuria on urinalysis. Hence, it was considered that the infective focus was not in the urinary tract. On the day of admission, antibiotic treatment was started, and a left nephrostomy was performed. Neither the fever nor the hematological findings improved despite the systemic antibiotic therapy. On the ninth day, CT was repeated, and it showed imminent extravasation and leakage of the thoracic aortic aneurysm to the surrounding tissue and a rapid increase of the left iliac aneurysm (Fig. 2). The patient was finally diagnosed with a threatened rupture of the thoracoabdominal aneurysm, and emergency surgery was performed. Histopathological examination of the resected specimen showed aneurysm wall fractures with focal abscess formation, hemorrhage, and calcification, which were compatible with an infected aneurysm (Fig. 3). No relapse or complications of the disease have been seen after 10 years.

3. Discussion

An infected aortic aneurysm is a rare and serious disorder with a high risk of spontaneous rupture. The symptoms and the clinical features of the disease are as follows: abdominal pain, back pain, high-grade fever, leukocytosis, and elevated CRP, which are common features for an infection.

Gram-positive cocci, such as Staphylococcus aureus or Gram-negative bacilli, such as Salmonella spp. and E. coli  are the most frequent organisms identified in the resected specimen or blood from the patient. Both can invade an arterial wall with arteriosclerosis. In the present case, no organisms were cultured from the resected aneurysmal wall or the preoperative blood samples, even from the samples taken before the start of antibiotic therapy. Some authors have reported that 22–54% of infected aortic aneurysms

* Corresponding author.
E-mail address: j.tamaru@saitama-med.ac.jp (J.-i. Tamaru).
have negative blood cultures.\textsuperscript{2,3,5} This suggests that we should not exclude an infected aneurysm only because of a negative blood culture result.

As for etiology, the pathogenesis of infected aortic aneurysm is affected by both immune deficiency status and arteriosclerosis. The infection rate is higher in immunodeficiency-like conditions, such as malnutrition, diabetes, use of immunosuppressive drugs, and malignancy, as well as in the elderly.\textsuperscript{2} In the present case, the patient had a high-grade fever at the first visit, but at his next visit to the hospital, it was too late because of the long-term use of antipyretic analgesics, which could suppress the fever. This may be due to the progression of infection, immunodeficiency, and malnutrition. Moreover, he had untreated hypertension and arteriosclerosis.

In the case, since urinary tract infection became an unlikely etiology for his presentation given sterile from bladder and from proximal to point of obstruction, as well as no radiographic findings suggestive of renal abscess or pyelonephritis, the strategy for management of the condition included systemic antibiotic therapy and did not exclude the possibility of an infective aortic aneurysm. Finally, it was possible to identify the vascular leakage from the aneurysm and successfully rescue the patient because of the second CT scan. Therefore, we recommend repeated radiographic examinations in a patient with an aneurysm with evidence of inflammation.

4. Conclusion

An infected thoracoabdominal aortic aneurysm must be considered in a patient having features such as arteriosclerosis, a dilated aorta, aneurysm, and symptoms, such as abdominal pain, back pain, and a high-grade fever, that are similar to those of urinary tract infection.

Conflicts of interest

The authors have no conflicts of interest.

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