

Managing isolated left internal iliac artery mycotic aneurysm

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Introduction

This incidence of isolated internal iliac artery aneurysm (IIAA) is around 0.04% of all aortoiliac aneurysmal disease [1]. The conditions are extremely rare and the detection of internal iliac artery aneurysm (IIAA) usually coincidental when investigating other pathology. It has been reported that 40% of all cases present with aneurysmal rupture [2]. Most of the symptoms that have been reported associated with IIAA include abdominal pain (31.7%), urological (28.3%), neurological deficit (18.3%), groin pain (11.7%), hip or buttock discomfort and gastrointestinal symptoms (8.3% respectively) [1,2].

We report a case of isolated mycotic IIAA and the management of the case will be discussed.

Case Presentation

A 63-year-old man with underlying diabetes mellitus and hypertension, presented with a 1-week history of left iliac fossa pain associated with high-grade fever. Investigated for possible diverticulitis, a Computerized Tomography Angiogram (CTA) was done and noted left saccular IIAA. It also showed a ruptured atherosclerotic plaque with a surrounding fluid collection and multiple air pockets (Figure-1). His blood culture revealed Salmonella species, which was sensitive to Ceftriaxone. His Erythrocyte Sedimentation Rate (ESR) and C-Reactive Protein (CRP) level were elevated on presentation with the value of 120 and 450 respectively.

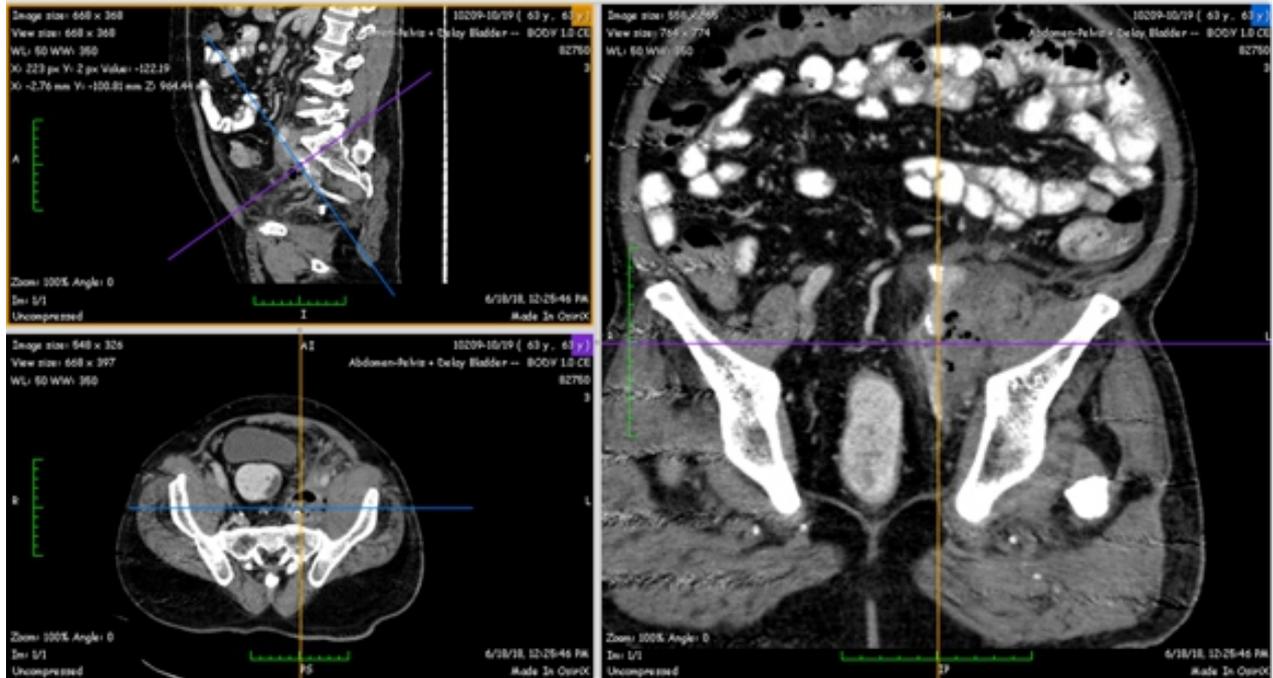


Figure 1. Noted the air pockets (thick arrow) surrounding the left internal iliac artery aneurysm with ruptured atherosclerotic plaque (thin arrow)

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Figure 2. Successful coiling of the aneurysm and the left internal iliac artery

Based on the above, a diagnosis of isolated mycotic left IIAA was made. An intravenous ceftriaxone 2g daily dose was initiated via peripherally inserted central venous catheter (PICC) line in his right basilic vein. The patient responded well with the antibiotics and latest blood culture didn't grow any new organism after 2 weeks of antibiotic. Consultation with the interventional radiologist was made to embolize the outflow and inflow of the left IIAA and the saccular aneurysmal sac after 1 week of antibiotic (figure 2). The contralateral femoral artery was cannulated retrogradely and crossover to the left side. Amplatz vascular coils were used for the embolization.

A repeat CTA of the vessel was carried out later after 2 weeks post-embolization revealed similar collection remained with total occlusion of an aneurysm and left internal iliac artery. The left ureter was stented and open surgical debridement was carried out soon after, together with the long-term plan for IV antibiotics administration for a total of 3 months.

Discussion

Aneurysms of the iliac arteries are relatively rare. Nonetheless, their successful management demands a knowledge of their natural history. The majority of these aneurysms are atherosclerotic in type though occasional mycotic types do occur. The mycotic type of aneurysms represent only 2.5% of all aneurysms. [1, 3]. In this case, the ruptured plaque of the IIA may somehow be infected with a blood-borne organism causing a mycotic aneurysmal configuration.

The most common cause for mycotic type is Salmonella, accounting for 18% to 50% of cases [1]. Although a significant decrease in its incidence has been observed since 1965, it is still associated with 10% of all infected type of an aneurysm that has been found in the bacteriology cultures

such as in this case [1]. Most infection occurs through oral route and cultures of stool or blood are frequently positive in such cases presented without gastrointestinal symptoms and is helpful for the selection of appropriate antibiotics. Inflammatory markers such as white blood count and C-reactive protein will be raised and series of these result may be used to observe progress following treatment.

Their onset is insidious and their occult location in the pelvis precludes the early diagnosis. Most of these cases have a pre-existing atherosclerotic disease at the site of an aneurysm that subsequently becomes infected, although in isolated cases Salmonella has been reported to invade even healthy intima [1]. The risk factors for the development of a mycotic aneurysm, in this case, includes local pathology of the ruptured atherosclerotic plaque of the left internal iliac artery and systemic cause from his underlying diabetes mellitus.

Salmonella infections can be divided into five categories: gastroenteritis, enteric fever, bacteraemia, localized infections, and chronic carrier state [1]. Vascular infections, osteomyelitis and meningitis are the most common non-gastrointestinal tract localized Salmonella infection. Salmonella vascular infections based on frequency, involve the aorta, coronary and peripheral arteries, prosthetic valves and vascular grafts.

The gold standard management of repair for IIAA is by open interposition graft [2], with the primary indication for repair being to prevent rupture in an aneurysm more than 4 cm in diameter [3, 4]. Other indication for repair includes abdominal pain and severe back pain. [3]. whilst the prognosis of the asymptomatic IIAA can be promising, the symptomatic patient such as retroperitoneal rupture or rupture into adjacent organ carries a limited prognosis [3, 4].

Endovascular techniques have excellent early outcomes when treating aortoiliac aneurysmal disease since the bifurcated end grafts were developed in the mid-1990s [4]. However, anatomical locations of IIAA deep in the pelvis make an endovascular approach to this entity quite challenging.

An infected IIAA may rapidly progress to rupture and prompt open surgical intervention is mandatory and life-saving although the procedure can be complicated since the IIAA is situated deep in the pelvis. Endovascular therapy such as embolization of the IIAA may alter the prognosis by controlling the acute bleeding and overall improve the survival rate in ruptured cases [4].

Conclusion

In conclusion, isolated mycotic aneurysm of the internal iliac artery is an extremely rare but serious condition of which vascular surgeons need to be aware. Their clinical manifestations are nonspecific. Being left untreated, it may

rupture from continued expansion and carries high mortality rate. The high index of suspicion and availability of radiologic modalities such as CT scan and angiography makes early diagnosis possible and hence early intervention can be initiated to improve survival rate in IIAA.

Finally, a successful management of this rare entity depends on collaboration from the infectious disease physician, interventional radiologist and the vascular surgeon. Observation of the clinical parameters of the patient is mandatory to ensure successful planned intervention of this rare yet serious disease. Early detection and diagnosis is the key point for early treatment initiation

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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Learning Points:

- Successful management of a rare isolated IIA mycotic aneurysm depends on collaboration from the infectious disease physician, interventional radiologist and the vascular surgeon.
- Careful observation of clinical parameters of the patient is mandatory to ensure successful planned intervention of this rare yet serious disease.
- Early detection by means of high clinical suspicious index of the disease is mandatory for early treatment initiation.