CASE REPORT

MYCOTIC ANEURYSM OF THE JUXTARENAL INFRARENAL ABDOMINAL AORTA: A CASE REPORT

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INTRODUCTION: The term Mycotic aneurysm is a misnomer that has nevertheless been generally adopted to describe aneurysms that occur secondary to the infectious destruction of an arterial wall.¹ Such aneurysms may result from bacteremia and embolization of infectious material, which cause superinfection of a diseased and roughened atherosclerotic surface.² William Osler¹ in 1885 was the first to describe a patient with multiple beadlike aneurysms and coined the term mycotic aneurysm due to its appearance resembling a fungal growth. Most patients with Mycotic aneurysm presents with fever associated with back pain or chest pain. The most common infectious agents implicated are Staphylococcus and Salmonella species.³ In this case report we describe CT imaging findings in a patient with Mycotic aneurysm of the Juxtarenal infrarenal abdominal aorta.

CASE REPORT: A 53 year old male patient presented to our institution with complaints of fever and abdominal pain since five days. Past medical history was significant for hypertension. He had a history of smoking and alcohol intake for 20 years. On clinical examination, his vitals were stable. Cardiovascular, respiratory and neurological examination was normal. Abdominal examination revealed tenderness in lower abdomen. Laboratory results revealed Leucocytosis, white blood cell count 14, 000/cu mm, elevated ESR >100mm in the first hour and positive blood culture for Staphylococcus aureus. CECT imaging shows aneurysmal dilatation of the juxtarenal infrarenal abdominal aorta including the site of bifurcation, with intimal calcifications. A perianeurysmal soft tissue mass with stranding and multiple small gas bubbles is also seen (figure 1, 2 & 3). On the basis of laboratory findings, positive blood culture and imaging studies the diagnosis of Mycotic aneurysm of Juxtarenal infrarenal abdominal aorta was made.

Fig. 1: Axial CECT image showing a Juxtarenal infrarenal abdominal aortic aneurysm with intimal calcifications. A perianeurysmal soft tissue mass with stranding and multiple small gas bubbles is also seen.

Fig. 1

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Fig. 2: Sagittal reformatted CECT image showing an irregular perianeurysmal soft tissue mass and small gas bubbles anterior to the juxtarenal abdominal aorta.

Fig. 2

Fig. 3: 3D Volume rendered CT image showing the Mycotic aneurysm involving the juxtarenal and infrarenal abdominal aorta including the site of bifurcation.

Fig. 3

DISCUSSION: Mycotic aneurysm of the abdominal aorta is infrequent, with a documented prevalence of 0.06%–2.6% among all aneurysms⁴. It has been reported in all age groups, including newborns but the disease predominantly affects the atherosclerotic elderly patients. Over the past 30 years, there has been a change in the etiology of mycotic aneurysms. Since the introduction of antibiotics, endocarditis as a source of bacteremia has become rare, and several risk factors for mycotic

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aneurysm, especially in older patients, are currently more common². Predisposing factors include atherosclerosis, arterial grafts, intravascular catheters, joint prostheses, neoplasia, alcoholism, corticosteroid therapy, chemotherapy, diabetes mellitus, and other conditions that cause immunosuppression. If the aneurysm is left untreated, severe hemorrhage or sepsis may lead to early death.⁴

The main pathologic change associated with Mycotic aneurysm develops when a pathogen offends a vulnerable vessel wall. The focus of infection can develop in a normal caliber vessel or an existing aneurysm. The infectious agent can either travel through the blood stream and harbor in the vasa vasorum of the arterial wall or implant on damaged intima, ulcerated arteriosclerotic plaques, or mural thrombus. Alternatively, the infectious agent can reach the artery either by contiguous spread of adjacent infectious process or by traumatic/iatrogenic inoculation.⁵

An infected aneurysm can occur anywhere in the vascular system but the most common location is the infrarenal aorta, followed by the descending thoracic aorta, thoracoabdominal aorta, juxtarenal aorta, and ascending aorta.⁴

The most common pathogens, which account for almost 40% of infections, include *Staphylococcus aureus* and *Salmonella* species⁶. Other pathogens involved include *Treponema pallidum*, *M. tuberculosis*, and other bacteria such as *Listeria*, *Bacteroides fragilis*, *Clostridium septicum*, and *Campylobacter jejuni*.⁷

Clinical Manifestations of Mycotic Aneurysm of the abdominal aorta includes the presence of painful, pulsatile, enlarging abdominal mass with systemic features of infection. In deeper sites, the aneurysm may not be palpable. Non-specific symptoms like back pain or abdominal pain is frequently seen in patients with pyrexia of unknown origin (PUO) and with risk factors for aneurysm. Other manifestations include Gastrointestinal bleed, Acutely expanding abdominal hematoma, Mesenteric Ischemia, Dysphagia, Hoarseness, Hemoptysis, Psoas Abscess, Osteomyelitis.⁸

Mycotic aneurysm of the aorta is characterized by the presence of two or more of the following features: sepsis (fever, leucocytosis and pain), positive blood culture, positive culture from the aneurysmal wall, or characteristic radiological appearance (including irregular aortic wall, rapid growth rate, or saccular appearance of the aneurysm). Negative blood cultures and absence of pyrexia do not exclude the diagnosis when the patient has presented with signs of infection and had characteristic radiological findings but had already been commenced on antibiotics.⁹

CT is the preferred imaging modality because it is widely available, fast, and able to depict associated findings. At CT, the morphology of these aneurysms is mostly saccular (>90% of cases) rather than fusiform, with a diameter of 1–11 cm. Other CT findings include perianeurysmal gas, stranding and fluid; vertebral body destruction with psoas abscess; and kidney infarct. In the early course of disease, a periaortic soft-tissue mass with or without rim enhancement (depending on the degree of necrosis) may be the only finding before development of the aneurysm. This periaortic mass may be confused with neoplasia, infectious lymphadenopathy, or hematoma; the presence of a hypoattenuating concentric rim in the aortic wall helps differentiate between these lesions.⁴

The current treatment for Mycotic aneurysm includes prompt surgical repair and appropriate antibiotic therapy. Antibiotic treatment of Mycotic aneurysm is guided by the most likely infecting organism and should include Vancomycin and a good gram negative coverage which is given for six weeks per orally or IV. Surgical repair is done by a synthetic extra anatomic bypass or in situ reconstruction with a graft.⁶

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CONCLUSION: Mycotic aneurysm of the abdominal aorta should be considered in patients with fever of unknown origin, vague abdominal pain and back pain. CT is the ideal noninvasive imaging method for the diagnosis of Mycotic aneurysm of the abdominal aorta and knowledge of its imaging appearances enables preoperative or interventional assessment and post-procedural follow up for detection of complications.

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