

Mycotic Aneurysm: A Brief Review of Current Literature

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ABSTRACT

Mycotic aneurysm, a rare condition characterized by infection of the arterial wall, presents as a medical emergency due to the risk of rupture and severe complications. This article reviews the clinical, diagnostic, and therapeutic aspects of mycotic aneurysm based on recent scientific literature. The search included articles published in the last two decades, highlighting advances in imaging diagnostics and minimally invasive surgical approaches. It is concluded that early management, based on appropriate antimicrobial therapy and surgical intervention, is essential to optimize outcomes.

Keywords: Mycotic aneurysm; Rare; Emergency; Bacteria

Objective

This study aims to review the current scientific literature on mycotic aneurysms, addressing etiological, pathophysiological aspects, diagnostic methods, therapeutic approaches, and prognosis to provide a comprehensive overview for healthcare professionals.

Materials and Methods

A systematic literature review was conducted using the PubMed, Scielo, and Web of Science databases.

Introduction

Mycotic aneurysm is a rare and potentially fatal vascular

condition characterized by infection of the arterial walls, resulting in aneurysm formation^{1,2}. The term “mycotic” was first used by Sir William Osler in 1885 to describe the fungal appearance of infected aneurysms, although most cases are caused by bacteria. The main development pathway occurs through hematogenous spread of primary infectious foci, arterial trauma, or direct extension of an adjacent infection^{3,4}. The pathogenesis involves the direct inoculation of infectious agents into the arterial wall, either by hematogenous dissemination, contiguity from a nearby infectious focus, or surgical manipulation. Risk factors include infective endocarditis, immunosuppression, diabetes mellitus, and intravenous drug use. Early diagnosis is challenging due to variable and nonspecific clinical presentation⁵. Symptoms

such as persistent fever, localized pain, and signs of systemic infection are common. Imaging studies, including computed tomography (CT), magnetic resonance imaging (MRI), and transesophageal echocardiography, are crucial for detection⁶. Despite diagnostic and therapeutic advances, mycotic aneurysm remains a challenge due to its insidious nature and high risk of fatal rupture^{7,8}.

Discussion

Mycotic aneurysm is frequently associated with infection by pyogenic bacteria such as *Staphylococcus aureus* and *Salmonella* spp., although fungi like *Candida* may also be involved⁹. Immunocompromised patients, such as those with HIV, diabetes mellitus, or on immunosuppressive drugs, are at increased risk¹⁰. Other predisposing factors include arterial trauma, invasive procedures, congenital heart diseases, infective endocarditis, and intravenous drug use. The infection compromises the arterial wall's integrity due to an intense inflammatory response, leading to dilation and rupture^{11,12}. Symptoms vary by location and stage of the aneurysm, making early diagnosis difficult. Diagnosis relies on clinical history, laboratory tests, and imaging methods^{13,14}. CT and MRI are essential for localizing and characterizing the aneurysm, while Doppler ultrasound is useful for peripheral lesions. Positive blood cultures help identify the etiological agent.

Management includes broad-spectrum antibiotic therapy, guided by blood cultures and antibiograms. Surgical intervention is often required for aneurysm excision and revascularization using autologous or synthetic grafts. Endovascular techniques, such as covered stent placement, have shown efficacy in selected cases, although complications like infection recurrence can occur. Prognosis depends heavily on early diagnosis and appropriate management. Without treatment, mortality rates are extremely high due to rupture or sepsis. Early intervention significantly improves survival¹⁵.

Conclusion

Mycotic aneurysm remains a severe medical emergency requiring a multidisciplinary approach that integrates early diagnosis, effective antibiotic therapy, and surgery. Despite medical advances, prognosis still depends on early identification and appropriate treatment, emphasizing the need for greater awareness and ongoing research. Current literature highlights the need for more robust studies to establish standardized treatment protocols and investigate new therapeutic approaches. Thus, the combination of early diagnosis, individualized treatment, and postoperative surveillance remains essential to minimize mortality associated with mycotic aneurysms.

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