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RESEARCH ARTICLE

ACUTE MESENTERIC ISCHEMIA REVEALING A SEVERE MITRAL STENOSIS: A CASE REPORT

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Abstract

Introduction: Rheumatic mitral stenosis remains a common valvular heart disease in Morocco, systemic thromboembolism is the principal complication especially with atrial fibrillation. Acute mesenteric ischemia (AMI) is an interruption of the blood supply to different portions of the small intestine, leading to ischemia and intestinal necrosis. It is a life?threatening condition with a mortality rate of 60?80 %. We describe a case of AMI successfully medically managed while waiting for the management of severe mitral stenosis.

Case Report: A 53-year-old patient with a history of recurrent angina was admitted to the emergency department with a surgical abdomen presenting with abdominal pain and bilious vomiting. An abdominal ultrasound was initially requested, but came back without any abnormalities , Abdominal CT angiography showed grelic ischemic wall thickening due to an occlusive thrombosis of the superior mesenteric artery . Etiological research found severe mitral stenosis without organized thrombus in the left atrium on transthoracic echocardiography.

Discussion: Acute mesenteric ischemia is a rare complication of mitral stenosis, it is an acute abdominal emergency, its incidence is low with approximately 0.14% case per year. Mortality rate is about 70%, This pathological entity can lead to intestinal necrosis and death. It is often associated with concomitant embolization in other vascular territories, including spleen or kidney.

Conclusion: Mesenteric ischemia is a fatal and rare complication of mitral stenosis. Management is often surgical or interventional, but can also be medical.

Introduction:-

Rheumatic mitral stenosis (MS) is a common valvular heart disease in Morocco, where systemic thromboembolism is a significant complication, particularly among patients with atrial fibrillation. Acute mesenteric ischemia (AMI), characterized by a sudden loss of blood flow to the intestines, can lead to ischemia and potentially fatal intestinal necrosis. The condition has a high mortality rate, ranging from 60% to 80%, making timely diagnosis and intervention critical. We describe in this case an AMI revealing a very severe mitral stenosis .

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Case report :

We report the case of a 53-year-old patient, with a history of reccurent angina in childhood and without any historyofcardiovascular disease. He was admitted to the ER for excruciating abdominal pain and bilious vomiting and diffuse abdominal tenderness. clinical examination: the patient was tachycardic with a blood pressure of 122/67 mmhg, a diastolic murmur at the mitral focus and diffuse tenderness of the abdomen. And the ECG showed a atrial flutter at 160 bpm(figure 1) , and transthoracic echocardiography showed a rheumatic valve disease : very severe mitral stenosis SOR at 0,94 cm2 (figure 2) and normal left ventricular function .

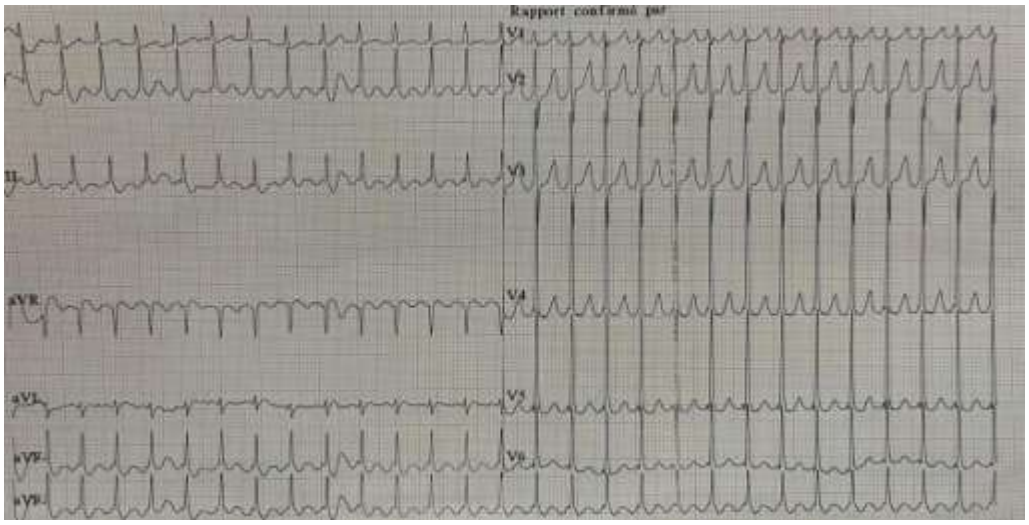

Figure 1:- ECG showing an atrial flutter at 168 bpm.

Figure 2:- TTE showing very tight mitral narrowing SOG: 0.94 cm2 by planimetry.

An abdominal ultrasound and laboratory tests were performed first, finding no abnormalities, then angio-CT was ordered, revealing a mesenteric infarction with cruoric thrombus of the superior mesenteric artery extending over 34 mm (figure 3)

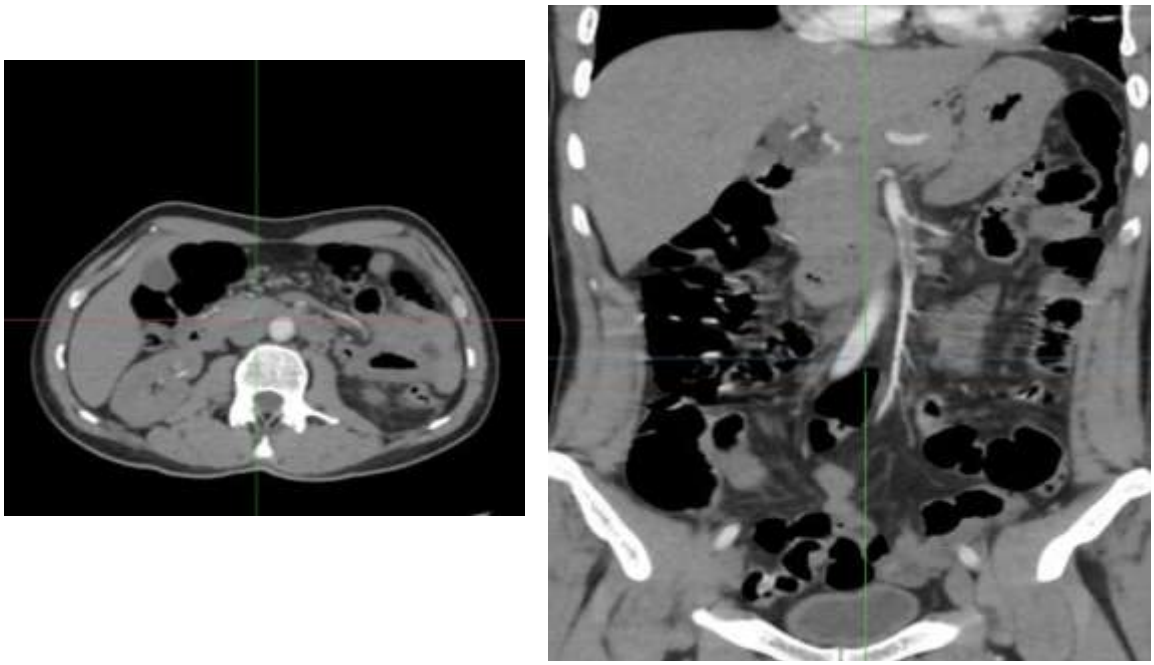

Figure 3:- Angio-CT showing a mesenteric infarction with cruoric thrombus of the superior mesenteric artery.

The diagnosis of very severe mitral stenosis with atrial flutter complicated by acute mesenteric ischemia was made. the management of acute mesenteric ischemia was medical with close monitoring.

The patient underwent mitral valve replacement with a mechanical prosthesis, with a good outcome(figure 4) .

Figure 4:- ETT showing a mechanical prosthesis in a well-functioning mitral focus.

Discussion:-

Acute rheumatic fever (RF) is a significant autoimmune inflammatory response that can occur following untreated or inadequately treated infection with group A β-hemolytic streptococci (GAS). This condition can lead to long-term complications, particularly rheumatic heart disease (RHD), which is characterized by damage to heart valves.(1)

Mitral Stenosis (MS): RHD is the primary etiology of mitral stenosis. Over time, chronic inflammation can lead to fibrous thickening and calcification of the mitral valve leaflets, reducing the effective valve orifice area. As the valve area decreases (below 2.0 cm^2), patients begin to experience symptoms due to increased left atrial pressure and pulmonary congestion.

In developing countries, rheumatic MS is still the most common form of valvular heart disease (VHD). Public health initiatives aimed at preventing streptococcal infections and treating RF promptly are critical.

Echocardiographic studies have revealed that the prevalence of RHD is often underestimated, indicating a need for routine screening, especially in at-risk populations.(3-4)

Patients with MS typically remain asymptomatic until the mitral valve area is significantly narrowed (often <1.5 cm^2). Symptoms can include dyspnea on exertion, fatigue, palpitations (especially if atrial fibrillation occurs), and chest pain.(4)

Increased cardiac output situations—like pregnancy, fever, and hyperthyroidism—can exacerbate symptoms as they increase blood flow across the narrowed mitral valve, leading to elevated transmitral gradients.

TTE is the gold standard for assessing mitral valve anatomy and function. It allows for evaluation of valve morphology, the degree of stenosis (using the continuity equation), and the assessment of left atrial size and function.Regular echocardiographic assessments are crucial for early detection of disease progression and timely intervention, such as surgical repair or valve replacement.(5,6,7)

The leading cause of mortality in patients with MS is heart failure, which accounts for about 60% of deaths. Thromboembolic events like mesenteric embolism , particularly in the context of atrial fibrillation, account for about 20% of fatalities.(1, 8, 4, 10)The presence of atrial fibrillation dramatically increases the risk of thromboembolic complications—patients with AF and MS have an 18-fold higher risk of stroke and other embolic events.

Acute mesenteric ischemia can occur due to either embolism or thrombosis affecting the superior mesenteric artery (SMA). In patients with mitral stenosis and atrial fibrillation, emboli can originate from the left atrium.

Approximately 50% of AMI cases are due to acute mesenteric embolism (11,12). Common sources include:Left atrial thrombus in the setting of AF and Thrombi from other cardiac structures in cases of endocarditis or myocardial dysfunction.

The SMA is particularly susceptible to embolic occlusion due to its anatomical characteristics. Emboli tend to lodge at points of normal anatomic narrowing, often just proximal to the middle colic artery, which typically spares the proximal jejunum and colon from ischemia.

More than 20% of emboli to the SMA are associated with concurrent emboli to another arterial bed including the spleen, or kidney. Thus, findings of changes in these organs on CTA suggest a proximal embolic source (13).

Occasionally emboli are generated from an atherosclerotic aorta. Emboli typically lodge at points of normal anatomic narrowing, and the SMA is particularly vulnerable because of its relatively large diameter and low takeoff angle from the aorta. The majority of emboli lodge 3 to 10 cm distal to the origin of the SMA.

The incidence of acute mesenteric ischemia in patients with AF is low (approximately 0.14% per year), but it carries a high mortality rate of around 70%. This highlights the urgency of diagnosis and treatment, which often requires surgical intervention to restore blood flow or resect necrotic bowel segments.

Treatment options for intestinal ischemia vary based on the underlying cause, the patient's hemodynamic stability, and the expertise of the medical team. Generally, nonocclusive acute mesenteric ischemia (AMI) is managed with medical treatment, while occlusive AMI typically requires surgical intervention. (14)

Conclusion:-

Acute mesenteric ischemia (AMI) is a life-threatening condition that can have diverse etiologies, including cardiac sources such as mitral stenosis. In this context, the interplay between mitral stenosis and AMI highlights the importance of vigilant cardiovascular assessment in patients presenting with gastrointestinal symptoms. The risk of embolic events from the left atrium, particularly in the presence of atrial fibrillation, underscores the need for timely diagnosis and intervention. Effective management of AMI requires a multidisciplinary approach that addresses both the immediate needs of the patient and the underlying cardiac condition. Early recognition and appropriate treatment can significantly improve outcomes, emphasizing the critical role of comprehensive cardiac evaluation in patients at risk for ischemic complications. By understanding the connections between these two serious conditions, clinicians can better tailor their strategies to prevent potentially devastating consequences and enhance patient care.

References:-

1 -Rowe JC, Bland EF, Sprague HB, White PD. The course of mitral stenosis without surgery: ten- and twenty-year perspectives. Ann Intern Med. 1960;52:741–9

2- prevalence of RHD. 3. Marijon E, Ou P, Celermajer DS, Ferreira B, Mocumbi AO, Jani D, et al. Prevalence of rheumatic heart disease detected by echocardiographic screening. N Engl J Med. 2007;357: 470–6.

3- Reményi B, Wilson N, Steer A, Ferreira B, Kado J, Kumar K, et al. World Heart Federation criteria for echocardiographic diagnosis of rheumatic heart disease—an evidence-based guideline. Nat Rev Cardiol. 2012;9:297–309

4- Wood P. An appreciation of mitral stenosis: II. Investigations and results. Br Med J. 1954;1:1113–24.

5- . Wunderlich NC, Beigel R, Siegel RJ. The role of echocardiography during mitral valve percutaneous interventions. Cardiol Clin. 2013;31:237–70.

6- Wunderlich NC, Beigel R, Siegel RJ. Management of mitral stenosis using 2D and 3D echo-Doppler imaging. J Am Coll CardiolImg. 2013;6:1191–205 State-of-the-art paper on the evalutation of rheumatic MS by echocardiography.

7. Wunderlich NC, Beigel R, Ho SY, Nietlispach F, Cheng R, Agricola E, et al. Imaging for mitral interventions: methods and efficacy. J Am Coll CardiolImg. 2018;11:872–901.

8- Chiang CW, Lo SK, Ko YS, Cheng NJ, Lin PJ, Chang CH. Predictors of systemic embolism in patients with mitral stenosis. A prospective study. Ann Intern Med. 1998;128:885–9.

9- Selzer A, Cohn KE. Natural history of mitral stenosis: a review. Circulation. 1972;45:878–90.

10- Munoz S, Gallardo J, Diaz-Gorrin JR, Medina O. Influence of surgery on the natural history of rheumatic mitral and aortic valve disease. Am J Cardiol. 1975;35:234–42

11- Acosta S. Mesenteric ischemia. CurrOpin Crit Care. 2015;21:171–8.

12-Clair DG, Beach JM. Mesenteric Ischemia. N Engl J Med. 2016;374:959–68.

13- Acosta S, Ogren M, Sternby NH, Bergqvist D, Björck M. Clinical implications for the management of acute thromboembolic occlusion of the superior mesenteric artery: autopsy findings in 213 patients. Ann Surg. 2005;241:516–22.

14- https://emedicine.medscape.com/article/189146-treatment?form=fpf