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Managing Aortic Valve Endocarditis with Cryoglobulinemia: A Multidisciplinary Case in a Young Patient

Dr. Tber Mohamedelamine¹, Dr. Hlal Monsef², Dr. Lhoumadi Hamza³, Dr. Tawab Zogarh⁴, Dr. Hasni Mohammed Ali⁵

¹Cardiovascular Surgeon, HPT Akdital Group, Tangier

²Head of Cardiovascular Surgery Department, HPT Akdital Group, Tangier

³Anesthesiologist and Intensivist, HPT Akdital Group, Tangier

⁴Cardiologist, HPT Akdital Group, Tangier

⁵Cardiologist, Private Practice, Tangier

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ABSTRACT

We report the case of a 24-year-old female patient presenting with severe aortic regurgitation due to a bicuspid aortic valve, in the context of suspected infective endocarditis caused by *Staphylococcus epidermidis*, associated with mixed cryoglobulinemia and moderate-to-severe microcytic hypochromic anemia. A multidisciplinary management strategy, including targeted antibiotic therapy, corticosteroids, and cardiac surgery performed under normothermic cardiopulmonary bypass, led to a favorable outcome. This case highlights the diagnostic and therapeutic challenges posed by this rare combination, in light of current literature.

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Introduction

The coexistence of infective endocarditis and cryoglobulinemia is rare but documented. Cryoglobulinemia can significantly complicate the management of patients undergoing cardiac surgery due to risks of immunological and temperature-related complications. Optimal treatment requires appropriate antibiotic therapy and often early surgical intervention. When compounded by reduced left ventricular function and anemia, the complexity of care increases. This case emphasizes the critical role of multidisciplinary coordination in managing such high-risk patients.

Case Presentation:

Medical History and Clinical Presentation

A 24-year-old woman was admitted with severe aortic regurgitation secondary to a bicuspid aortic valve and clinical suspicion of infective endocarditis. The patient had a left ventricular ejection fraction of 40%. Her medical history included minor subarachnoid hemorrhage, moderate-to-severe microcytic hypochromic anemia, and mixed cryoglobulinemia. On admission, she reported profound fatigue, resting dyspnea, tachycardia, and appeared clinically pale.

Preoperative Workup and Management

Preoperative blood cultures were positive for *Staphylococcus*

epidermidis, prompting targeted antibiotic therapy. Following an internal medicine consultation, intravenous methylprednisolone (Solumedrol 500 mg/day for 3 days) was initiated, followed by oral prednisone (Effipred 60 mg/day). Prophylactic anticoagulation with enoxaparin (Lovenox® 0.4 mL/day) was also started.

Surgical Intervention

On the 7th day of hospitalization, a multidisciplinary team meeting confirmed the indication for aortic valve replacement. Intraoperative transesophageal echocardiography confirmed severe regurgitation and suspected vegetations on the bicuspid valve.

Surgery was performed under normothermic (37°C) cardiopulmonary bypass using a warming mattress and thermal blanket. Crystalloid cardioplegia (1,100 mL) was administered. The aortic cross-clamp time was 67 minutes, and total bypass time was 84 minutes. The patient received three units of packed red blood cells intraoperatively. She was transferred to the intensive care unit (ICU) in stable hemodynamic condition, with close temperature monitoring.

Postoperative Course

The ICU stay lasted 48 hours. Unfractionated heparin therapy was initiated 8 hours postoperatively due to the absence of significant bleeding. Corticosteroid therapy was resumed with Effipred 40 mg/day at 24 hours post-op as advised by the internist. Antibiotic therapy was continued as per microbiological findings.

Due to persistent anemia, two additional units of packed red blood

* Corresponding author.

Tber Mohamedelamine, Cardiovascular Surgeon, HPT Akdital Group, Tangier, Email: drtberm@gmail.com.

cells were transfused. No postoperative complications—*infectious, hemodynamic, or immunological*—were observed. The patient was discharged on postoperative day 7.

Follow-Up:

The patient returned for outpatient follow-up on day 10 for suture removal and laboratory evaluation. Her recovery was clinically satisfactory, with stable vital signs and good general condition. A follow-up consultation with internal medicine was arranged to ensure ongoing management of the cryoglobulinemia.

Discussion:

The association between cryoglobulinemia and infective endocarditis is reported in the literature. Hurwitz et al., [1] found cryoglobulins in 95% of endocarditis cases. Management requires both immunosuppressive and anti-infective strategies.

Cardiac surgery in these patients is particularly challenging due to the risk of cryoprecipitation during hypothermia. Edmiston et al., [2] recommend normothermic cardiopulmonary bypass and, in some cases, plasmapheresis. Satomi et al., [3] demonstrated safe outcomes in a patient with Waldenström’s macroglobulinemia undergoing normothermic bypass.

Immunologically, Reinberg et al., [4] and Spindel et al., [5] suggest that treating the underlying infection can resolve cryoglobulinemic vasculitis, though corticosteroids are warranted in cases with systemic involvement, such as renal or visceral lesions.

Raimondo et al. [6] reported a perioperative mortality rate of 7% in a series managed with normothermia and/or plasmapheresis.

In this case, preoperative corticosteroids were essential to control inflammation. The low-virulence yet persistent nature of *Staphylococcus epidermidis* demanded a cautious, multidisciplinary strategy. Normothermic bypass was critical in preventing cryoglobulin precipitation, thereby reducing the risk of intraoperative complications.

Conclusion:

This case highlights the importance of individualized and coordinated care in a young patient with suspected infective endocarditis on a bicuspid

valve and concurrent mixed cryoglobulinemia. Success depended on multidisciplinary planning, awareness of cryoglobulinemia-specific risks, and careful postoperative management. With such a comprehensive approach, favorable outcomes are achievable in complex cases.

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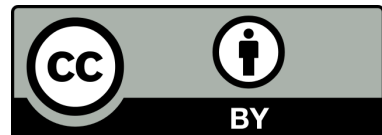
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