

# Subacute Prosthetic Valve Infective Endocarditis with Crescentic Glomerulonephritis and Mycotic Aneurysms: A Case Report

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## Background

- Subacute prosthetic valve infective endocarditis (PVIE) remains a formidable clinical challenge, particularly when accompanied by systemic complications such as multi-organ involvement, immunologic responses and vascular phenomena.
- PVIE occurs in 1-6% of patients with prosthetic valves, with *Enterococcus* species implicated in approximately 10% of cases<sup>1</sup>.
- Mortality rates range from 20% to 40%, with worse outcomes in those with multiorgan involvement and delayed diagnosis<sup>2</sup>.
- Crescentic glomerulonephritis, a rare complication of PVIE, is associated with immune complex deposition in glomeruli and has significant prognostic implications<sup>3</sup>.
- Recent literature emphasizes the importance of early detection and the expanding role of combination antibiotic regimens in reducing mortality<sup>4</sup>.

## Case Presentation

- A 40-year-old man with a history of severe aortic regurgitation status post valve replacement presented with difficulty walking due to acute right foot pain and swelling.
- He also reported worsening bilateral lower limb pain, fevers, night sweats, dark urine, dysuria, and lower back pain.
- Initial evaluation noted fever, acute kidney injury (AKI), and elevated inflammatory markers (CRP, ESR).
- His INR was supratherapeutic while on warfarin.
- While the initial urinalysis was bland, further work-up revealed abrupt occlusions in the left peroneal and anterior tibial arteries and potential mycotic aneurysms in the superior mesenteric artery (SMA).
- Septic arthritis and deep vein thromboses were excluded through joint aspirate and imaging.

## Case Presentation Continued...

- Given high concern for bloodstream infection, blood cultures were obtained and grew pan-sensitive *Enterococcus faecalis*
- Ampicillin and ceftriaxone were initiated.
- TTE did not reveal valve vegetations, however a subsequent TEE revealed aortic valve vegetations, confirming PVIE.
- Throughout the hospitalization, the patient's renal function progressively worsened, although the patient remained non-oliguric and did not require dialysis. Renal biopsy confirmed crescentic glomerulonephritis.
- An exploratory laparotomy was performed to excise the enlarging SMA mycotic aneurysm.
- The patient's hospitalization was further complicated by Coombs-negative hemolytic anemia and thrombocytopenia in the setting of profound sepsis.
- Following targeted antibiotic therapy, subsequent blood cultures were negative, and the patient's condition improved. After a three-week hospital stay, antibiotics were switched to oral amoxicillin and moxifloxacin for a six-week course.

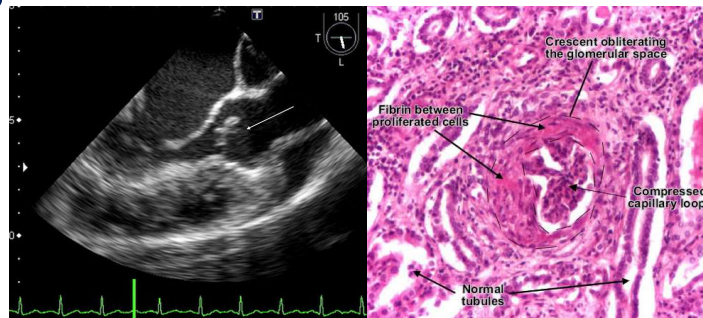


Figure 1. (left) Mobile Vegetations on Aortic valve as seen on Transesophageal echocardiogram.

Figure 2. (right) Histological appearance of Crescentic Glomerulus under Light Microscope using H&S Stain.

- At six months post-discharge, renal function improved significantly with creatinine levels at 1.5 mg/dL; although it is expected that the patient will develop chronic kidney disease.

## Discussion

- PVIE presents unique diagnostic and therapeutic challenges, as seen in this case, where vascular phenomena and immune-mediated kidney injury contributed to the complexity of the illness.
- The patient's recovery underscores the importance of early intervention and the use of combination antibiotic regimens, in treating *Enterococcus*-related PVIE<sup>3</sup>.
- The involvement of mycotic aneurysms and crescentic glomerulonephritis highlights the systemic impact of infective endocarditis.
- Crescentic glomerulonephritis, though rare in PVIE, typically portends a poor prognosis. Its pathogenesis is linked to immune complex deposition, as noted on biopsy with C3 and IgG deposits<sup>2</sup>. Although not required here, treatment may include immunosuppression or plasmapheresis.
- Recent advances in diagnostic techniques, such as positron emission tomography (PET) and next-generation sequencing (NGS), have significantly improved the detection of prosthetic valve infections, particularly in culture-negative cases<sup>6,7</sup>.
- Recent advancements in PVIE management focus on individualized therapeutic strategies including targeted antibiotic therapy and early surgical intervention not limited to just the heart, particularly in cases complicated by vascular and renal involvement<sup>1,3</sup>.

## References

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