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## A rare case of De novo mitral valve endocarditis in a patient with chronic kidney disease

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### ABSTRACT

In the era of guideline based practice, central catheter induced endocarditis is not unknown. The internal jugular cannula, often serve as conduits for infection of the seemingly normal heart. Our patient is a 60 years old male of chronic kidney disease, stage V, awaiting the maturation of the AV fistula. His presenting complaints were of progressive shortness of breath and fever of one-week duration and he had been receiving cycles of haemodialysis since the last 2months via an indwelling central venous catheter (Internal Jugular Vein). Bedside transthoracic ECHO showed a large posterior mitral leaflet vegetation, mild to moderate mitral regurgitation and normal LV systolic function. Klebsiella pneumonia was grown in the blood culture and the patient was put on Cefoperazone. The patient improved with antibiotics but sought premature discharge due to personal reasons and was lost to follow up. This case is being presented to highlight that a high index of suspicion of infective endocarditis is necessary for patients on cannulas, who develop the febrile illness. Further, unless there is a septal defect, right sided endocarditis was more common when the heart was structurally normal in immune compromised persons, in cannula acquired infection the left heart valves are more often the seat of endocarditis than the right heart valves, as was in our case.



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### INTRODUCTION

A high index of suspicion is mandatory for diagnosing infective endocarditis in patients with haemodialysis accesses, who develop a febrile illness. Although the most prevalent organisms in intravenous catheter sepsis include *Candida*, *Pseudomonas*, *Enterococci* and *Staphylococci*, poly-microbial infections can occur, though to a lesser extent (Sunil Kumar et al., 2013). Negative

blood cultures possibly due to prior antibiotic administration can also occur and pose hurdles in management. Infection can be reduced by shaving the area before cannula insertion and observing other aseptic precautions during such procedures (Sunil Kumar et al., 2013).

In community-acquired *Klebsiella* infections particularly *Klebsiellapneumoniae*, a primary pyogenic liver abscess is the commonest, particularly in Asia and the ensuing bacteremia can lead to endocarditis, although extremely rare (Ji-Ae Hwang et al., 2013; Tsay RW et al., 2002; Rivero A et al., 2010). Although most of these patients have no previous history of heart disease, previously unrecognised mitral valve prolapse or bicuspid aortic valve may act as a nidus for infection. Further, transesophageal echocardiography has shown that more than 95% of patients with a structurally normal valve are not necessarily free of regurgitation and thickening of the valve leaflet predisposing to infection (Jae-

Kwan Song, 2015). Intravenous drug abusers and immune compromised patients are more commonly predisposed and surprisingly left cardiac valves were more commonly involved.

Patients with of apparently normal valve endocarditis tend to be older with a higher incidence of diabetes and end-stage renal disease on hemodialysis, have larger vegetations, more frequent involvement of the aortic, mitral and tricuspid valve and are more commonly infected with staphylococci and enterococci. These patients usually refuse surgery or are denied surgery because of their co-morbidities which can result in higher surgical mortality (Jae-Kwan Song, 2015).

### CASE REPORT

The patient is a 60yr old male with hypertension and chronic kidney disease, stage V, awaiting the maturation of the AV fistula. His presenting complaints were of progressive shortness of breath and fever of one-week duration and he had been receiving cycles of haemodialysis since the last 2months via an indwelling central venous catheter in the Internal Jugular Vein. On physical examination, the patient was conscious and oriented, ill-looking, with spiky seasonal temperature and on inotropic support with nor-adrenaline and had 90%oxygen saturation in room air. Auscultation demonstrated soft S1 with a pansystolic murmur of grade III in the mitral area and crepitations over both lung fields. Investigations revealed, leucocytosis of 24,000/mm<sup>3</sup> with a profound neutrophilia and Haemoglobin of 6.3 g/dL, serum creatinine of 9.4 mg/dL, and blood urea of 101.7 mg/dL. Chest radiography was within normal limits and the central venous catheter tip was seen in the proximal superior vena cava. Bedside transthoracic ECHO was performed with GE Vivid T8 Machine which revealed large vegetation over the posterior mitral leaflet, moderate mitral regurgitation and normal LV systolic function. The presence of a patent foramen ovale was looked for but was absent. *Klebsiella pneumonia* was detected in the blood cultures and the patient was put on Cefoperazone. He was also investigated for APLA, which was negative. The patient improved with antibiotics, he was taken off inotropes and became afebrile on the 8<sup>th</sup> day. Repeat blood culture did not show any growth and antibiotic was continued. Repeat Echo showed the vegetation to be of the same size. The patient, however, sought premature discharge due to personal reasons and was lost to follow up.

### DISCUSSION

Infective endocarditis is traditionally suspected in persons with previously diagnosed heart disease

or following open heart surgery who develop a prolonged fever. However, there has been an upsurge in the incidence of Healthcare-associated infective endocarditis (HAIE) in patients without previously detected heart disease and this has been confirmed by studies investigating this entity (Ji-Ae Hwang *et al.*, 2013). However, the most important risk factor seems to result from increased use of catheters instead of fistulas as vascular access devices, as was in our case. The organisms most frequently seen in cases of intravenous cannula sepsis are *Candida*, *Pseudomonas*, *Enterococci* and *Staphylococci*. Poly-microbial infections are also encountered, but less frequently (Sunil Kumar *et al.*, 2013). The patient had blood cultures which were positive for *Klebsiella pneumonia* (Tsay RW *et al.*, 2002; Rivero A *et al.*, 2010). Negative blood cultures due to prior antibiotic intake pose diagnostic hurdles.

The risk of infection can be reduced by shaving and observing strict aseptic precautions and strictly following antibiotic prophylaxis recommendation (Abbott KC *et al.*, 2002). The overall reported incidence of IE in a normal-looking valve in non-drug abusers was 16% -40%. Structurally normal valves are not necessarily free of regurgitation or thickening and calcification caused by the hemodynamic stress of hypertension, diabetes, chronic kidney disease, ageing *etc.*, and age-dependent changes in the defence mechanisms of the host may set the stage for the development of infection. Sometimes, non-bacterial thrombotic endocarditis may precede the development of infection. Drastic reduction in the list of indications for IE prophylaxis is also contributory. The urinary tract was the most common source of bacteremia and the aortic valve was the most commonly affected valve in *Klebsiella* endocarditis (Ji-Ae Hwang *et al.*, 2013). In *Klebsiella* infections, pneumonia and or liver abscess was the primary lesion following bacteremia, following which endocarditis may occur (Tsay RW *et al.*, 2002; Rivero A *et al.*, 2010). Our patient did not have pneumonitis or liver abscess. *Klebsiella* endocarditis was usually sensitive to most antibiotics except ampicillin, and in most cases, piperacillin-tazobactam was the initial antibiotic administered. We started the patient on Cefoperazone empirically after the blood was taken for culture and continued with the same because the report revealed that the organism grown, were sensitive to it. Studies have shown that early combination antibiotic therapy yields better survival compared with monotherapy. There have been varied reports on the prognosis, but most studies show that Infective endocarditis of apparently normal valves has a worse outcome probably because it is often diagnosed late, prior

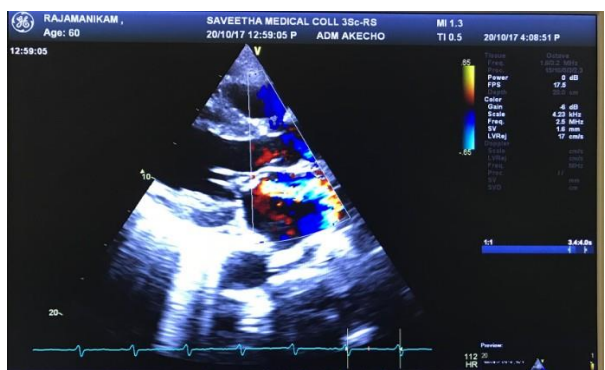
antibiotic administration for the febrile illness may result in negative cultures and diagnostic confusion and because of associated comorbidities (Jae-Kwan Song, 2015).



**Figure 1:**



**Figure 2: Parasternal long axis view – arrow showing vegetation attached to the posterior mitral leaflet**



**Figure 3: Parasternal long axis view showing the mitral regurgitation**

## CONCLUSION

A high index of suspicion is mandatory for the diagnosis of infective endocarditis in patients who become febrile while having vascular accesses for haemodialysis even in the absence of structural heart disease, as was in the reported case.

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