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Case Report

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First report of *Kytococcus schroeteri* prosthetic valve endocarditis in Oman

Abstract

A 38 year-old man with prosthetic mitral and tricuspid valves presented with fever and tachycardia. An organism isolated from aerobic cultures only was ultimately identified as *Kytococcus schroeteri*. The recognition of the organism as a pathogen is important because of intrinsic penicillin resistance. Patient management was complicated by refusal of surgical treatment.

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Introduction

Kytococcus schroeteri is a rare cause of infective endocarditis with eight previous cases reported. We report a case of *K. schroeteri* prosthetic valve endocarditis (PVE) in a 38 year old male.

Case report

A 38 year old male presented to an emergency department with fever, chills and productive cough. He had a background of rheumatic heart disease, atrial fibrillation and hyperthyroidism. Medications were warfarin, carbamizole and metoprolol daily. He had a prosthetic aortic valve placed 13 years previously and a prosthetic mitral valve (MV) placed 8 months previously. He was febrile (38.3°C), tachycardic (HR 121/min) but normotensive (BP 127/80). Chest auscultation revealed metallic clicks and no murmur. He had a neutrophil leucocytosis (13 x 10^9/ml). Urea and electrolytes and creatinine were normal. Three sets of blood cultures were drawn (day 1, day 2 and day 4), and empiric antimicrobial treatment directed toward community acquired pneumonia was initiated.

Trans-thoracic echocardiogram showed a calcified mass on the tricuspid valve. He continued to have occasional spikes of temperature. After 72 hours of incubation the aerobic bottle only of the first blood culture became positive with Gram-positive cocci in clusters. Repeat cultures were requested. The infectious disease team advised therapy for endocarditis with ampicillin (2 gm 6 hourly) and gentamicin (80 mg 8 hourly). On day six, trans-oesophageal echocardiogram showed mobile vegetation, 1.5x1.3 cm attached to the MV prosthesis. The aerobic bottle only of two further sets of blood cultures from day 2 and day 4 of admission also became positive. The antimicrobial regimen was changed to vancomycin (1250 mg 12 hourly) and he continued on gentamicin. On day 7 his anticoagulant was changed to heparin and rifampicin (300 mg every 8 hours) was commenced. The patient declined surgical intervention. He then left hospital against medical advice to seek health care elsewhere. One month later he attended the Emergency Department with a subarachnoid haemorrhage (SAH). Echocardiogram showed the vegetation had reduced in size to 0.8 x 0.4 cm. He again declined surgery, took his discharge and was lost to follow up.

The aerobic bottle only from all 3 sets of blood cultures became positive. On subculture colonies were a muddy yellow. On rapid tests the organism was catalase positive but unreactive on testing for detection of clumping factor and protein A with Staphaurex (Remel Europe Ltd). Tube coagulase and DNase tests were negative. The BD Phoenix Automated Microbiology System consistently identified the organism as *Kytococcus sedentarius* and STAPH API (bioMérieux) identified it as *Micrococcus species*. However sequencing of 16S rRNA identified it as *Kytococcus schroeteri*. The oxacillin and vancomycin MICs respectively were >2mg/l and <=0.5mg/L, performed using VITEK 2 AST card (bioMérieux). Applying the Clinical and Laboratory Standard Institute (CLSI) breakpoints for coagulase-negative staphylococci[1] this was interpreted as oxacillin-resistant and vancomycin susceptible.

Discussion

The *Kytococcus* genus was distinguished from *Micrococcus* in 1995.[2–4] *K. sedentarius* was the only recognized species until 2002, when *K. schroeteri* was described.[4] *K. schroeteri* is a strict aerobe. In contrast to *Micrococcus* spp, it is intrinsically resistant to oxacillin.[2,4,5] Colonies grow slowly and have a distinctive "buttercup" yellow colour[6] which may aid the laboratory in identification. Although *Kytococcus schroeteri* is a skin commensal it is increasingly recognized as a cause of infection in the context of prosthetic materials.[4,5,7] See Table 1. It has also caused other fatal infections including pneumonia in immunocompromised hosts.[3,7–9]

Table 1 A summary of previously reported cases of prosthetic valve endocarditis due to *Kytooccus schroeteri*

Case report	Age, Gender, Geography	Involved valve	Time of onset of endocarditis post implant	Need for surgery	Outcome
Becker et al.,[4]	34 yrs, F ,	Aortic	Within 10 wks	No	Discharged
Le Brun et al.,[5]	73 yrs, M,	Aortic	3 yrs	Yes, during admission	Discharged
Mnif et al. 2006	49 yrs, F	Mitral	10 yrs	No	Discharged
Aepinus et al. 2008	38 yrs, F	Aortic	Not stated	No	Discharged
Renvoise et al. 2008	70 yrs, M	Aortic	26 months	Yes, 1 month later	Discharged
Poyet et al. 2010	72 yrs, M	Aortic	Not stated	No	Discharged
Yousri et al. 2010	64 yrs, M	Aortic	Not stated	Yes, 5 months later	Discharged
Lui et al.,[6]	53 yrs, M	Aortic	12 months	No	Discharged
Current case, 2017	38 yrs, M	Mitral	8 months	Yes, not done	Lost follow up

Conclusion

The true incidence of infection may be underestimated as it may be misidentified as *Micrococcus spp*. or as *K. sedentarius*. Molecular identification using 16S rRNA gene sequencing is the most reliable means of identification as identification of this genus using other systems including MALDI-TOF MS is difficult.[10]

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None.

Conflicts of interest

Authors declare that there is no conflict of interest.

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