Case report

Prosthetic valve endocarditis caused by *Pseudomonas luteola*

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Abstract

**Background:** *Pseudomonas luteola* has been recognized as an uncommon cause of bacteremia and of infections in patients with underlying medical disorders

**Case presentation:** We isolated *P. luteola* from blood cultures in a patient with prosthetic valve endocarditis developed 16 months after cardiac surgery.

**Conclusion:** *P. luteola* is a rare opportunistic agent, with a propensity of infecting valvular prostheses.

**Background**

*Pseudomonas luteola* (*P. luteola*) is an aerobic, Gram-negative rod with a distinctive yellow to orange pigment. After 48 hours of incubation, colonies are typically rough or wrinkled. The organism is non-fermentative, oxidase-negative, catalase-positive, and grows on MacConkey agar [1]. The organism was originally named *P. luteola*. On the basis of low levels of DNA-DNA hybridization, it was subsequently reclassified as *Chryseomonas luteola* [1]. Anzai et al. [2], in an analysis of 16S rDNA sequences of these organisms, has suggested that genus names *Chryseomonas*, *Flavimonas* and *Pseudomonas* were synonymous. Consequently, they concluded that the names *P. luteola* and *Pseudomonas oryzihabitans* should be used. The normal habitat of *P. luteola* is unclear, although it belongs to a group of bacteria normally found in water, soil, and other damp environments [3,4]. Reported human infections are rare.

**Case presentation**

In July 2003, a 53-year-old man was admitted to the Timone hospital in Marseilles, France, presenting with clinical signs of acute endocarditis. He had a fever of 39°C that lasted for two weeks, anorexia, a weight loss of 7 kg since December 2002, a stroke with intracranial haemorrhage, and femoral arterial emboli. He had had an aortic replacement by a bioprosthesis in March 2002 for aortic insufficiency. In February 2003, the patient was hospitalized for undulating fever (38.5°C) that had lasted for the previous 3 months. The transeosophageal echocardiography showed neither valvular dysfunction nor vegetation. Six blood cultures were negative. The patient was treated with amoxicillin (1 g twice a day orally) for 8 days. The fever decreased but persisted at a level of 37.8°C. In July 2003, upon his admission, the echocardiography (multiplane transeosophageal echocardiography) showed a vegetation on the aortic bioprosthesis valve measuring 30 mm at its maximum, and a grade IV valvular regurgitation. The
Reported human *P. luteola* infections are rare. These have included a septicemia in a patient with systemic lupus erythematosus under corticosteroid therapy who developed haemorrhagic pancreatitis complicated by a pancreatic abscess [5]; one case of bacteremia in a previously healthy patient with granulomatous hepatitis [9]; a bacteremia in a patient with peritonitis [10]; and non-bacteremic cases of peritonitis associated with gangrenous appendicitis [10] and continuous ambulatory peritoneal dialysis [11]. Bacteremia has also been reported in patients with indwelling vascular catheters [10-12]. Other clinical isolates have been recovered from the bone of a patient with a femur abscess [10]; from a patient with a subphrenic abscess [10]; from the cerebrospinal fluid and wounds of neurosurgical patients with dural grafts or bone flaps [13]; from an HIV-infected patient with invasive cutaneous infection [3]; and from a patient with facial cellulitis [11]. To the best of our knowledge, only two cases of endocarditis caused by *P. luteola* have been reported in patients with prosthetic cardiac valves [13,14]. These patients developed fever and blood cultures grew *P. luteola* 15 days [13] and 45 days [14], respectively, after cardiac surgery. In addition, one case of *P. luteola* septicemia has been described in a 5-month-old infant after open heart surgery for congenital cardiac disease [3]. Septicemia was diagnosed 8 days after surgery but no endocarditis was found. In the present case, as the patient did not undergo any invasive procedure between the 2002 valvular replacement and the onset of fever, we believe that he was infected during the initial cardiac surgery.

**Conclusion**

Using the Duke endocarditis service criteria, our patient was classified as having a definite endocarditis (valvular histological examination confirmed the diagnosis of infectious endocarditis). The isolation of *P. luteola* in 3 blood cultures and in the arterial thrombus demonstrated its role as an etiologic agent. Including our patient, endocarditis with *P. luteola* has occurred in three patients who had undergone valvular replacement. This suggests that this organism is a rare opportunistic agent, with a propensity of infecting valvular prostheses.

**Competing interests**

The author(s) declare that they have no competing interests.

**Authors’ contributions**

JPC isolated the microorganism, initiated the antibiotic therapy, and drafted the manuscript; PEF identified the microorganism and drafted the manuscript; GH performed the echocardiograms and drafted the manuscript; AR performed valvular surgery and drafted the manuscript; DR helped drafting the manuscript.

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**References**

1. Holmes B, Steigerwalt AG, Weaver RE, Brenner DJ: *Chryseomonas luteola* comb. nov. and *Flavimonas oryzihabitans* gen. nov., comb. nov., *Pseudomonas*like species from human clinical specimens and formerly known, respectively, as groups Ve-1 and Ve-2. Int J Syst Bacteriol 1987, 37:245-250.

2. Anzai Y, Kudo Y, Oyaizu H: The phylogeny of the genera *Chryseomonas*, *Flavimonas*, and *Pseudomonas* supports synonymy of these three genera. Int J Syst Bacteriol 1997, 47:249-251.

3. Freney J, Hansen W, Etienne J, Vandenesch F, Fleurette J: Postoperative infant septicemia caused by *Pseudomonas luteola* (CDC group Ve-1) and *Pseudomonas oryzihabitans* (CDC group Ve-2). J Clin Microbiol 1988, 26:1241-1243.

4. Silver MR, Felegie TP, Sorkin MI: Unusual bacterium, group Ve-2, causing peritonitis in a patient on continuous ambulatory peritoneal dialysis. J Clin Microbiol 1985, 21:838-839.
5. Berger SA, Siegman-Igra Y, Stadler J, Campus A: Group VE-1 septicemia. J Clin Microbiol 1983, 17:926-927.
6. Drancourt M, Bollet C, Carlioz A, Martelin R, Gayral JP, Raoult D: 16S ribosomal DNA sequence analysis of a large collection of environmental and clinical unidentifiable bacterial isolates. J Clin Microbiol 2000, 38:3623-3630.
7. Weisburg WG, Barns SM, Pelletier DA, Lane DJ: 16S ribosomal DNA amplification for phylogenetic study. J Bacteriol 1991, 173:697-703.
8. Lepidi H, Durack DT, Raoult D: Diagnostic methods current best practices and guidelines for histologic evaluation in infective endocarditis. Infect Clin North America 2002, 16:339-361 ix.
9. Engel JM, Alexander FS, Pachucki CT: Bacteremia caused by CDC group Ve-1 in previously healthy patient with granulomatous hepatitis. J Clin Microbiol 1987, 25:2023-2024.
10. Rahav G, Simhon A, Mattan Y, Moses AE, Sacks T: Infections with Chryseomonas luteola (CDC group Ve-1) and flavimonas oryzihabitans (CDC group Ve-2). Medicine (Baltimore) 1995, 74:83-88.
11. Rastogi S, Sperber SJ: Facial cellulitis and Pseudomonas luteola bacteremia in an otherwise healthy patient. Diagn Microbiol Infect Dis 1998, 32:303-305.
12. Hawkins RE, Moriarty RA, Lewis DE, Oldfield EC: Serious infections involving the CDC group Ve bacteria Chryseomonas luteola and Flavimonas oryzihabitans. Rev Infect Dis 1991, 13:257-260.
13. O’Leary T, Fong IW: Prosthetic valve endocarditis caused by group Ve-1 bacteria (Chromobacterium typhflavum). J Clin Microbiol 1984, 20:995.
14. Chihab W, Alaoui AS, Amar M: Chryseomonas luteola identified as the source of serious infections in a Moroccan University Hospital. J Clin Microbiol 2004, 42:1837-1839.

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