

## Non catheter-related bacteremia caused by *Pseudomonas oryzihabitans* in an adolescent with chronic renal failure undergoing peritoneal dialysis

Karampatakis T<sup>1</sup>, Sevastidou A<sup>1</sup>, Argyropoulou E<sup>2</sup>, Printza N<sup>2</sup>, Tsivitanidou M<sup>1</sup>, Siaka E<sup>1</sup>, Papachristou F<sup>2</sup>

<sup>1</sup> Department of Clinical Microbiology, Hippokratia General Hospital, Thessaloniki, Greece

<sup>2</sup> First Pediatric Clinic, Aristotle University of Thessaloniki, Hippokratia General Hospital, Thessaloniki, Greece

### Abstract

A *Pseudomonas oryzihabitans* clinical isolate was recovered from a blood sample. The patient, a 14-year-old-adolescent underwent parathyroidectomy due to secondary hyperparathyroidism. The patient had been going peritoneal dialysis because of chronic renal failure. According to the susceptibility testing conducted with phenotypic methods the microorganism was sensitive to the vast majority of the antibiotics. The isolation of this rare species of *Pseudomonas* combined with the patient's medical history stimulated as to focus on the causes of the bacteremia, which was non catheter-related. Hippokratia. 2012; 16 (1): 90-91

**Key words:** *Pseudomonas oryzihabitans*, peritoneal dialysis, bacteremia, immunosuppression

**Corresponding author:** Theodoros Karampatakis, Hippokratia General Hospital, 49, Konstantinoupoleos street, 54642, Thessaloniki, Greece. Tel: 00306946687601, e-mail: tkarampatakis@yahoo.com

*Pseudomonas oryzihabitans* also known as *Flavimonas oryzihabitans* is an environmental Gram negative rod, which can rarely cause septicemia, peritonitis, endophthalmitis and bacteremia<sup>1,2</sup>. It can infect immunocompromised individuals, patients that undergo surgery or with catheters in their body<sup>3</sup>. This organism is most commonly found at devices for continuous ambulatory dialysis<sup>4</sup>. It can spread through contaminated fluids and unsterilized medical tools. Symptoms of an infection with *P.oryzihabitans* are actually quite vague and similar to the signs that can indicate other disease. In this case report we present a case of bacteremia caused by *P. oryzihabitans* in an adolescent with chronic renal failure of final stage undergoing peritoneal dialysis.

### Case report

On 17 March 2011 a *Pseudomonas oryzihabitans* isolate A2332/11, was recovered from a blood culture. The patient was a 14-year-old male, undergoing peritoneal dialysis because of chronic renal failure. He had been waiting for several years in the list for kidney transplantation. The patient was often admitted to hospital for typical control of his renal function. In this circumstance, the reason for the patient's admission was a programmed parathyroidectomy due to secondary hyperparathyroidism. During his hospitalization the patient was receiving large quantities of calcium intravenous, because of low calcium serum levels. One week after surgery the patient's temperature increased to 39.6°C. The physical findings showed a septic situation including tachypnea and tachycardia. Admission laboratory tests revealed WBCs 5200

cells/mm<sup>3</sup> (83.7% neutrophils), CRP 16.1 mg/L and ESR 69 mm/1<sup>st</sup> hour. The patient began receiving cefuroxime intravenous and a blood culture was obtained. The culture was performed using the BacTAlert 30 automated system (bioMerieux, France). After 72 hours, BacTAlert gave a positive signal and subcultures were performed in blood agar plate, Mac Conkey agar and chocolate agar. The plates were incubated in oxygen and carbon dioxide conditions, respectively. After 24 hour incubation, Mac Conkey agar grew *Pseudomonas oryzihabitans* characterized by rough colonies, yellow pigment and negative oxidase reaction<sup>5</sup>. Moreover, subcultures were performed in Mac Conkey agar/Blood agar divided plate.

The microorganism's identification and susceptibility testing was performed using phenotypic methods with the Vitek 2 automated system (bioMerieux, France). According to the susceptibility testing, the microorganism was sensitive to the majority of the antibiotics tested. More specifically, the microorganism was susceptible to aminoglycosides (MICs for gentamicin, netilmicin and tobramycin  $\leq 1$   $\mu\text{g/ml}$ ), quinolones (MICs for ofloxacin and ciprofloxacin  $\leq 0,25\mu\text{g/ml}$ ) and cephalosporins tested (MIC for cefotaxime 4 $\mu\text{g/ml}$  and for ceftazidime  $\leq 1$   $\mu\text{g/ml}$ ). Moreover, susceptibility testing using the standard Kirby-Bauer method showed sensitivity to cefepime, levofloxacin, imipenem, colistin, aztreonam, ciprofloxacin and chloramphenicol. Amikacin, Piperacillin/Tazobactam, Ampicillin, Amoxicillin/Clavulanic acid were sensitive as well. The rod was found sensitive even to ampicillin, to which some *Pseudomonas* species have a known endogenous resistance. Nevertheless,

*P. oryzihabitans* usually has generally a wide sensitivity to antibiotics, even to ampicillin<sup>6</sup>. The results were interpreted according to the breakpoint tables of the European Committee on Antimicrobial Susceptibility Testing, January 5, 2011<sup>7</sup>.

Based on susceptibility testing results, antibiotic therapy was changed to ceftazidime intravenously. A few days later, the patient's clinical image was improved and the laboratory tests were back to normal levels. During these days, two cultures of peritoneal fluid were obtained and they were negative as the patient had no evident signs of peritonitis.

**Discussion:** *Pseudomonas oryzihabitans* has been reported to cause peritonitis in patients undergoing chronic peritoneal dialysis. Nevertheless, in our case report the patient showed no signs of peritonitis and the peritoneal fluid cultures were negative. As a result, the peritoneal cavity cannot be considered as the gate of the Gram negative rod to the blood and that's why this bacteremia is non catheter-related. Of course, *Pseudomonas oryzihabitans* bacteremia can mask an underlying disease<sup>8</sup>. Moreover, non catheter-related bacteremias are rare and the source of infection in the majority of cases remains unknown<sup>9</sup>. If we aim to focus on the causes of bacteremia, we can consider three possible alternatives. First, the patient's operation could constitute a possible cause of infection. Moreover, the patient was treated with large quantities of calcium because of the hypocalcemia. The administration of large calcium quantities could have caused such vascular disorders rendering the patient vulnerable to infections and bacteremia. Last but not least, the most possible reason of the infection can be regarded the patient's immunosuppression due to his chronic renal failure. The latter is very important as infections caused by *P. oryzihabitans* mostly appear in immunocompromised patients<sup>10</sup>.

Conflict of interest: none was stated

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