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Case Report

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Sphingomonas *Paucimobilis* positive for KPC in hemodialysis patient: a case report

Abstract

Sphingomonas *Paucimobilisis* a gram negative bacilli (GNB). It has-been isolated in different places like water, soil, medications, dialysis fluids and hospital water systems. ITS, although pathogenic potential is mainly in immunocompromised hosts attributed, cases of severe infections in immunocompetent Patients have also been reported. Since its discovery, a large variety of infections such as, meningitis, endophthalmitis, peritonitis, septic arthritis, endovascular devices-related infections and so forth have been reported. Despite multiple severe infections have been described by this bacterium, the isolation of S. paucimobilis with multi resistance never had been reported. We report a case of endovascular device-related sepsis by carbapenem-producing S. paucimobilis (KPC) in a 64 years old female patient dialysis-dependent.

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Pizarro CA, Ortiz JF, Osorio M, Osorio D
Nephrology service, Fundación Nefrouros Neiva, Colombia

Correspondence: Carlos Arturo Pizarro Herrera, Nephrology service, Fundación Nefrouros Neiva, Colombia, Email catuopizarro-1220@hotmail.com

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Introduction

The bacterium Sphingomonas paucimobilis, Pseudomonas paucimobilis formerly,[1,2] It is a gram-negative bacillus uniflagelado, strictly aerobic, oxidase and catalase positive, non-glucose fermenters.[3–5] Its natural habitat is not well known, however have been isolated bacterial strains that grow at room temperature (25-36°C) in water, soil, water hospital systems, dialysis fluids, medicines, sterile water, etc.[1,3,6,7] Since its discovery in 1977, hence the name of their kind "paucimobilis" is metabolically recognized as an oligotrophic bacteria and allowing it to survive in an environment with low nutrient availability and has a high biodegradable capacity.[8] Potential pathogen in humans was described in 1979[9] being the first of its kind with this capability described. Have documented more than 50 cases worldwide that have been implicated in a variety of infectious processes acquired in community and nosocomial (bacteremia, sepsis related to endovascular devices, postsurgical endophthalmitis, visceral abscesses, meningitis, peritonitis, skin infections, urinary tract and diarrhea adenitis).[1] Reported cases mostly are cases in developing countries and in immunocompromised patients, endovascular devices and hospital management.[1,6] Despite the low virulence documented in the bacteria, which is associated with the presence of glycosphingolipids in cell wall and absence of lipopolysaccharide (LPS) as major virulent element species gram negative, it has been associated with bio film formation in various structures, the difficulty for its elimination and the need for removal and exchange of vascular access for various procedures.[2,5] These characteristics have generated growing attention to these opportunistic bacteria and cases have been documented in multiple clinical settings without having to extensive evidence when resistance profiles for this germ. Report a case of sepsis related to endovascular device Sphingomonas paucimobilis producing carbapenems (KPC) in a female patient 64 in hemodialysis therapy.

Case report

A 64 years old female patient who come to focus first level in the municipality of Rivera in poor general health. Comments questioning the clinical picture of two days of consistent evolution un quantified fever associated with fatigue and weakness, pale mucous membranes and significant deterioration in their state of consciousness reason decide to refer to the Uros clinic in the city of Neiva. As background importance patient with chronic kidney disease was studying stage 5 with requirement for renal replacement therapy for 42 months ago in hemodialysis mode. The cause of CKD is diabetic nephropathy. At the time he was receiving hemodialysis via central venous catheter implanted via right femoral emergency thrombosis arteriovenous fistula. It was reported that prior to patient consultation day the patient had chills intra dialysis episode of which was associated with probable bacteremia associated with hemodialysis catheter and antibiotic treatment was started with vancomycin and ceftazidime scheme. It is also known that the patient had in the last 30 days episode of bacteremia associated entry central venous catheter in the jugular and right internal was also handled with antibiotic treatment with a good response. This catheter was removed accidentally by the patient at home. Her vital signs on admission were: TA: 62/30 mmHg, FC: 124x min, FR: 22 x min, SaO_2: 85%, 36.4°C temperature. The rest of her physical examination was within normal limits, with presence of right femoral catheter for performing the hemodialysis without infectious changes insertion hole. Their paraclinical reported: CBC with 47,080/mm3, 95.4% neutrophils, 2.3% monocytes, 1.7% lymphocytes, hemoglobin 10.8g/dl, hematocrit 31.8, platelets 208,000/mm3, 51 mg/dL BUN, and glucose 289 mg/dL. The transfer of the patient to Intensive Care Unit (ICU) is ordered to continue strict monitoring and removal of central venous catheter for hemodialysis and samples were taken for blood culture of peripheral blood, of the branches of the catheter and the catheter tip. Presumptive diagnostic of septic shock associated endovascular device antibiotic broad spectrum coverage with vancomycin + meropenem adjusted to renal function, the patient began.

The peripheral blood samples and catheter branches were inoculated in culture bottles BacT/ALERT FA Aerobic (Biomérieux Inc.) and incubated in automated system for detecting microorganisms BacT/ALERT 3D (Biomérieux Inc.). Documenting bacterial growth sample was seeded by laboratory protocol on solid media blood agar, chocolate and Mc Conkey. Peal documented on solid medium in all samples and subsequently cultured inoculum was incubated in the automatic identification system VITEK® 2 (Biomérieux Inc.). Culturing reported growth of a gram-negative germ, not fermenting, oxidase and catalase postive. It was identified the bacterium Sphingomonas paucimobilis. Antibiogram disc performed on the sample reported sensitivity only tigecycline (MIC: <0,5) and intermediate resistance to piperacillin/tazobactam (MIC: 64) and gentamicin (MIC: 8) (Table 1). For profile compatible with producing bacterium resistance test carbapenems Hodge inoculums isolated positive confirming that reported the isolation of S. paucimobilis KPC was performed (Table 1). Based on the report antibiograma service infectología decided to

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discontinue treatment with vancomycin and continue combination therapy with meropenem, tigecycline and aztreonam for 14 days. He was raised jointly wait until after 72 hours of antibiotic treatment for placing new hemodialysis catheter via the jugular vein and prevent recolonization internal thereof. After 48 hours of antibiotic treatment has significant modulation of the infectious process and transfer to general hospitalization is decided in isolation to continue antibiotic treatment. Presents favorable development during the same without new episodes of systemic inflammatory response so after completing and discontinue antibiotic therapy is decided to exit to continue outpatient dialysis support.

Table 1 Profile of Sphingomonas paucimobilis isolate resistance

Antibiotic	Resistance profile	CMI
Ampicillin sulbactam	Resistant	>=32
Amikacin	Resistant	>=64
Ciprofloxacin	Resistant	>=4
Colistin	Resistant	>=16
Ceftriaxone	Resistant	>=64
Cefepime	Resistant	>=64
Cefoxitin	Resistant	>=64
Gentamicin	Intermediate	8
Imipenem	Resistant	>=16
Meropenem	Resistant	>=16
Ceftazidime	Resistant	32
Tigecycline	Sensitive	<=0,5
Piperacillin/Tazobactam	Intermediate	64

Discussion

Sphingomonas paucimobilis It emerges as an opportunistic bacteria causing infections in multiple clinical settings and engaging patients with varying severity[2,6] Since the discovery of its pathogenic potential in the year 1979[9] They have been documented more than 50 cases in which a majority of cases of patients with Comorbid conditions generators immunosuppressant (cancer, diabetes, chronic kidney disease, use of immunosuppressant's) persists.[2,7,9] The rate of infectious processes for S. paucimobilis related to health care (about 60%) it is held over time and is related to the use of endovascular devices, contamination of solutions and drugs for intravenous use, contamination of devices for mechanical ventilatory support and colonization of water supply ducts.[6–8] Comorbid conditions such as diabetes mellitus and chronic kidney disease in the terminal have been associated with about 10% of patients reported in different studies,[2] So that the degree of immunomodulation generated by these disease states may be considered a risk factor for infections caused by this germ. a significant number of patients with active neoplastic processes and carriers chemotherapy endovascular devices as a cause of infection associated with immunosuppression seed generated by the neoplastic process and drug therapy provided is also reported.[7,10] A total of two cases of infectious processes related to the use of endovascular devices for hemodialysis in patients with chronic kidney disease are reported.[8,9] As reported history found for one of diabetes mellitus cases, liver cirrhosis with hepatocellular carcinoma, and aortic stenosis in the other case reported. For cases symptoms were similar and consistent fever, malaise, headache and post-dialysis without evidence of hemodynamic compromise in patients chill. Antibiotic susceptibility reported was variable, as supplied therapy (intraluminal amoxicillin and ceftazidime), requiring in one case the withdrawal catheter for hemodialysis patient healing. The antibiotic scheme proposed for the treatment lasted 4 weeks for the endoluminal operation and 14 days of ceftazidime with adequate response to both schemes raised.

While S. paucimobilis retains a limited virulence compared to other bacteria of opportunistic behavior, the significant increase in the number of cases reported worldwide in the last 5 years lead us to document severe in which infectious processes already reports a case mortality in 2016 in a patient with immunomodulation associated with poorly controlled diabetes mellitus.[11] Antibiotics administered schemes all patients were based on the full sensitivity report antibiogram and cephalosporins correspond to second and third generation, carbapenems, fluoroquinolones and trimethoprim/sulfamethoxazole, with persistent oxacillin. Resistance is reported in some studies to aminoglycosides and fluoroquinolones.[1] But with widespread carbapenem susceptibility, it is confirming the limited virulence of the germ related to the absence of endotoxin activity. Our clinical case corresponds to the first case of S. paucimobilis forming carbamepenemasa (KPC) with requirement of very broad spectrum antibiotics for treatment associated with removal of the endovascular device as an integral part of managing septic patient, which highlights the need to reassess the true virulence of these opportunistic bacteria.

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None.

Conflicts of interest

The authors declared there is no conflict of interest.

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