

Community acquired *Sphingomonas paucimobilis* in a child - A rare case

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Abstract

Sphingomonas paucimobilis is a rare organism that usually infects immunocompromised patients and is known to cause nosocomial infections from mild to severe pathogenicity. Recently a few community acquired infections have been identified in relatively healthy adult patients with diabetes and alcoholics. We report a case of a 10 years old previously healthy child who presented with fever for a month and was found to have a positive blood culture for *Sphingomonas paucimobilis*.

Keywords: *Sphingomonas paucimobilis*, Immunocompromised, Nosocomial, Pathogenicity.

Introduction

Sphingomonas paucimobilis is characterized as yellow pigmented, aerobic and glucose-nonfermenting bacterium. This organism was previously known as *Pseudomonas paucimobilis* when it was first isolated in 1977 from human clinical specimen and hospital environment.¹ At that time it was labeled as non-virulent and non-pathogenic as there was no evidence of human pathogenicity caused by this organism and considered as specimen contaminant. In 1979, it rose as a human pathogen when it was first isolated from the pus specimen of a leg ulcer.² Although the Lipopolysaccharide constituent of the outer wall of gram negative bacterium, which is highly capable of producing toxicity in host is completely absent in *Sphingomonas paucimobilis*, however, Glycosphingolipids (GSL) are present in the outer layer which has structural similarities with Lipopolysaccharide and has proven to induce cytokines in the host.³ It was formerly known to cause opportunistic and nosocomial infections with low pathogenicity.⁴ However few community acquired cases in healthy adults have also been reported. It is present in nature especially water and soil and found to be allied with indwelling medical devices.⁵ It has been reported to cause infection from primary bacteraemia to life threatening meningitis, peritonitis and septic shock.^{6,7} To our knowledge, in Pakistan this is the first reported case of *Sphingomonas paucimobilis* in a previously healthy child.

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Case Report

A 10 year old male presented to a community clinic at Liaquat National Hospital in an urban area of Karachi, Pakistan in December 2016 with one month history of low grade fever, lethargy and decreased appetite. History revealed that three months back the child's family relocated from UAE and at the time of presentation, were residing in Lyari (a sub-urban settlement in Karachi). According to his mother he had not been well since one month, initially he had diarrhoea and vomiting which resolved with certain medication (no prescription available) from anearbyclinic. Within a period of a week he gradually became lethargic and developed low grade fever which was documented as 100-101°F. When he presented to our clinic, on examination he was pale and looked sick, lips were dry and scaly and temperature was 99°F. Rest of the general and systemic examination was unremarkable. He was requested for few investigations and prescribed Cefixime 400 mg orally once daily for seven days as an empirical therapy, but his symptoms did not improve despite taking complete course of Cefixime. The results of blood reports are as follows, Haemoglobin: 11.7g/dl, total leukocyte count: $9.9 \times 10^9/l$, platelets: $301 \times 10^3/ml$ and ESR: 69, his Thyroid function test, Liver function test and Urine report were in normal limits. Stool report was positive for cyst of *Giardia lamblia* 1-2/HPF. His blood culture showed *Sphingomonas paucimobilis* which was resistant to 3rd generation Cephalosporin and Ticarcillin-Clavulanic acid but sensitive to Ciprofloxacin, Levofloxacin, Meropenem, Imipenem, Gentamycin, Tobramycin and Amikacin. A 5 days course of oral Ciprofloxacin 500 mg twice daily was prescribed. He came for follow up after 1 week with significant improvement in general health and appetite and had been afebrile for last 4 days. His blood culture 2 weeks after treatment showed no growth and ESR dropped to 18. Six weeks after the treatment, he was followed up through a phone call and his mother confirmed that he had been healthy since then.

A written and informed consent was taken from the parents of the child for publication.

Discussion

In our case *Sphingomonas paucimobilis* was isolated from blood culture of a 10 year old boy. In the absence of an underlying disease and risk factors, the most likely source of infection could be drinking water because it is frequently found in natural environment and also isolated from biofilm of drinking water distribution system where it can survive from days to years,⁸ it has also been discovered from hospital surroundings such as tap water, distilled water and fluid used in nebulizers, respirators, dialysis machine and other equipments⁹ but in this case there was no history of hospital exposure. Previously it was known to produce nosocomial infection especially in immunocompromised individual but now an increasing frequency has been reported among healthy people of all age groups as community acquired infection¹⁰ and found to be present as primary bacteraemia as well as a variety of severe life threatening illnesses such as meningitis, peritonitis, osteomyelitis and sepsis^{11,12} where it was isolated from CSF, blood, urine and wound culture. Diabetes and alcoholism are significant risk factors of primary bacteraemia in immunocompetent patient.¹³ Although the antibiotic susceptibility for *Sphingomonas paucimobilis* is highly variable, however majority of the studies showed resistance towards Penicillin and Cephalosporin¹⁴ as shown in this case. The patient was evaluated and managed on time and significant outcome was observed with short course of Ciprofloxacin, a susceptible antibiotic in this case.

Conclusion

The aim of this case report is to highlight the increasing emergence of *Sphingomonas paucimobilis* in immunocompetent patient as community acquired infection and the isolation of this organism from drinking water storage system and hospital environment is highly alarming that may cause outbreak of this organism in communities.

Informed Consent: Written informed consent was obtained from parents for publication of this case report.

Disclaimer: None to declare.

Conflict of Interest: None to declare.

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