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Case Report

# Nosocomial Infection Caused By Sphingomonas Paucimobilis—A Rare Pathogen

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## Introduction

Sphingomonas paucimobilis is regarded as a rare opportunistic human pathogen. This organism is widely distributed in the natural environment (especially water and soil). It has been implicated in Nosocomial outbreak of bacteremia, catheter-related sepsis, meningitis, peritonitis, wound infections urinary tract infections, visceral abscesses, adenitis and endophthalmitis. It has also been recovered from nebulizers, respirators, IV fluids and other medical equipments and has been documented to cause infection in the immune compromised host [1]. They are thus known to exist as hospital environmental contaminants. Saroj Gupta Cancer Centre & Research Institute is a tertiary Cancer Hospital in Eastern India and caters to patients with both early and advanced malignancies. We report six cases of Sphingomonas paucimobilis infection from different clinical specimens.

**Case1:** 60 year old male diagnosed as carcinoma stomach two years ago. He was admitted to this hospital for chemotherapy and developed pleural effusion. Pleural fluid was sent for culture which grown Sphingomonas paucimobilis. On routine examination of blood, he had total leukocyte count 21,000/mm$^3$ with neutrophil count 80% and C-reactive protein was 12mg/L

**Case 2:** 60 year old female admitted with squamous cell carcinoma of left thumb with axillary involvement. During her hospital stay, the carcinomatous thumb got infected. A swab from the infected ulcer was sent for culture which grown S.paucimobilis. Routine examination of blood revealed total leukocyte count 11.000/mm$^3$ with 70% neutrophil. C-reactive proteon was 24mg/L.

**Case 3:** 59 year old male patient admitted to this hospital with a diagnosis of adenocarcinoma right lung with metastasis in urinary bladder. He received chemotherapy twice and then developed catheter-associated urinary tract infection. He was a known diabetic patient with fasting blood sugar 200mg/dl at the time of admission. Routine examination of urine showed 25-30 pus cells/HPF. Routine examination of blood showed total leukocyte count 12.900/mm$^3$ with 80% neutrophil and C-reactive protein 24mg/L. Culture of urine showed growth of S.paucimobilis.

**Case 4:** 22 year old female admitted with a diagnosis of renal cell carcinoma of left kidney and metastasis in liver with as cites. After insersion of PICC line (Peripherally inserted central line catheter) and pigtail catheter she developed septicaemia. Blood culture showed growth of S. paucimobilis twice. Total leukocyte count was 9,150/mm3 with 79% neutrophil and C-reactive protein was 48mg/L

**Case 5:** 66 year old female, diagnosed as acute myeloid leukemia, developed central line associated blood stream infection (CLABSI) three days after insertion of central line catheter and urinary catheter. She had total leukocyte count of 77,240/mm$^3$ with neutrophil 48%, lympho 07%, monocyte-0, eosinophil-0, and basophil-0, atypical 45%. C-reactive protein 96 mg/L. Fasting blood sugar 200 mg /dl. Blood culture revealed growth of S.paucimobilis.

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**Case 6:** 20 year old male diagnosed as acute myeloid leukemia developed sepsis after insertion of central line catheter. Total leukocyte count was 50,000/mm$^3$, neutrophil 45%, Lympho-06%, monocyte-9, basophil-0, eosinophil-0, atypical cell 49%. C-reactive protein 12 mg / L and fasting blood sugar was 180 mg /dl. All six isolates of S.paucimobilis were identified to biochemical profiles established with use of Vitek-2 Gram Negative identification card and antibiogram was done by Vitek-2 AST-N281, and it was found sensitive to Ampicillin/sulbactum, Amoxicillin/clavulanate, Tigecycline, Amikacin, Imipenem and Meropenem. Sensitivity to Ceftazidime, Cefepime, Ciprofloxacin, Levofloxacin, Gentamicin and Tobramycin were varied. All six strains were resistant to Colistin and Polymyxin. Reports exist with beta-lactamase producing strains also and treatment may safely be guided by the antibiotic susceptibility pattern of the respective isolate.

## Discussion

S.paucimobilis is a yellow pigmented, aerobic, no fermenting, gram negative bacilli with a pollar flagellum. The organism can be grown on blood agar or chocolate agar but not on any selective media for enterobacteriaceae. It is both catalase and oxidase positive. Grows at 30$^0$C and 37$^0$C but not at 50C or 420C Unlike other gram negative bacilli, it lacks LPS (Lipopolysachharide) in its outer wall [2] Instead it possesses two different kinds of sphingolipids which are capable of inducing TNF , IL-6 and IL-1 from mononuclear cells [2] In this report all the cases survived the infection previously reported cases due to S.paucimobilis , were not associated with deaths probably because of deficiency of endotoxin activity of this organism [2] S.paucimobilis infection is regarded as being of minor clinical significance but many instances of infections with this organism have been reported in literature [1] . The origin of S.paucimobilis Nosocomial infection may be endogenous which may stem from previous colonization of the patient or environmental i.e. via the implantation of indwelling devices or environmental. In this report the patients had variable response to leukocyte counts and the CRP was not markedly raised.

## Conclusion

This report highlights the importance of Sphingomonas infection in the immune compromised patients. It would be prudent not to disregard it just as an environmental contaminant not causing any threat to human health , more so in immunocompromised patients with indwelling devices. Adequate and stringent infection control measures in hospital would be necessary to prevent the organism from causing serious Nosocomial outbreak.

## Compliance with Ethical Standards

### Conflict Of Interest

There is no conflict of interest

## Human and Animal Rights Informed Consent

This report does not contain any research work involving humans or animals. Informed consent for publication of this report has been obtained from the patients.

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