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Sphingobacterium Multivorum - A Case Report from a Spondylodiscitis Patient

Gargi Ghosh, Asad Riyaz, Anshul Agrawal

Abstract: ***Sphingobacterium multivorum is a rare, opportunistic gram-negative non-fermenter, which is intrinsically resistant to most antibiotics. We isolated the organism from a tissue sample of the vertebral disc at L5-S1 level. The organism grew well on MacConkey's and 5% Sheep blood agar plates and responded well to Colistin.***

Keywords: Opportunistic, immunocompromised, gram-negative non-fermenter, intrinsically resistant

1. Introduction

Sphingobacterium multivorum is a saprophytic, gram negative non-fermentative bacillus that rarely causes disease in humans. In immunocompromised individuals it may be present as an emerging opportunistic infection. It is ubiquitous in nature, mostly contracted in moist environment and is nosocomial in nature. It can grow in disinfectants and

It was previously classified as Flavibacterium. It now belongs to the family Sphingobacteriacae. It derives its name from the presence of high concentration of sphingophospholipids as its cellular lipid concentrations.

It consists of several species, but only a few species cause infection in the humans, including S. spiritovorum, S. multivorum, S. mizutae and S. thalpophilum.

2. Case Report

We present a case where a 50-yr-old lady from low-socioeconomic status, a known case of diabetes for 10 years, not well controlled, came with a history of radicular pain in the right leg in November 2020, which was confirmed on MRI spine as L5-S1 spondylo-discitis.

She was empirically started on anti-tubercular therapy elsewhere with no symptomatic relief for 2 months.

In January 2021 she presented to us with persistent symptoms. After repeat MRI she underwent endoscopic biopsy and lavage of the disc for confirmation of diagnosis, which ruled out tuberculosis in TB-PCR and AFB culture. By this time she also had symptoms of frequency of micturition, fever of 99-100^{o} F, with burning on micturition and pyuria. She was empirically started on antibiotics after sending the urine culture.

3. Laboratory Findings

Her baseline Creatinine was.92 mg/dl. She had MCHC anaemia, which required blood transfusion. Her urine culture performed on CLED Agar grew Candida albicans, with significant growth of > 10^5 CFU/ml colony counts, sensitive to Azoles and was started on intravenous Fluconazole, after stopping the empirically given antibiotics. Her tissue (disc fragments) culture also grew Candida albicans with co-infection with multi-resistant Sphingobacterium multivorum.

The L5-S1 disc tissue was received in our labrotary for microbiological culture. The tissue was crushed and immersed in sterile normal saline and cultured on MacConkey and blood agar plates and kept at 37 degrees for aerobic incubation for 24 hours. The bacterial colonies grown on MacConkey Agar were non-lactose fermenting, small, circular, convex, smooth and opaque, 1-mm colonies which were catalase and oxidase positive. Gram stain was done which showed it to be a gram-negative rod. The Urease test was positive. The identification on Vitek-2 Compact gave the organism genus as Sphingobacterium and species as multivorum. No sugars were fermented, hence a non-fermenter on TSI agar slant.

The antibiotic susceptibility on Vitek-2 and manually showed the organism to be resistant to all other drugs except Colistin, which was sensitive.

Sphingobacterium multivorum AST		
ANTIBIOTICS	**MIC Value**	**Interpretation**
1. Cefoperazone/Sulbactam	>=64	R
2. Piperacillin /Tazobactam	>=128	R
3. Ceftazidime	>=69	R
4. Cefipime	>=32	R
5. Imipenem	>=16	R
6. Meropenem	>=16	R
7. Ertapenem	>=16	R
8. Amikacin	>=64	R
9. Gentamicin	>=16	R
10. Ciprofloxacin	>=4	R
11. Levofloxacin	>=8	R
12. Azithromycin	6mm	R
13. **Colistin**	**<=0.5**	**S**

The other organism isolated was Candida albicans which was sensitive to all the antifungal drugs tested on Vitek-2 Compact.

4. Treatment

Injection Colistin (intravenous) was started with glycaemic control with Insulin and supportive therapy, including blood transfusion for anaemia. During the course of treatment she developed non-oliguric acute kidney injury with raised Creatinine up to 2.78 mg/dl, requiring nephrology consultation and dose reduction of the drug Colistin according to the eGFR. She had relapse of UTI with Vancomycin resistant Enterococcus faecium (VRE) within 2

weeks of her previous infections, suggesting her severely immunocompromised status.

She has responded with Buprenorphine patch for her disc pain, glycaemic control with insulin and has improved and started walking.

5. Discussion

The Spondylo-discitis and epidural abscess caused by a rare pathogen Sphingobacterium multivorum required expertise and isolation of the organism from the tissue fragments in the Microbiological Laboratory, for the confirmation of the disease. Till now the infections reported by Sphingobacterium multivorum in humans have been bacteraemia, septic shock, acute meningitis, necrotizing fasciitis, spontaneous bacterial peritonitis and lung infections.

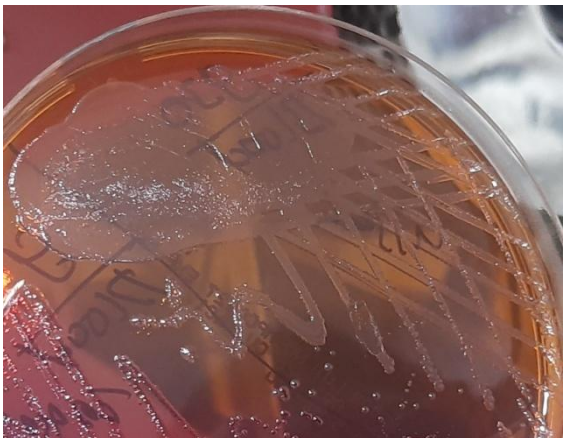

Figure 1: NLF mucoid colonies on MacConkey Agar

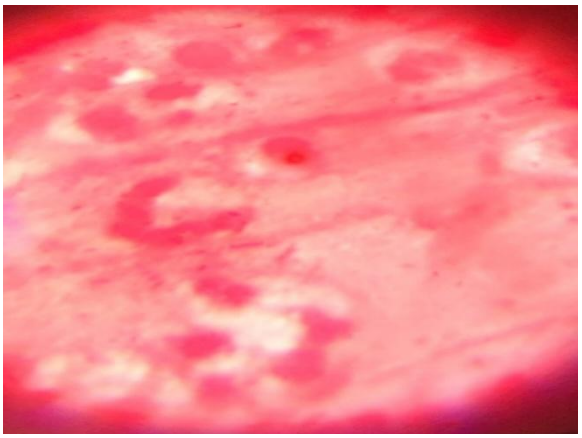

Figure 2: Gram's stain showing pus cells with GNB

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