

Case Study

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## A Case of Bacterial Meningitis due to *Stenotrophomonas maltophilia* in a Patient with *Pilocytic astrocytoma*

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### ABSTRACT

*Stenotrophomonas* is a gram negative non-fermentative bacillus that is ubiquitous in the environment and is increasingly recognized as a cause of serious infections in hospitalized patients. Meningitis secondary to *S.maltophilia* has rarely been described. We report a patient who developed meningitis due to these bacteria after a neurosurgical procedure. This strain was only sensitive to co-trimoxazole and ciprofloxacin. The patient was discharged after recovery.

### Introduction

The genus *Stenotrophomonas* was created in 1993 to accommodate *Xanthomonas maltophilia* (formerly *Pseudomonas maltophilia*) (Palleroni and Bradbury, 1993). It is a gram negative non-fermentative bacillus that is ubiquitous in the environment and is increasingly recognized as a cause of serious infections in hospitalized patients (Hugh and Ryschenkow, 1961; Platsouka *et al.*, 2002; Lai *et al.*, 2004; Denton and Kerr, 1998; Patrick *et al.*, 1975; Denis *et al.*, 1977; Trump and Grossman, 1982; Sarvamangala Devi *et al.*, 1984; Muder *et al.*, 1987). It occasionally causes opportunistic infections and is emerging as an important hospital acquired pathogen especially in patients who are immunocompromised. It is divided into nine genomic groups. Of the different species of this

genus only *Stenotrophomonas maltophilia* is associated with human infections. Meningitis secondary to *S.maltophilia* has rarely been described. We report a patient who developed meningitis due to these bacteria after a neurosurgical procedure.

### Case Report

A 20 year old boy was admitted to our neurosurgery ward with complaints of nausea, headache, vomiting, irritability, visual complaints and torticollis. MRI was done and biopsy was taken after which *Pilocytic astrocytoma* was observed on histopathological examination. VP shunting was done. Three days after the procedure patient developed fever of 38.9 degree Celsius. Laboratory findings on the same day were raised white blood

cell counts and C-reactive protein. Haematocrit was 34%, urea 15mg/dl, creatinine 1.1mg/dl. CSF sample was sent for culture and the patient was started on vancomycin and meropenem empirically but, the patient did not improve. On the third day, growth was obtained on CSF culture and gram negative bacilli were seen after microscopic examination. After following standard microbiological procedure (biochemical tests, antibiotic sensitivity testing) it was identified as *Stenotrophomonas maltophilia*. It was confirmed by API system and also by Vitek-2 automated systems. This strain was only sensitive to co-trimoxazole and ciprofloxacin hence, treatment was switched to the sensitive drugs. Fever subsided and the patient recovered with his parameters returning to baseline. CSF for culture was taken again after 5 days which showed no growth. The patient was discharged after recovery.

## Results and Discussion

*S.maltophilia* is a gram negative bacillus first identified by Hugh and Ryschenkow (1961). It is a rare cause of community acquired infections and is commonly recognized as a cause of hospital

acquired infections (Platsouka *et al.*, 2002). It causes bacteremia, endocarditis, pneumonia, pyelonephritis, cellulitis and meningitis (Lai *et al.*, 2004). Treatment is complicated because of high resistance to multiple antibiotics (Denton and Kerr, 1998). Meningitis due to *S.maltophilia* is rarely seen and there are very few case reports.

Meningitis developed in some of these patients. Some patients died despite medical therapy but none of them received appropriate therapy. Our case is also a case of meningitis due to neurosurgical procedure VP shunting. Caylan reported the risk factors for *S.maltophilia* meningitis as prematurity, neurosurgical procedures, shunting, drainage, intracranial haemorrhage and malignancy.

Carbapenem treatment has also been suggested as risk factor for colonisation/infection with this bacteria (Caylan and Aydin, 2002; Sanyal and Mokaddes, 1999). It is resistant to several antibiotics used empirically. Inducible beta lactamase activity, efflux mechanisms, biofilm formation and production of extracellular slime are responsible for resistance to multiple antibiotics (Nicodemo *et al.*, 2005).

**Fig.1**

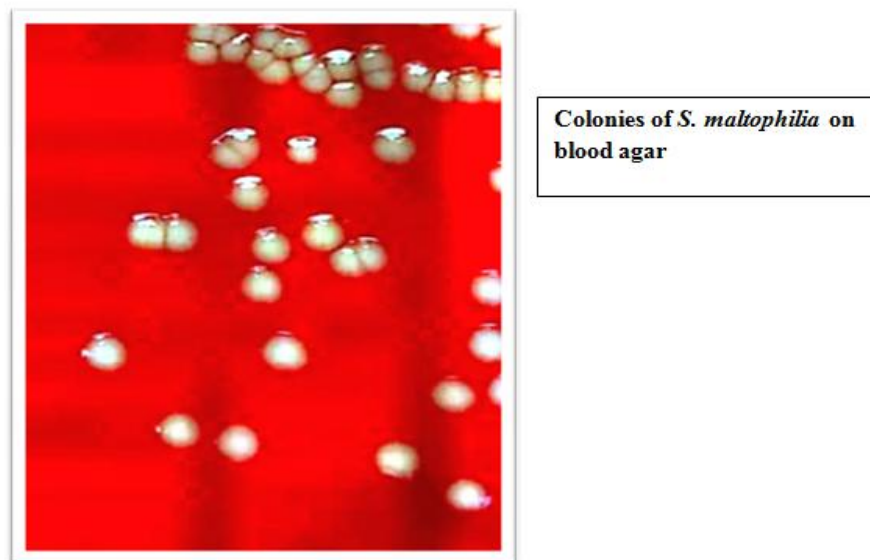


Fig.2



Gram negative bacilli (*S. maltophilia*)

Our strain was resistant to imipenem, meropenem, amikacin, ceftazidime, piperacillin/tazobactam. It was sensitive to ciprofloxacin and cotrimoxazole. We combined both these drugs although not much literature is available on polytherapy.

This bacteria is an emerging pathogen for nosocomial infections. Meningitis due to this is rare and experience is limited. Physicians must be alert to *S. maltophilia* if meningitis develops after neurosurgical procedure and cotrimoxazole treatment should be started as per AST (Nicodemo *et al.*, 2005).

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