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The HPCSA and the Med Tech Society have confirmed that this clinical case study, plus your routine review of your EQA reports from Thistle QA, should be documented as a “Journal Club” activity. This means that you must record those attending for CEU purposes. Thistle will **not** issue a certificate to cover these activities, nor send out “correct” answers to the CEU questions at the end of this case study.

The Thistle QA CEU No is: **MT00025**.

Each attendee should claim **THREE** CEU points for completing this Quality Control Journal Club exercise, and retain a copy of the relevant Thistle QA Participation Certificate as proof of registration on a Thistle QA EQA.

**Cycle 24 - Organism 11:**

**Stenotrophomonas maltophilia**

**A Study carried out at the Royal Perth Hospital, Perth, Australia**

*Stenotrophomonas maltophilia* is a common coloniser of the respiratory tract of patients with chronic lung disease, and, in the absence of pneumonia or bacteraemia, is often ignored by physicians

It is a Gram-negative nonfermentive bacillus. It has previously been designated as *Pseudomonas maltophilia* and *Xanthomonas maltophilia*. Owing to a combination of high innate antibiotic resistance, including two chromosomal cephalosporinases, one of which hydrolyses carbapenems, and selective antibiotic pressure, *S. maltophilia* is emerging as an important nosocomial pathogen.

Mortality rates of 10–60% in patients with bacteraemia due to *S. maltophilia* have been reported largely influenced by their occurrence in critically ill, heavily immuno-suppressed patients. However, the attributable mortality due to *S. maltophilia* bacteraemia appears to be equivalent to that for other nosocomial bacteraemias after adjusting for underlying disease status

Although the respiratory system is the most common site of isolation and infection with *S. maltophilia*, the significance of a positive respiratory tract isolate in the absence of bacteraemia is less clear as transient asymptomatic carriage is not common, especially in the nosocomial setting. Making a distinction between *S. maltophilia* colonisation and infection is made even more difficult by the frequent isolation of other organisms from the same specimen.

Therefore, although there is good evidence that *S. maltophilia* causes significant mortality in patients with nosocomial pneumonia, in other clinical settings, the significance of a positive respiratory isolate is much less clear.

At the Royal Perth Hospital (Perth, Australia), there was quite a range of opinions regarding the need to treat *S. maltophilia* when isolated from sputum in the absence of pneumonia. Therefore, all case records from the period of 1995–2002 were reviewed to determine whether the decision to treat *S. maltophilia* impacted on outcome, and whether clinical indications for treatment could be determined.

An episode of *S. maltophilia* was defined as a positive sputum sample, endotracheal tube aspirate, bronchial wash or lavage culture. If no specific therapy for *S. maltophilia* was given, then subsequent isolates obtained during the same hospital admission were not defined as a separate episode. Nosocomial infection was defined as a positive culture for *S. maltophilia* >72 h after admission to hospital, or a positive culture on admission if the patient had been discharged from hospital in the past 14 days. With respect to outcome, mortality was defined as death occurring within 14 days of the initial positive culture of *S. maltophilia*.

Although nosocomial bacteraemia and ventilator-associated pneumonia due to *S. maltophilia* show significant mortality and morbidity, it was not possible to attribute any excess mortality or morbidity in the absence of pneumonia. Although overall mortality rates were high, the absence of any apparent effect of treatment is more consistent with the acquisition of *S. maltophilia* being a marker of severe underlying life-limiting illnesses than of *S. maltophilia* being a highly virulent pathogen in this setting. Given the high frequency of multiple pathogens, in the absence of consolidation, isolation of *S. maltophilia* may not require antibiotic therapy as the majority of patients in this group do not appear to benefit from treatment.

The argument that most isolates of *S. maltophilia* from the respiratory tract represent colonisation rather than invasive disease is supported by several findings. First, specific anti-*S. maltophilia* antibiotic therapy did not alter the outcome in patients without pneumonia. Secondly, even without antibiotic therapy, the overwhelming majority of patients cleared *S. maltophilia* from their respiratory tract. Thirdly, in the majority of cases, *S. maltophilia* was not the only pathogen isolated. Finally, the only independent predictor of survival was serum albumin concentration. This strongly suggests that the isolation of *S. maltophilia* is an indication of a severely compromised host rather than *S. maltophilia* being an extremely virulent opportunistic pathogen.

Although treatment of *S. maltophilia* may not be critical, physicians still need to be cautious in their selection of antibiotic therapy when it is isolated. Given the extremely high frequency of multiple pathogens observed in the present study and in others, limiting antibiotic therapy to cover only *S. maltophilia* may be dangerous, as many of the typical co-pathogens are resistant to sulfamethoxazole/trimpethoprim. It should also be noted that both gatifloxacin and doxycycline appear to be good alternatives to sulfamethoxazole/trimethoprim in vitro, although efficacy in clinical trials has not been assessed.

In summary, in the absence of pneumonia-specific antibiotic therapy, *Stenotrophomonas maltophilia* isolated from the respiratory tract does not appear to affect outcome. When *Stenotrophomonas maltophilia* is isolated, physicians should be alert to the high probability of multiple pathogens being present. Although respiratory tract colonisation does not appear to have adverse implications, the isolation of *Stenotrophomonas maltophilia* indicates a severely compromised host with a high likelihood of mortality attributable to the underlying disease processes.

### **CPD Questions:**

- 1. This study took place in Australia. Do you think the findings are valid for South Africa's patient population and disease profile?**
- 2. Why has *S. maltophilia* a high innate antibiotic resistance?**