Stenotrophomonas maltophilia Infections in Hospitalized Patients at Siriraj Hospital

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ABSTRACT

Ninety-seven strains of *Stenotrophomonas maltophilia* isolated from 62 patients hospitalized at Siriraj Hospital from September 2005 to February 2006 were studied. Ninety-two strains (94.8%) were isolated from respiratory secretions and five strains (5.2%) were from blood. Only 39.3% of the patients who had *S. maltophilia* isolated from their clinical specimens had infections. All *S. maltophilia* infections were hospital acquired and the infected patients had underlying diseases, multiple medical devices and received multiple antibiotics prior to *S. maltophilia* infections. Pneumonia was the most common site of infections. *S. maltophilia* was susceptible to co-trimoxazole in 68.8% of the isolates. The overall mortality of the patients with *S. maltophilia* infections was 45.5%.

Keywords: Hospitalized patients; infections; *Stenotrophomonas maltophilia*

Siriraj Med J 2006; 58: 1110-1111
E-journal: http://www.sirirajmedj.com

Stenotrophomonas maltophilia is a non-fermentative aerobic gram-negative bacillus formerly classified as *Pseudomonas*.[1] *S. maltophilia* is usually found in a variety of aquatic environments. *S. maltophilia* is a frequent colonizer of fluids used in the hospital setting i.e. irrigation solutions and intravenous fluids, and of patient secretions e.g., respiratory secretions, urine, wound exudates. *S. maltophilia* is an organism of low virulence and is an infrequent pathogen in humans. *S. maltophilia* must bypass normal host defenses to cause human infection. For example, if an intravenous infusion fluid contains a large amount of *S. maltophilia*, then direct injection into the bloodstream may result in blood stream infection. *S. maltophilia* has been recognized as an increasingly important nosocomial pathogen causing pneumonia, bacteremia and other infections especially in debilitated and immunocompromised cancer or hematologic malignancy patients.[1-4] Infection with *S. maltophilia* is difficult to treat since effective antibiotics against *S. maltophilia* are limited and co-trimoxazole is an antibiotic of choice.[1-5]

The objective of the study was to describe the demographics, clinical features and outcomes of hospitalized patients at Siriraj Hospital who had *S. maltophilia* isolated from their clinical specimens.

MATERIALS AND METHODS

S. maltophilia isolated from the clinical specimens collected from the patients hospitalized at Siriraj Hospital during a six-month period from September 2005 to February 2006 were included. The medical records of the patients with a presence of *S. maltophilia* in their clinical specimens were reviewed.

RESULTS

There were 97 isolates of *S. maltophilia* from 62 patients hospitalized at Siriraj Hospital during the study period. Ninety-two strains (94.8%) were isolated from respiratory secretions and five strains (5.2%) were from blood. Forty patients (64.5%) were males and 22 (35.5%) were females. The mean age of the patients was 53.1 years (median age 62 years) with an age ranged from 1 month to 90 years. Thirty patients (48.4%) were hospitalized at intensive care units (ICU). The medical records of 56 patients were available for review. Twenty-nine patients (51.8%) were medical patients and 19 (33.9%) and 6 (10.7%) were surgical and pediatrics patients respectively. Forty-nine patients (87.5%) had underlying severe or chronic diseases such as cancer, diabetes mellitus, hypertension, cerebrovascular diseases, ischemic heart diseases. *S. maltophilia* isolated from the respiratory secretions of 34 patients (60.7%) were considered colonization since the patients did not have clinical features of *S. maltophilia* pneumonia. Of 22 patients with *S. maltophilia* infections, 17 patients (77.3%) had pneumonia, 4 patients (18.2%) had bacteremia and 1 patient (4.5%) had pneumonia and bacteremia. All episodes of *S. maltophilia* infections were hospital-acquired. All patients with *S. maltophilia* infections had underlying diseases, multiple medical devices including central venous catheter, endotracheal tubes, urethral catheters, nasogastric tubes, and had received multiple antibiotics prior to developing *S. maltophilia* infections. Eighteen patients (81.8%) were hospitalized in the ICU. In vitro susceptibility of co-

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trimoxazole against 77 isolates of *S. maltophilia* revealed that 53 isolates (68.8%) were susceptible. Fifteen patients with *S. maltophilia* infections received co-trimoxazole and 10 patients survived whereas 7 patients received other antibiotics and only 2 patients survived. The overall mortality of the patients with *S. maltophilia* infections was 45.5%.

DISCUSSION

We found that most isolates of *S. maltophilia* from respiratory secretions were colonizations, all patients with *S. maltophilia* infections had underlying diseases, multiple medical devices and had received multiple antibiotics prior to developing the infections; and a high mortality of patients with *S. maltophilia* infections confirmed the observations made earlier by others.[1-6] The responsible healthcare personnel should be aware that most of the *S. maltophilia* strains isolated from respiratory secretions were not infections and these patients did not need antibiotics specific for *S. maltophilia*. The recovery of *S. maltophilia* from respiratory secretions should be regarded as colonization until proven otherwise and a potential pathogenic role should be evaluated by an infectious disease consultant. Although *S. maltophilia* usually is resistant to aminoglycosides, antipseudomonal penicillins, and antipseudomonal third-generation cephalosporins, it usually is susceptible to co-trimoxazole. *S. maltophilia* isolated from hospitalized patients at Siriraj Hospital was less susceptible to co-trimoxazole than that in other studies.[5, 7-10] Therefore new antibiotics are needed for therapy of *S. maltophilia* infections. Tigecycline was found to be active against most isolates of *S. maltophilia*[11, 12] and this antibiotic might be beneficial for therapy of *S. maltophilia* infections. Polymyxin B was found to be active against *S. maltophilia*[13] whereas colistin (polymyxin E) was inactive against *S. maltophilia* in another study.[10] In vitro synergy of colistin with rifampin and trimethoprim/sulfamethoxazole on multidrug-resistant *S. maltophilia* was observed[14] and antibiotic combination could be another measure for therapy of *S. maltophilia* infections. Since all *S. maltophilia* infections in our study were hospital-acquired, the choice of antibiotic therapy was limited and the mortality rate was high. Effective infection control measures should be employed in order to prevent *S. maltophilia* colonizations and infections in hospitalized patients. Sources of *S. maltophilia* colonization include personnel (hands, antiseptic soaps, hand lotion), respiratory equipment and/or fluids (ultrasonic nebulizers, inhalation medications, respirator tubing condensate), IV lines and/or fluids (IV solutions, central venous catheters, pressure monitoring devices - pressure transducer fluids), urine and/or fluids (indwelling urinary catheters, urometers, irrigation solutions). Effective measures for decontamination of *S. maltophilia* in these sources and a control of patient-to-patient spread of the organism should be attempted and is of concern.

ACKNOWLEDGEMENTS

The authors thank Mr Siripan Chaiya and Ms Lucksamee Wattanamongkolsilp for co-ordinating the study, and the Thailand Research Fund for supporting the study.

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บทคัดย่อ

การติดเชื้อ *Stenotrophomonas maltophilia* ในผู้ป่วยที่รับไว้รักษาในโรงพยาบาลศิริราช

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คณะผู้วิจัยได้ศึกษาเชื้อ *Stenotrophomonas maltophilia* จำนวน 97 สายพันธุ์จากเสมหะและเลือดที่แยกได้จากผู้ป่วย 62 คนที่รับไว้รักษาในโรงพยาบาลศิริราช ระหว่างเดือนกันยายน พ.ศ. 2548 ถึงเดือนกุมภาพันธ์ พ.ศ. 2549 พบว่าเชื้อร้อยละ 94.8 แยกได้จากเสมหะ และร้อยละ 5.2 แยกได้จากเลือด ผู้ป่วยเพียงร้อยละ 39.3 เท่านั้นที่มีการติดเชื้อ *S. maltophilia* การติดเชื้อทั้งหมดเกิดในผู้ป่วยที่รับไว้รักษาโรงพยาบาลที่มีโรคประจำตัว ได้รับสายหรือท่อสอดใส่เข้าสู่ร่างกาย และได้รับยาต้านจุลชีพหลายขนานก่อนมีการติดเชื้อดังกล่าว การติดเชื้อส่วนมากคือปอดอักเสบ เชื้อ *S. maltophilia* ร้อยละ 68.8 ไวต่อยา co-trimoxazole ผู้ป่วยติดเชื้อ *S. maltophilia* มีอัตราตายร้อยละ 45.5