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

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Stenotrophomonas maltophilia is a non-fermentative aerobic gram-negative bacillus formerly classified as Pseudomonas. 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. Infection with S. maltophilia is difficult to treat since effective antibiotics against S. maltophilia are limited and co-trimoxazole is an antibiotic of choice.

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 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. 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. Therefore new antibiotics are needed for therapy of *S. maltophilia* infections. Tigecycline was found to be active against most isolates of *S. maltophilia* and this antibiotic might be beneficial for therapy of *S. maltophilia* infections. Polymyxin B was found to be active against *S. maltophilia* whereas colistin (polymyxin E) was inactive against *S. maltophilia* in another study. In vitro synergy of colistin with rifampin and trimethoprim/sulfamethoxazole on multidrug-resistant *S. maltophilia* was observed 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 bronchodilator, respiration 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.

**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. 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. Therefore new antibiotics are needed for therapy of *S. maltophilia* infections. Tigecycline was found to be active against most isolates of *S. maltophilia* and this antibiotic might be beneficial for therapy of *S. maltophilia* infections. Polymyxin B was found to be active against *S. maltophilia* whereas colistin (polymyxin E) was inactive against *S. maltophilia* in another study. In vitro synergy of colistin with rifampin and trimethoprim/sulfamethoxazole on multidrug-resistant *S. maltophilia* was observed 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.

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**REFERENCES**