Community-acquired infection due to *Stenotrophomonas maltophilia*: a rare cause of septic arthritis

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***Stenotrophomonas maltophilia* is an important nosocomial pathogen in hospitalized patients, particularly those with prior broad-spectrum antibacterial therapy. The microorganism mainly infects severely ill, debilitated patients and is most frequent in immunocompromised hosts. A prominent feature of this organism is its resistance to multiple antibiotics including β-lactam agents, carbapenems and aminoglycosides. Community-acquired infection with *Stenotrophomonas maltophilia* is reported rarely. This is the first report of a child patient diagnosed with septic arthritis due to *Stenotrophomonas maltophilia*.**

Key words: septic arthritis, Stenotrophomonas maltophilia, child.

Stenotrophomonas maltophilia, formerly named pseudomonas and then *Xanthomonas maltophilia*, has been increasingly described as a cause of systemic or focal infections, including pneumonia, bacteremia, meningitis, urinary system infections, endocarditis, endophthalmitis, sinusitis, cellulitis, and myositis[1]. *S. maltophilia* is increasingly recognized as an important cause of nosocomial infections, although community-acquired infection with this bacterium is reported rarely. Infection in immunocompetent individuals is rare[2]. In this report, a case of septic arthritis caused by *S. maltophilia* following penetrating trauma is described.

Case Report

An eight-year-old girl presented with three-day history of swelling, erythema, and pain in the right knee. She had a history of penetrating knife trauma on the right knee six days before admission. The knife was used in the kitchen solely for cutting bread and fruit. Her medical history revealed no infectious diseases, antimicrobial treatments, or hospitalization.

On physical examination, the patient was afebrile. There was warmth, erythema, swelling, tenderness, and limitation of motion in the right knee. No other joints were inflamed. The remainder of her examination was unremarkable.

The laboratory findings revealed hemoglobin level 10.3 g/L, white blood cell count 13.2×10^9/L with neutrophils 88%, platelet count 488×10^9/L, C-reactive protein (CRP) 78 mg/L, and erythrocyte sedimentation rate 110 mm/h. A provisional diagnosis of a septic arthritis was made. The joint of the patient was opened and drained in the operating room, yielding 15 ml of purulent fluid. The knee was washed out with aqueous chlorhexidine. The examination of the synovial fluid was consistent with septic arthritis. Synovial fluid Gram staining showed numerous Gram-negative rods and segmented neutrophils. The patient was started on intravenous cefepime and amikacin until culture results. Culture of the synovial fluid revealed rough, lavender-green colonies on blood agar which were Gram-negative rods on Gram stain. The organism was non-fermentative, motile, and positive for oxidation of glucose and maltose and yielded negative oxidase reaction, while lysine decarboxylase test was positive. The organism was identified as *S. maltophilia* using API 20NE (BioMerieux, France) and BD Phoenix (Becton Dickinson, France) systems. The MIC (minimal inhibitory concentration) values revealed by BD Phoenix system are shown in Table I. Therapy was then altered to trimethoprim-sulfamethoxazole (TMP-SMX) (10 mg/kg/d every 12 h intravenous) and

Table I. In Vitro Antibiotic Susceptibility of *Stenotrophomonas maltophilia* and MIC Values

Antibiotic	MIC (μg/ml)	R/S/I
Amikacin	<8	S
Amoxicillin-clavulanate	>16	R
Ampicillin	>16	R
Aztreonam	>16	R
Cefepime	>16	R
Cefotaxime	>32	R
Cefoxitin	>16	R
Ceftazidime	16	I
Chloramphenicol	≤4	S
Ciprofloxacin	<4	S
Gentamicin	<2	S
Imipenem	>8	R
Meropenem	>8	R
Levofloxacin	<1	S
Piperacillin	32	I
Piperacillin-tazobactam	16/4	S
Trimethoprim-sulfamethoxazole	<0.5/9.5	S

MIC: Minimal inhibitory concentration. R: Resistance. S: Susceptibility. I: Intermediate.

amikacin (15 mg/kg/d every 12 h intravenous). Amikacin was stopped for 14 days and TMP-SMX continued for 28 days with a great improvement in symptoms. In four weeks the swelling had resolved and there was full range of movement of the knee.

Discussion

Septic arthritis remains an important and serious disease of childhood because of its potential to cause permanent damage. The most common causative microorganisms are *Staphylococcus aureus*, coagulase-negative staphylococcus, *Streptococcus pneumoniae*, salmonella, *Haemophilus influenzae* type b and group B streptococcus[3]. *S. maltophilia* is an uncommon cause of septic arthritis, with only one case reported in the literature occurring in an adult-acquired immunodeficiency syndrome patient[4]. To our knowledge, our patient is the first case of septic arthritis caused by S. *maltophilia* in childhood.

Stenotrophomonas maltophilia infections are primarily nosocomial in origin. *S. maltophilia* has been implicated in several outbreaks of true nosocomial infections. Over 80% of the episodes of infections were nosocomial. Risk factors for true *S. maltophilia* infection include exposure to broad-spectrum antibiotics, severe underlying illness, immunosuppressive therapy, prolonged hospitalization, intensive care unit residence, and the presence of devices such as central venous catheters[5]. In our case, septic arthritis occurred in a healthy girl who had penetrating knife trauma. Therefore, direct inoculation from an environmental source seems to have been the most probable cause of *S. maltophilia* septic arthritis in this patient.

Community-acquired infection due to *S. maltophilia* is very rare. Two immunocompetent patients with community-acquired meningitis and plantar pyoderma due to *S. maltophilia* were reported in the literature[6,7].

Resistance to the multiple agents used to treat Gram-negative infections is a hallmark of *S. maltophilia*. Based on susceptibility studies, TMP-SMX is the agent of choice for treating *S. maltophilia* infections[2]. However, there are no controlled clinical studies to determine the most effective antibiotic regimen or the appropriate length of therapy. Antibiotic susceptibility studies and clinical observation suggest that the most active antibiotics against *S. maltophilia* are TMP-SMX and ticarcillin-clavulanate. The high frequency of resistance and the possibility of resistance development during therapy make dual antibiotic therapy reasonable for severe infections[5]. The isolate from our patient's synovial fluid was susceptible to TMP-SMX and amikacin, and she was cured with this combination.

In conclusion, this case demonstrates that *S. maltophilia* can cause septic arthritis and should be considered in the differential diagnosis, particularly in posttraumatic cases.

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