Pneumonia Caused by *Stenotrophomonas maltophilia* with a Mucoid Phenotype

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We describe the first known case of pneumonia caused by a mucoid *Stenotrophomonas maltophilia* (Xanthomonas maltophilia) strain in a patient with bronchiectasis. The patient was admitted because of mild hemoptysis and productive cough with infiltrative shadow in the right lower lung field on chest X ray. The clinical symptoms were mild, and treatment with minocycline was effective.

*Stenotrophomonas maltophilia* (Xanthomonas maltophilia) is the second most commonly isolated pseudomonad from human clinical sources and is generally recognized as an opportunistic pathogen (4). The name *Stenotrophomonas* has been proposed by Palleroni and Bradbury (2) to restore the genus *Xanthomonas* to its original definition. None of the previously reported clinical isolates of *S. maltophilia* species were characterized as mucoid strains. We present here a case of pneumonia caused by a mucoid variant of *S. maltophilia.*

**Case report.** A 49-year-old woman had been treated for bronchiectasis at the Outpatient Department of Imari Municipal Hospital since 1988. She came to our clinic because of an increase in the volume and purulent nature of the sputum and mild hemoptysis on 18 November 1993. Physical examination revealed an afebrile woman with a pulse rate of 78 beats per min, blood pressure of 140/70 mm Hg, respiratory rate of 20/min, and small moist rales over the lower area of the right lung. Her chest X-ray film showed an infiltrative shadow in the right lower lobe (Fig. 1). There was no pleural effusion or cavitation. An electrocardiogram was normal. The diagnosis was right lower lobe pneumonia, and the patient was admitted to our hospital.

The results of laboratory studies upon admission were as follows: hemoglobin, 13.5 g/dl; hematocrit, 40.5%; leucocyte count, 6.2 × 10³/l liter, with 53% segmented neutrophils, 31% lymphocytes, 5% monocytes, and 5% eosinophils. The patient was treated empirically with cefpirome sulfate (1 g twice a day) for 3 days, but chest films on day 4 showed little improvement. Sputum cultures at the time of admission and after the 3 days of cefpirome treatment yielded mucoid *S. maltophilia.* Treatment with minocycline (100 mg twice a day), to which the isolates were susceptible, was initiated on day 4. With this therapy, sputum culture on day 11 yielded no pathogenic bacteria, and no infiltrative shadow was seen on the chest X-ray on day 14. She was discharged on day 24 (11 December 1993).

**Microbiological studies.** Microscopic examination of Gram-stained smears of sputum revealed numerous gram-negative rods ingested by polymorphonuclear leukocytes (Fig. 2). In culture, colonies showed a mucoid appearance (Fig. 3) and produced an odor similar to that of ammonia on nutrient agar (1). Colonies were nonhemolytic on sheep blood agar and developed a white color. The organism was identified as *S. maltophilia* by the API 20 NE system (API System S.A.) (*S. maltophilia*, >99.9% probability; profile code, 1412341) and the API 20 E system (API 20 E strain, >99.9% probability; profile code, 0202000). The isolate tested positive for motility, polar fragella (more than one), nitrate reduction, esculin hydrolysis, lysine, DNase, growth on MacConkey agar, and geratinase but was negative for oxidase, tryptophan deaminase, arginine dihydrolase, urease, and ornithine decarboxylase. The organism did not grow at 4 or 42°C or in the presence of 6.5% NaCl. The isolate could not use asparagine as a sole source of carbon and nitrogen. By use of the rapid identification panels, the organism was found to utilize the following compounds as sole sources of carbon: maltose, D-mannose, *N*-acetyl-0-glucosamine, and L-malic acid. It did not utilize D-glucose, L-arabinose, D-mannitol, gluconate, rhamnose, melibiose, inositol, sorbitol, malonate, or sucrose. Broth dilution susceptibility testing of the isolate with cation-supplemented Mueller-Hinton broth demonstrated the following results: minocycline

![FIG. 1. Chest X-ray film showing an infiltrative shadow in right lower lobe.](image-url)
FIG. 2. Gram-stained smear of sputum showing gram-negative rods phagocytized by polymorphonuclear leukocytes. Magnification, ×1,000.

FIG. 3. Comparison of the colonial morphology between mucoid (A) and nonmucoid (B) phenotypes of S. maltophilia on sheep blood agar.

MIC, 1.56 μg/ml; ofloxacin MIC, 1.56 μg/ml; piperacillin MIC, 25 μg/ml; ceftazidime MIC, 100 μg/ml; cefotaxim MIC, >100 μg/ml; ampicillin MIC, >100 μg/ml; imipenem MIC, >100 μg/ml; erythromycin MIC, >100 μg/ml; clindamycin MIC, >100 μg/ml; fosfomycin MIC, >100 μg/ml; and amikacin MIC, >100 μg/ml.

S. maltophilia is increasingly recognized as an opportunistic pathogen in debilitated hosts. Although Sarkar and associates (3) reported a primary pulmonary infection caused by S. maltophilia, colonization with S. maltophilia is most common in patients with severe underlying illness, and it can be difficult to distinguish colonization from infection.

In the case of infection described here, the patient was a healthy female without a serious underlying disease. We believe that the present case was primary lung infection caused by mucoid S. maltophilia, because sputum culture on admission exhibited pure and heavy growth of mucoid S. maltophilia, and numerous neutrophils which had phagocytized the organism were observed on microscopic examination of sputum smears. The isolated organism was resistant to a variety of antimicrobial drugs, but a clinical and bacteriologic cure was achieved with minocycline.

The case described here emphasizes that a mucoid strain of S. maltophilia can be isolated from human clinical sources and may cause pulmonary infection in an immunocompetent host.

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REFERENCES


