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Case report

S. maltophilia pneumonia: A case report

Mauro Geller[a,b,c,*], Carlos Pereira Nunes[a,c], Lisa Oliveira[b], Rafael Nigri[c]

[a] Centro Universitário Serra dos Órgãos (UNIFESO), Av. Alberto Torres 111, Teresópolis, RJ, Brazil
[b] Universidade Federal do Rio de Janeiro (UFRJ), Av. Brigadeiro Trompovsky, s/n, Rio de Janeiro, Brazil
[c] Instituto de Pós-Graduação Médica Carlos Chagas, Av. Beira-Mar 406, gr 503/506, Rio de Janeiro, Brazil

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ABSTRACT

Case report of Community-acquired pneumonia in a male patient without co-morbidities. Empiric antibiotic treatment did not resolve the clinical picture of productive cough, and a chest computerized tomography and sputum culture with antibiogram were performed, identifying *S. maltophilia* infection with sensitivity to levofloxacin and sulfamethoxazole/trimethoprim. Treatment with levofloxacin (500 mg/day for 15 days) resulted in resolution of the clinical picture.

1. Introduction

Stenotrophomonas maltophilia is a gram-negative and non-fermentative aerobic bacterium, considered an opportunistic pathogen due to its low virulence [1]. However, *S. maltophilia* presents several characteristics, including its ability to survive and colonize on humid surfaces, a tendency to biofilm formation on abiotic and biotic surfaces (including pulmonary cells), and the use of various mechanisms of resistance to various antimicrobial agents, which contribute to infection-associated risk factors [2]. *S. maltophilia* is commonly associated with respiratory tract infection and may also infect the eyes, biliary system (leading to biliary sepsis), bones and joints, and the urinary system, among others [1].

2. Case report

A 61-year-old male patient, without comorbidities, had persistent productive cough for 5 months, with two episodes of chills and fever in this period. During this period, the patient used aminophylline (400mg/day), deflazacort (60mg/day), and formoterol + budesonide fumarate (24/800/day) intermittently and without significant cough improvement. After a 20-day course of amoxicillin + clavulanate potassium (875/125mg), followed by clarithromycin (500mg/day for 14 days), blood tests and a computed tomography scan of the chest were requested.

The blood test revealed elevation of C-reactive protein (1.5) leukocytosis (16,600/mm^3), segmented 85%, lymphopenia (9%) and BSR elevation (36mm/h). Computed tomography of the thorax was performed, showing centrilobular nodular opacities in the left lower lobe, due to filling of small airways, bronchi with thickened walls, some partially filled. Facial glass nodular opacities were also observed in the apicoposterior segment of the upper left lobe, measuring 1 cm. Small, sparse non-calcified nodular opacities measuring < 0.03cm present bilaterally. Opacity in a fibroatelectasic range in the medial segment of the middle lobe. Absence of lymphadenomegaly or pleural effusion (Figs. 1 and 2).

Sputum examination (performed by automated culture) with antibiogram identified the bacterium *Stenotrophomonas maltophilia*, with sensitivity to levofloxacin and sulfamethoxazole/trimethoprim. Treatment with levofloxacin (500 mg/day for 15 days) resulted in resolution of the cough.

3. Discussion & conclusion

Community-acquired pneumonia is defined as pneumonia contracted outside the hospital setting and is among the most common infectious diseases in the general population and is identified as a major cause of mortality and morbidity worldwide. About 85% of cases are caused by three bacteria: *Streptococcus pneumonia*, *Haemophilus influenza*, and *Moraxella catarrhalis*. Less frequently (~15% of cases), the following microorganisms are identified as the etiological agent: *Chlamydophila psittaci*, *Coxiella burnetii*, and *Francisella tularensis*, *Mycoplasma pneumoniae*, *Legionella* spp and *Chlamydia pneumoniae* (the latter three being considered non-zoonotic atypical pathogens) [3].

Empirical treatment of pneumonia is recommended immediately according to the following therapeutic regimens (oral route). For patients without comorbidities and in the absence of risk factors for resistant *S. pneumoniae*: Azithromycin (500 mg once daily followed by

* Corresponding author. Centro Universitário Serra dos Órgãos (UNIFESO), Av. Alberto Torres 111, Teresópolis, RJ, Brazil.
E-mail address: maurogeller@gmail.com (M. Geller).

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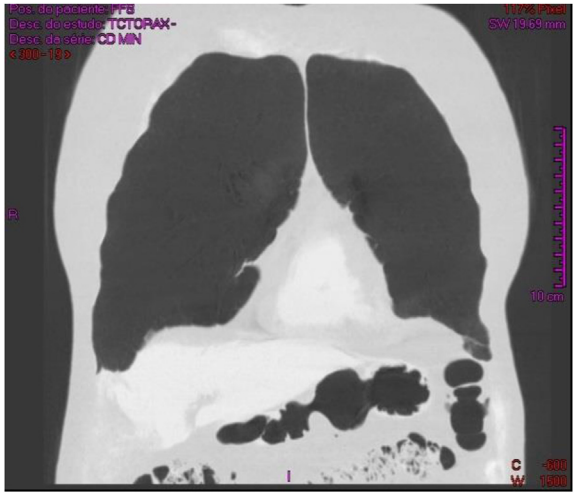

Fig. 1. CT image showing centrilobular nodular opacities in the left lower lobe and facial glass nodular opacities in the apicoposterior segment of the upper left lobe. Small, sparse non-calcified nodular opacities < 0.03cm present bilaterally.

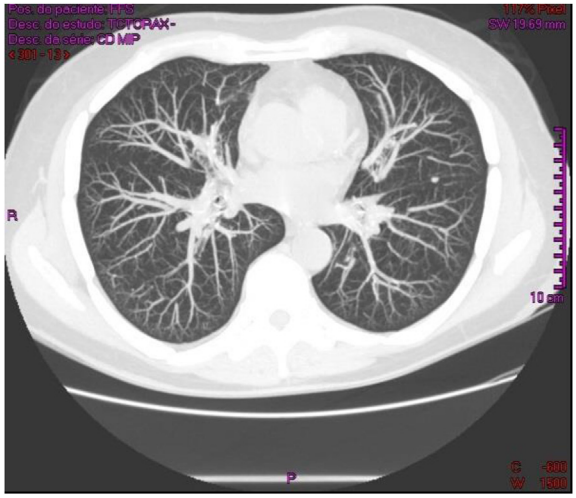

Fig. 2. CT image showing opacity in a fibroatelectasic range in the medial segment of the middle lobe.

250 mg daily for 4 days or 2 g prolonged single dose); Clarithromycin (500mg twice daily or 1000mg prolonged release in single daily dose); or Doxycycline (100mg twice daily). In the case of prior antibiotic therapy within 3 months, therapeutic options include: azithromycin or clarithromycin together with amoxicillin 1g every 8 hours or amoxicillin and clavulanate 2g every 12 hours; or respiratory fluoroquinolone (levofloxacin or moxifloxacin). In the presence of comorbidities, options include levofloxacin 750mg daily, moxifloxacin 400mg daily, or a combination beta-lactam antibiotic such as amoxicillin together with a macrolide (azithromycin or clarithromycin). The minimum duration of therapy is 5 days, and prolonged treatment may be necessary in case of complications [3,4].

Risk factors associated with *S. maltophilia* infection include malignancy, organ transplantation, human immunodeficiency virus (HIV) infection, chronic obstructive pulmonary disease, cystic fibrosis, prolonged hospital stay, intensive care unit admission, mechanical ventilation, permanent catheter therapy, corticosteroid or immunosuppressive therapy, and recent antibiotic treatment [2]. Resistance to antimicrobial agents is an important topic in the discussion of *S. maltophilia* infections; the World Health Organization classifies it as one of the leading multidrug resistant organisms in hospital settings [5]. *S. maltophilia*'s increasing propensity towards drug resistance has been widely reported, with proposed mechanisms ranging from expression of environmentally-acquired resistance genes to decreased outer membrane permeability, in addition to chromosomal and plasmid-encoded transposons, β-lactamase production, integrons, and biofilms, as well as multidrug efflux pumps [1,5,7].

S. maltophilia is associated with nosocomial infections among patients presenting immunodeficiencies, with cases isolated in the literature from involvement in healthy individuals [6]. However, the prevalence of *S. maltophilia* infections has increased in the general population from 0.8 to 1.14% in the period 1997–2003 to 1.3–1.68% between 2007 and 2012 [7]. Complementary exams such as sputum culture represent an important tool in the diagnostic confirmation and implementation of therapy appropriate to each case. In the case of this patient, the culture identified the presence of *S. maltophilia* and the antibiogram showed to sensitivity to two antibiotics (levofloxacin and sulfamethoxazole/trimethoprim). In this case, treatment with levofloxacin was successful in resolution of the patient's persistent productive cough.

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Declarations of interest

None.

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