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***Nocardia* otitidiscaviarum Infection in an Immunocompetent Patient[☆]**



Infección pulmonar por Nocardia otitidiscaviarum en paciente inmunocompetente

To the Editor,

Nocardia is a strictly aerobic Gram-positive bacterium that is partially acid-alcohol-resistant and forms long branched filaments.¹ Species of medical significance are: *N. asteroides*, *N. brasiliensis*, *N. pseudobrasiliensis* and *N. otitidiscaviarum*. Infection by the latter is rare compared with other species of *Nocardia* and rarely causes infection in humans, even in immunocompromised patients.^{2–4} All species are universally distributed and routinely found in soil, sand, dust, and stagnant water.^{2,3}

We report a case of pyopneumothorax caused by *Nocardia otitidiscaviarum*, in an 89-year-old woman with mild persistent asthma, bronchiectasis in the left upper and lower lobes, and obesity. She had had 2 episodes of community-acquired pneumonia approximately 5 and 10 years previously. She had never smoked and could perform activities of daily living independently. Her usual medication consisted of benzodiazepines, proton pump inhibitor, and long-acting β -2 adrenergic bronchodilators combined with corticosteroids (budesonide/formoterol 160/4.5 mcg, 1 inhalation every 12 h) and on-demand short-acting β -2 adrenergic receptors for several years. She presented in the emergency department in December 2015 with a 1-week history of cough without expectoration, progressive dyspnea on moderate exertion, febrile sensation, constipation, nausea, and vomiting. She denied chest pain, dysuria, and other symptoms. On physical examination, she was conscious, oriented, and collaborative; she had tachypnea 20 breaths/minute, SpO₂ 86% breathing room air, blood pressure 133/55 mmHg, heart rate 87 bpm, and axillary temperature 39.6°C. On pulmonary auscultation, breath sounds were normal, with abundant disperse rhonchi. The rest of the physical examination was normal. Chest X-ray was performed, showing right basal peribronchial thickening, cardiomegaly, and aortic elongation. ECG with no changes. Arterial blood gases: pH 7.46, pCO₂ 30 mmHg, and pO₂ 48 mmHg. Abnormal clinical laboratory results were sodium were 133 mmol/l, LDH 460 U/l, PCR 22 mg/l, leukocytosis 10.83 × 10⁹/l, and neutrophilia 9.35 × 10⁹/l. Urine analysis showed moderate pyuria.

Diagnoses of acute partial respiratory failure, respiratory infection, and urinary infection were given, and the patient was admitted for antibiotic treatment in the form of levofloxacin, in addition to

aerosols and corticosteroids. *Escherichia coli* in urine was confirmed on day 3 of admission.

The patient's progress was poor. Eight days later, an image was observed in a radiographic follow-up of consolidation in the right middle and left lower lobes, so nosocomial pneumonia was suspected and antibiotic treatment was switched to ceftazidime and ciprofloxacin. On day 9, urine was positive for pneumococcal antigen. On days 12 and 16 after admission, *N. otitidiscaviarum* was isolated in a sputum culture, and treatment was changed, in line with the sensitivity studies, to cotrimoxazole, amikacin, and imipenem. In view of the worsening symptoms, a chest computed tomography was then performed (Fig. 1) which revealed right hydropneumothorax and areas of consolidation, some of which were cavitary, predominantly in the right lung base. A pleural drainage tube was placed, from which purulent fluid was obtained, determined to be predominantly polymorphonuclear exudate with a pH <7.2, indicating, more specifically, a case of pyopneumothorax. Throughout the period of admission, the patient continued to require high oxygen levels to maintain SatO₂ at around 90%, and after suffering paralytic ileus that could not be corrected despite placement of a nasogastric and rectal tube, she died 35 days after admission.

Nocardiosis is a suppurative infection that can occur acutely or chronically and tends to disseminate. It generally appears as an opportunistic infection in individuals with T cell-mediated immunosuppression. The most common risk factors are occult malignancies, diabetes, HIV, and COPD,^{3–5} although it can also occur in immunocompetent patients (up to one third of all cases).^{3,5,6} The most common routes of infection are inhalation and cutaneous inoculation.^{1,4,5} Pulmonary nocardiosis is the most common clinical presentation. This is a severe, sporadic disease that is more prevalent among men, and generally occurs in the fourth decade of life.^{2,7} Central nervous system and subcutaneous involvement may be present in up to 30% and 15% of cases, respectively.^{5,7}

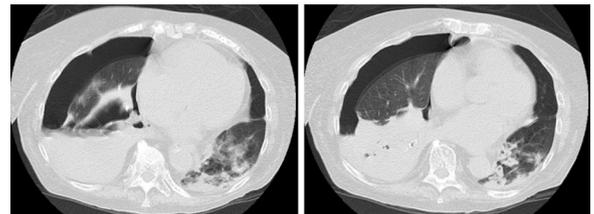


Fig. 1. Transversal CT slices of the chest performed on day 23 of admission, showing right hydropneumothorax, right lower lobe atelectasis and areas of consolidation, some cavitary, mainly in the right lung base. Cavitary pulmonary nodules and ground-glass opacities adjacent to the area of consolidation can be seen in the left lower lobe.

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Risk factors for *Nocardia* infection in our patient were bronchiectasis and chronic use of inhaled corticosteroids. Radiological findings are variable and non-specific, and occur as consolidations, diffuse nodules or masses that may be cavitary, and less frequently, pleural effusion and diffuse interstitial patterns,^{4,6–11} although up to one-third of patients may not have radiological evidence of pulmonary involvement. This is a curable disease, but the mortality rate is high, and can be over 50% in severe cases with sudden onset.^{6,12} In patients with severe infection without central nervous system involvement, trimethoprim-sulfamethoxazole (15 mg/kg/day intravenously), plus amikacin (7.5 mg/kg/12 h intravenously) is recommended.⁹ The initial treatment must be given intravenously for at least 3–6 months or until clinical improvement is documented. For severe pulmonary infection, the recommended treatment duration is 6–12 months or more.^{6,9,13}

N. otitidiscaviarum tends to be resistant to trimethoprim-sulfamethoxazole, but it is usually sensitive to amikacin and minocycline.^{5,9} There are few reported cases of pyopneumothorax caused by *Nocardia*.^{8,12,14,15} Those cases that are reported were finally resolved, probably because the disease was diagnosed earlier and because it occurred in younger patients (aged 32, 47, 74 and 78 years). In our case, the patient died despite the administration of wide-spectrum antibiotic coverage, later adjusted to the sensitivity profile of the strain, perhaps because of her advanced age and late detection of complications.

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Primary Pulmonary Giant Cell Tumor[☆]



Tumor de células gigantes primario de pulmón

To the Editor,

The World Health Organization defines giant cell tumor (GCT) of bone as a benign but locally aggressive primary bone neoplasm composed of a proliferation of mononuclear cells that include numerous disperse macrophages and osteoclast-like multinucleated giant cells.¹ Extrasosseous forms of GCT occur that have an identical histology to GCTs of bone. It is exceptional to encounter these tumors in the lung. We report the case of an aggressive primary GCT of the lung.

This was an 80-year-old male patient, former smoker of 50 pack-years, being examined for hemoptysis. Computed tomography (CT) showed a solid, hypodense, right pulmonary mass measuring 8×5×5 cm, with polylobulated borders, and homogeneous uptake of contrast material, located in the confluence of the oblique and horizontal fissures, below the hilum, centered in the middle lobe, but with lobulations invading the apical segment of the right lower

lobe (RLL) and the anterior segment of the right upper lobe (RUL), suggestive of primary bronchopulmonary neoplasm. No evidence of metastatic disease was seen on preoperative PET–CT. Right pneumonectomy was performed with aortopulmonary and subcarinal lymphadenectomy; postoperative progress was favorable.

Gross examination of the surgical piece showed a multinodular mass of hemorrhagic appearance, measuring 7.6 cm, located mainly in the middle lobe, with a satellite nodule measuring 1.4 cm in the same lobe. Histologically, the tumor consisted of proliferation in a solid pattern with medium-sized mononuclear cells and eosinophilic cytoplasm. Nuclei were round or oval, with finely granular chromatin, and contained small nucleoli with no cytological atypia or mitotic figures. Numerous osteoclast-like multinucleated giant cells were also observed (Fig. 1A), many of which had numerous nuclei (Fig. 1B) with no atypia or significant mitotic activity. After extensive sampling of the piece, no carcinoma, sarcoma or other tumor components were identified.

The immunohistochemical study, including both the mononuclear component and the osteoclast-like giant cells, was positive only for CD68 (Fig. 1C). Immunoreactivity was negative for a wide range of epithelial markers (CK7, CK20, panCK [AE1/AE3], epithelial membrane antigen, CK34BE12), actin, desmin, CD34, TTF1, napsin, and S100. These data pointed to a diagnosis of GCT.

Two and a half months after surgery, the patient consulted for pain in the area of the surgical wound and in the right inguinal

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