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CASE REPORT

Nocardia farcinica arthritis of the knee
A case report

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***Nocardia* is a Gram positive, aerobic branched actinomycete ; it is an ubiquitous soil saprophyte. As an infecting agent it has been increasingly identified in humans, especially in immuno-suppressed hosts. *Nocardia* as a cause of septic arthritis is very unusual. The described genus was *Nocardia asteroides* in nearly all previously reported cases. We report an unusual case of spontaneous *Nocardia farcinica* septic arthritis of the left knee in a 68-year-old man, who was under systemic corticosteroids for chronic obstructive pulmonary disease. The diagnosis was rapidly made by Gram and acid-fast stains and later confirmed by culture. PCR was used to identify the subtype. The patient was treated successfully with sulphametaxazole-trimethoprim for six months. Our case re-emphasises, especially in the immunocompromised patient, the importance of performing fungal and acid-fast bacilli cultures, besides the most common bacterial cultures for aerobic and anaerobic organisms, in order to identify less common organisms and to initiate early and adequate treatment.**

INTRODUCTION

Nocardiosis can present as a cutaneous, pulmonary, or disseminated disease and can follow an acute, subacute, or chronic course. The most frequently reported form is N*ocardia* pneumonia in an immunocompromised host. Disseminated nocardiosis may involve any organ, mainly the brain and meninges (*6*). The aetiological agent is an aerobic actinomycete, an ubiquitous saprophyte in soil, decaying organic matter and water. At least 12 species of the Nocardia genus have been identified. *Nocardia asteroides* is the most frequent human pathogen. Human disease has also been caused by *Nocardia brasiliensis, Nocardia farcinica, Nocardia nova, Nocardia transvalensis and Nocardia otitidis calvarium* (*6*). Infection usually occurs through inhalation ; primary cutaneous disease can start from soil-contaminated wounds. Rarely does surgical transmission occur.

Risk groups for the development of nocardiosis are severely immuno-compromised patients (malignancy, connective tissue diseases, bone marrow and organ transplanted patients, oral corticosteroid users, HIV-infected patients, alcoholism and pulmonary proteinosis) (*8*). The male : female ratio is 3:1 (*4*).

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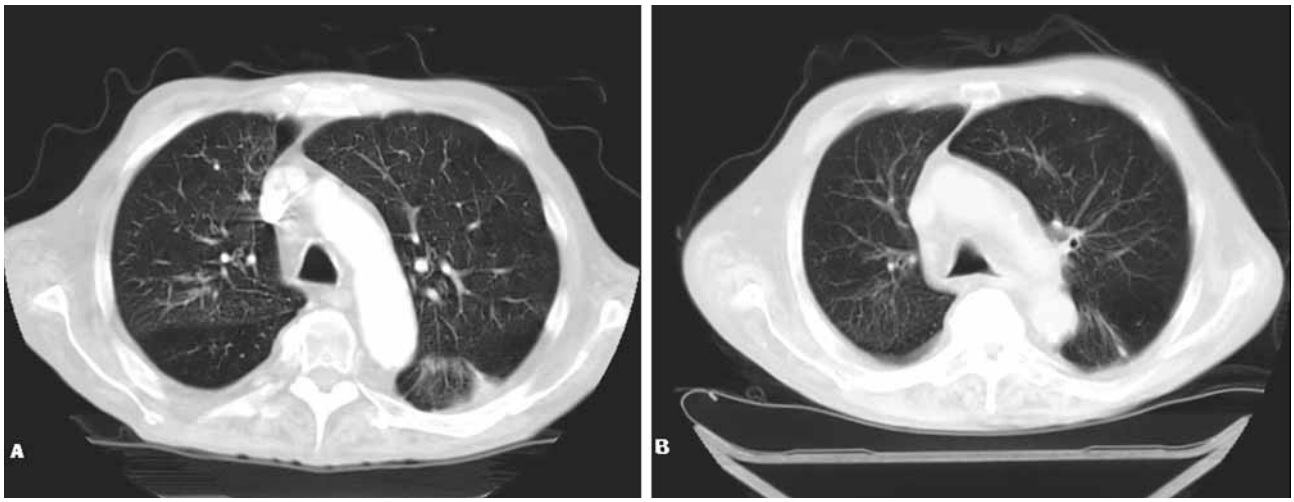

Fig. 1. — Sagittal CT-images of the lung before (A) and after six months of treatment (B) for nocardiosis due to *Nocardia farcinica*

Disseminated Nocardiosis presenting as septic arthritis has rarely been reported. In nearly all cases the described pathogen was *Nocardia asteroides*. We found no cases of *Nocardia farcinica* causing septic arthritis.

CASE REPORT

A 68-year-old man presented with deterioration of his general condition, shortness of breath, painful swelling of the left knee joint, tiredness, anorexia, nausea, vomiting and headache. The patient had an elevated temperature of 38.5° Celsius ; other vital parameters were normal. Clinical examination of the left knee joint showed a painful intra-articular swelling, redness and elevated skin temperature. The range of motion was limited by pain and swelling. There was no history or clinical evidence of skin lesions or traumatic wounds. Lung auscultation revealed diffuse wheezes and bilateral basal crepitations.

The patient had a long medical history of uncontrolled type 2 diabetes mellitus, and chronic severe corticosteroid-dependent obstructive pulmonary disease (COPD) with progressive deterioration of respiratory function.

His main problem was recurrent respiratory infection with *Klebsiella* and *E. coli* (five times in one year) presenting with dyspnoea, fever, and purulent sputum, necessitating repeated hospital admissions.

On this admission, haematological tests showed leucocytosis with neutrophilia and CRP elevation of 20.8 mg% (0.3). Chest radiographs and CT-scan of the thorax showed signs of interstitial lung disease with zones of panlobular emphysema mainly in the lower lobes. Pleuro-pulmonary fibrotic changes were present in the left upper lobe and interlobular apical septal fibrosis in the right upper lobe, consistent with pulmonary nocardiosis (fig 1a).

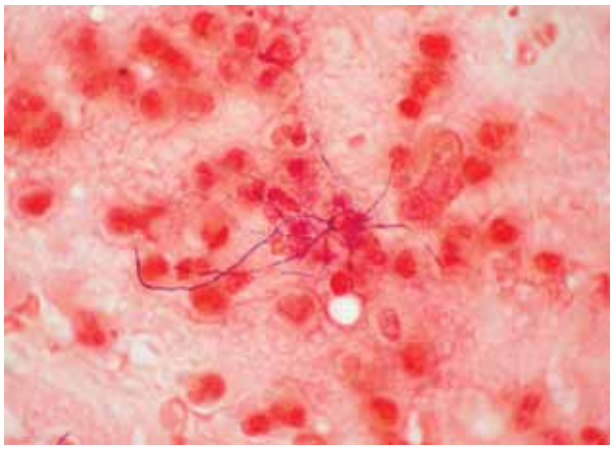

Fig. 2. — Gram-stain showing Gram-positive, branched bacterial filaments. The identification of the *Nocardia* was confirmed by culture.

Sputum examination and culture yielded *Escherichia coli* and *Pseudomonas aeruginosa*, sensitive to amikacin and ciprofloxacine.

Sonography and venous Doppler examination of the left lower limb disclosed a ruptured Baker cyst and left knee joint effusion. The left knee was punctured and a highly purulent fibro-viscous material was obtained, suggestive of septic arthritis. Gram and acid-fast staining were positive for gram-positive, branched bacterial filaments identified as Nocardia on culture (fig 2). The Nocardia was identified as *Nocardia farcinica* by sequence determination of the 16S rRNA gene.

Once the diagnosis of Nocardia had been made, the patient was treated with trimithoprim-sulphamethaxazole. Oral treatment was maintained for six months. During this period the patient showed progressive recovery of pulmonary function and subsidence of the septic arthritis. Chest radiograph and CT scan of the thorax after six months of treatment showed significant regression of the pleural and pulmonary fibrotic infiltration (fig 1b).

DISCUSSION

Nocardia species are organisms associated with environmental materials. They are ubiquitous saprophytes, including soil saprophytes, and only occasionally cause human disease, often in immunocompromised patients. The lung is the most commonly affected site (73%). Less frequently, the infection is disseminated, with an unknown entry portal. According to the literature these infections are usually of pulmonary origin (*2,9*).

Our patient was at specific risk for infection, because he was a diabetic, had chronic obstructive pulmonary disease, and was undergoing immunosuppressive treatment with corticosteroids.

The first stage in the diagnosis of nocardiosis involves direct examination of the specimen. Microscopic observation occasionally reveals the presence of Gram-positive, branched bacterial filaments. The development of *Nocardia* in culture media is rather slow ; colonies are usually visible after 3 to 5 days as in our case, but the delay can be as long as 2 to 3 weeks (*7*). PCR technique by sequence determination of the 16S rRNA gene demonstrated that the specific *Nocardia* type in our case was *Norcadia farcinica* (*3*).

With regard to the treatment of Nocardia arthritis, repeated thick-needle aspiration is the first line of management. Antibiotic treatment should not be started before the susceptibility pattern of the causal micro-organism is known from a diagnostic aspiration sample. In our case, the strain was sensitive to trimethoprim-sulphamethaxazole (*1*), which is the drug of choice for nocardiosis. The duration of treatment is 6 to 12 months. Minocycline is the best established alternative oral drug, amikacin the best alternative parenteral drug. Newer B-lactam antibiotics, including cefotaxime, cefizoxime, cefitrixone and imipenem may be less effective in some cases caused by *Nocardia farcinica*.

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