Endobronchial nocardial infection

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Abstract
The rare presentation of nocardial infection as an endobronchial 'tumour' is reported. Haematogenous dissemination occurred after fibroptic bronchoscopy and biopsy, a phenomenon not previously described in nocardial infections. This case highlights the difficulties in diagnosing pulmonary nocardial infection and the potential for invasive procedures to disseminate the disease.

Pulmonary nocardiosis is uncommon, but this infection is becoming increasingly important with the widespread use of immunosuppressive treatment in transplant recipients and patients with malignancy. The disease is caused by several species of the genus Nocardia which most commonly behave as opportunistic pathogens in the compromised host. Pulmonary infection is the commonest form of the disease with dissemination from the lungs to other sites occurring in up to 50% of cases. Pulmonary nocardiosis presenting as an endobronchial tumour is, however, uncommon with only two previously reported cases.

Case report
A previously healthy 70 year old male smoker presented with a three month history of non-productive cough, dyspnoea, anorexia, and weight loss. On admission he was afebrile. Chest auscultation revealed diminished breath sounds throughout the right lung associated with a monophonic wheeze. The remainder of his physical examination was normal. The neutrophil count was elevated at 24 × 10^9/litre. The erythrocyte sedimentation rate was 90 mm in the first hour. A chest radiograph showed a right hilar mass (fig 1) and a computed tomographic scan showed this mass to be encroaching on the lumen of the right upper lobe bronchus (fig 2). At fibroptic bronchoscopy there was obstructing 'tumour' in the right main bronchus. Endobronchial biopsy specimens showed acute and chronic inflammatory changes with no evidence of granuloma formation. There was no evidence of malignancy.
Four days after bronchoscopy he developed hypotension, a temperature of 39°C, a generalised pustular rash, and digital lesions suggestive of septic emboli.

There was no clinical evidence of cardiac, meningeal or central nervous system involvement. *Nocardia asteroides* was cultured from the bronchial washings and biopsies after four days, and subsequently from his sputum and cutaneous pustules. Intravenous co-trimoxazole (trimethoprim 480 mg and sulphamethoxazole 2400 mg twice daily) was commenced, with defervescence within 48 hours. Oral co-trimoxazole was commenced after 10 days of intravenous treatment but subsequently ceased after 20 days following the development of erythema multiforme. Minocycline, 100 mg twice daily, was substituted on day 30 and continued for a total of 10 months. After 14 months he remained well with radiographic resolution of the right hilar mass. Investigations revealed no underlying defect of humoral or cell mediated immunity.

**Discussion**

Nocardial infection is uncommon, with an incidence in Queensland of 2-1 cases per year per 100 000 head of population.7 Fever and cough are the commonest presenting symptoms. Abscesses, necrotising pneumonias, cavitating lesions, nodules, infiltrates, and miliary patterns all occur.1 The clinical and radiographic picture is variable, reflecting the host immune status and the ability of the organism to cause both supplicative and granulomatous disease.1,8

The diagnosis is often delayed as *Nocardia* may take up to four weeks to grow.2 Bacterial cultures of sputum and bronchoscopy specimens are often routinely discarded after 48-72 hours, so the diagnosis can be missed.6

This case shows the potential for bronchoscopy to disseminate nocardial infection. This phenomenon is well recognised with other organisms such as *Mycobacterium tuberculosis*,9 but has not been reported in nocardial infections. However, because sputum cultures are negative in up to two thirds of patients with pulmonary nocardiosis, invasive procedures are usually required for diagnosis.5

Nocardial infections are usually treated with sulpha-based regimens.4 Sulpha drugs used alone in doses of 6-12 g daily are effective.4 More recently co-trimoxazole (trimethoprim 90 mg and sulphamethoxazole 400 mg) has been used, but treatment failures have been noted.10 Minocycline has been used successfully; again, however, treatment failures have been reported. There are no comparative data available to determine duration of treatment. In pulmonary and systemic nocardiosis, without central nervous systemic involvement, experience suggests that treatment should be continued for 6-12 months. Infection of the central nervous system should be treated for a minimum of 12 months.14

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