Nocardia Asteroides Primary Cerebral Abscess and Secondary Meningitis

By

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With 2 Figures

Summary

A rare case of primary cerebral abscess due to Nocardia asteroides, and its surgical removal, are described. Postoperative meningitis caused by the same fungi was successfully cured with sulphadiazine and cycloserine. The nocardial disease, its neurological complications, and therapy are reviewed.

Key words: Cerebral abscess, Meningitis, Nocardia asteroides.

Central nervous system involvement by Nocardia asteroides is a very rare event, usually secondary to a previous pulmonary lesion. Our report of a cerebral abscess cured by complete excision, the brilliant effect of medical treatment (sulphadiazine and cycloserine) upon the course of the postoperative meningitis, the fact that no other lesions were found outside the central nervous system, and the recent chemotherapeutic advances in a disease that increases in frequency, seem to us to be important.

Case Report

A 51-year-old man was admitted to Hospital with a week's history of severe headaches, confusion and drowsiness. He presented marked right hemiparesis, inattention to the right side of the body and visual hemifields, and bilateral papilloedema with recent and multiple retinal haemorrhages. General examination showed mild dehydration, slight increase of temperature (37.6 °C), tachycardia (130 per minute), and normal blood pressure (140/80).

Standard blood tests showed a white cell count of 14,200 with a neutrophilia of 91%. Lumbar puncture yielded CSF at slightly increased pressure, and containing 18 cells/cumm and 1.7 g/oz of protein.
Chest and skull X-rays were normal. An ECG was normal. The EEG showed a constant depression of activity in the left cerebral hemisphere, with a slow wave focus in the posterior parieto-occipital region. A left carotid angiogram showed a large avascular area at the parieto-temporo-occipital junction (Fig. 1).

A left posterior parieto-temporal-craniotomy was performed, and at approximately 2 cm from the cortex the capsule of an abscess was found. Some 60 ml of yellow creamy pus were drained. The capsule was separated from the surrounding white matter and a deep multilocular abscess was completely removed.

In the first postoperative week, the temperature returned to normal, and the patient progressively improved. Repeated CSF examination was normal and no organisms were found. He was treated with penicillin 40 million units/day by intravenous injection, and with parenteral chloramphenicol, streptomycin, and ampicillin in large doses.

In the following 15 days he again developed fever up to 39 °C, and headaches. Repeat CSF examination showed 750 cells/cumm, and 1 g% of protein, with no organisms. Antituberculous treatment was given with no beneficial effect.

The histological examination of the surgical specimen showed a purulent cavity surrounded by a capsule formed of epithelioid cells distributed in a palisade with some multinuclear cells. At the periphery was chronic granulomatous tissue with reactive gliosis and vascular proliferation (Fig. 2). Gram-positive, partially acid-fast, short branching hyphal organisms typical of Nocardia asteroides were found. There was no growth on culture of pus, sputum, or CSF.

In view of the histological findings, treatment with sulphadiazine (9 g/day) and cycloserine (750 mg/day) in 4 doses/day was then given. Two weeks later he was symptomless, and in a good neurological and general state. The leucocytosis disappeared, and the CSF was found to contain 60 cells/cumm, and 1.54 g% of protein. Ten days later the patient was discharged home with mild dysphasia and dysarthria; the same medical treatment was continued for two months.

Two months later, neurological and general examinations showed no abnormality. The EEG and the CSF (38 Cells/cumm, 1.59 g% of protein, no organisms) improved. Cycloserine was suspended, and sulphadiazine dosage was dropped to 4.5 g/day. Two months later the CSF was normal and a pneumo-encephalogram showed slight ventricular dilatation without signs of an expanding lesion. He continued for another four months to take sulphadiazine (2 g/day) and then the treatment was discontinued. Twenty eight months after surgery the patient was back to full employment.

Discussion

Nocardia asteroides was first described in animals by Nocard (1888), and Eppinger 12 (1890) found it in the pus from a human cerebral abscess. The fungus is anaerobic, partially acid-fast, and gram-positive, being a usual contaminant of soil, water, and grass. Its pathogenic power is weak, and human infection is very rare. Its frequency has increased in the last few years, especially during the course of malignant, consumptive, and malnutritional diseases, after intensive antibiotic courses, and after treatment with steroids and antimitotic drugs 5, 7, 27, 31, 48.

The most frequent presentation of N. asteroides infection is lung