CASE REPORTS AND TECHNICAL NOTE

NOCARDIOSIS WITH MULTILOCULAR CEREBELLAR ABSCESS
REPORT OF A CURED CASE
C. F. List, M.D.,* J. R. Williams, M.D., C. B. Beeman, M.D.,
and C. A. Payne, M.D.
Grand Rapids, Michigan
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Nocardia is an aerobic, partially acid-fast actinomycete, pathogenic to man and animals. The name “Nocardia” was given in memory of Nocard who in 1888 discovered this organism as the cause of bovine farcy. There are various subspecies of Nocardia, the most common being Nocardia asteroides—also known under the synonyms Cladothrix asteroides, Streptothrix eppingeri, Oospora asteroides, and Actinomyces asteroides.

Even though this organism is a ubiquitous inhabitant of the soil, human nocardiosis appears to be a remarkably rare disease and records of only 54 such cases were found in the literature. The primary lesion is usually found in the lungs and bronchopulmonary lymph nodes, occasionally in the subcutaneous tissues (as the result of accidental penetrating injury), or in the gastrointestinal tract. The infection then spreads by the hematogenous route and frequently produces metastatic intracranial lesions, notably brain abscesses. Among the 54 recorded cases there was proven intracranial involvement in at least 17 cases. The mortality rate of human nocardiosis is high; so far only one instance is known of cured intracranial Nocardia infection. In this case, described by Jacobson and Cloward, a 28-year-old psychotic Japanese woman was proved to have meningitis caused by Nocardia asteroides. The patient recovered after being treated with large doses of sulfadiazine and intramuscular and intrathecal injections of penicillin and streptomycin, combined with ventricular drainage.

Facing the almost hopeless prognosis of intracranial nocardiosis, additional experiences must be gathered and it therefore appears worth while to record any further case of successful treatment. In the following we wish to describe in detail a case of nocardiosis with multilocular cerebellar abscess, terminating in recovery.

**51-446. W. van S., a 48-year-old bread salesman, was admitted to Blodgett Memorial Hospital, Grand Rapids, Michigan, on Jan. 20, 1951. Approximately 10 weeks previously, he had begun to complain of general lassitude, and pain in the left shoulder and epigastrium. The condition of his shoulder was diagnosed as calcifying bursitis and was treated by roentgen irradiation and aspiration. The epigastric pain, which occurred chiefly on fasting, was relieved by ingestion of food and antispasmodic drugs. Eight weeks prior to admission, a persistent hacking cough developed, productive of scanty, nonhemorrhagic, nonpurulent sputum.**

* 883 Lake Drive, S.E., Grand Rapids, 6, Michigan.
† Since this paper was submitted for publication another case of successful treatment of cerebral nocardial infection has been reported (Krueger, E. G., Norsa, L., Kenney, M., and Price, P. A. Nocardiosis of the central nervous system. J. Neurosurg., 1954, 11: 226–233).
There was no fever. Roentgenograms of the chest revealed infiltrative lesions in both lower lung fields, supposedly virus pneumonia. After unsuccessful treatment with penicillin and aureomycin for 16 days, bronchoscopy was performed but this procedure yielded no further information. Thereafter, his general condition deteriorated; he complained of nucho-occipital and frontotemporal headaches, nausea and, finally, of failing vision.

**Examination.** The patient appeared chronically ill, irritable and anxious. Temperature was 98.6°, pulse rate 84, respiratory rate 18, and B.P. 136/80. Physical examination of the chest revealed no abnormal findings. There was slight epigastric tenderness. The prostate gland was moderately enlarged without signs of malignancy. The left shoulder was "frozen" because of previous bursitis. Neurologic findings were not remarkable.

Urine was normal. RBC 4,380,000, WBC 6,650, Hb. 13.3 gm.—86 per cent, eosinoph. 1, stabs 2, segment 85, lymphs 12. Blood Kahn negative. Serum albumin 3.76; globulin 2.74. Blood N.P.N. 27; fasting blood sugar 129.

Roentgenograms of the chest showed an infiltration in the left lung at the level of the 5th rib near the heart. The left hilar shadow was enlarged. The right lung was normal.

The sputum contained no acid-fast organisms but on culture there was heavy growth of Streptococcus viridans and scanty growth of Staphylococcus aureus and nonpathogenic yeasts.

Roentgenograms of the upper gastrointestinal tract disclosed a peculiar rugal pattern compatible with the diagnosis of gastritis or duodenitis. The duodenal bulb was deformed suggesting ulcer (or prolapsed gastric mucosa?). On the cholecystogram there were areas of decreased density, suggestive of gallstones.

**Course.** At this state of the investigation no definite diagnosis could be made. It was felt that the gastrointestinal findings were probably unrelated to the pulmonary lesion, the anatomic nature of which remained obscure; the possibility of a primary bronchogenic carcinoma was considered. In the 10 days following admission, new and progressive symptoms appeared pointing to a lesion of the central nervous system. He became increasingly lethargic, depressed and refused to eat. Urinary retention occurred on several occasions. Nucho-occipital headaches and nausea were frequent and at times associated with vomiting. Finally, his pulse rate dropped to 50–60 per min.

Lumbar puncture revealed an initial pressure of 150 mm. of H₂O. The fluid was clear, colorless, and contained 1 lymphocyte; total protein 114 mg., sugar 76.9, gold curve and Kahn negative.

Neurosurgical consultation was then obtained. The emaciated patient was conscious but lethargic, indifferent and without psychomotor initiative. The right suboccipital region was tender to pressure and the neck was moderately rigid. There was mild paresis of the left 6th nerve with marked horizontal nystagmus to the left, less to right, and slight vertical nystagmus upwards. Pupils, fundi and fields were normal. A slight left lower facial weakness was noted. There was generalized hypotonicity, especially in the left arm and leg. The left extremities exhibited mild paresis, kinetic ataxia, dysmetria and slowing of diadokokinesis. When attempting to sit he fell asynchronously to the right and backwards. There was bilateral positive Babinski sign. All other reflexes were normal. Sensory changes could not be demonstrated.

Detailed EEG study revealed numerous bursts of high voltage 1 to 2 per sec. delta waves occurring bilaterally, especially in the frontal, parietal and temporal areas, and with greater emphasis on the right side. These findings indicated either a diffuse degenerative process or a deep cerebral focal lesion. It was suggested that if the lesion was in the posterior fossa it would more likely be on the left side. Roentgenograms of the skull showed slight displacement of the calcified pineal shadow to the left.

Reviewing the case in the light of the neurologic findings, it was now assumed that the patient had multiple expanding intracranial lesions, with a large mass in the left cerebellum and possibly additional lesions in the cerebral hemispheres. Intracranial metastases from bronchogenic carcinoma appeared to be the most likely diagnosis, yet metastatic intracranial granuloma could not be ruled out. Intracranial abscess was considered improbable because of the absence of fever and of inflammatory reaction in blood and spinal fluid.