A tuberculous abscess of the brain

Case report

CARYS M. BANNISTER, B.Sc.(OXON), F.R.C.S.
Department of Neurosurgery, The General Infirmary at Leeds, Yorkshire, England

Even before the introduction of streptomycin in 1944 for the treatment of tuberculosis, tuberculous abscesses of the brain as opposed to the more common tuberculomas were rarely reported. Rand described one case and found nine others in the literature. Of these ten cases only two, that of Evans and Smith and Rand, were fully investigated and shown to be undoubted tuberculous abscesses. Recently Singh, et al., reported in detail three other cases. These five cases remain the only fully documented lesions of this sort in the literature, although in several recent series of cerebral tuberculomas pus was found. Higazi, describing a series of six tuberculomas, stated that one lesion contained pus, but he did not supply operative or postmortem details. Das- tur and Desai, reporting 107 tuberculomas, mentioned that in eight of the lesions pus was found, but again supplied no further details.

This report is a description of the clinical features and necropsy findings of a tuberculous cerebral abscess.

Case Report

The patient, a Yorkshireman of 54, was in good health and working as a hospital porter until the onset of his illness in December, 1966. The illness began with a left-sided focal fit, followed by a transient left hemiparesis. A week later he had a second left-sided focal fit, and after it there was a persistent weakness of the left leg. During the next week he had two further left-sided focal fits, and following them he was noted to have developed a hemiparesis involving the left side of the face and both left limbs.

Examination. The patient was admitted for investigation initially to a medical unit at the Leeds General Infirmary, but was transferred to the Neurosurgical Unit early in January, 1967. By that time there had been considerable deterioration in his condition; he was confused and disorientated, he had bilateral moderately severe papilledema, and a severe left hemiparesis involving the face, arm, and leg. The tone in the left limbs was increased, and the reflexes brisk. A left extensor plantar response was present. There was diminished sensation to pinprick over the whole of the left side of the body, and position sense was impaired in the distal joints of both left limbs. Plain x-rays of the skull were normal. A lumbar air encephalogram showed a depression in the roof of the right lateral ventricle. There was no significant displacement of the ventricular system toward the left. The lumbar cerebrospinal fluid contained 5 monocytes per cu mm and 60 mg% of protein.

A provisional diagnosis of a rapidly growing glioma in the right parietal lobe was made, and a biopsy of the lesion through a burr hole was planned.

Operation. Under local anesthesia, a cannula was passed through a right parietal burr hole into the brain, and at a depth of about 3 cm resistance was felt. With further pressure...
From that organism revealed microscopic queues and contained 204 penicillin, wall of the pus. After a biopsy had been taken from the wall of the abscess cavity, 20,000 units of penicillin, 100 mg of streptomycin, and 3 ml of a barium sulphate solution were instilled into the cavity.

Examination of the pus showed that it contained numerous pus cells. Routine techniques did not reveal any of the usual pyogenic organisms, but acid-fast bacilli were found. Subsequently, M. tuberculosis were cultured. Microscopic examination of the biopsy taken from the wall of the abscess cavity showed that it consisted of necrotic cerebral tissue and large collections of leucocytes. No epitheloid follicular systems were seen in the specimen even though a Ziehl-Neelsen stain revealed numerous acid-fast bacilli scattered throughout the pus (Fig. 1).

Postoperative Course. Once the infecting organism had been identified, the patient was given systemic streptomycin, P.A.S., and I.N.A.H. in appropriate doses. Emptying the abscess did not initially improve the patient. He remained confused, disoriented, and hemiparetic, and in addition, developed a dense left hemonymous hemianopia.

Six weeks later he deteriorated suddenly. Over a few hours he became deeply unconscious, developed a stiff neck, and a positive Kernig's sign. Examination of the lumbar cerebrospinal fluid showed 87 white blood cells per cu mm, 74% of which were monocytes, and a glucose content of 22 mg%. No tubercle bacilli were seen in the fluid nor were they cultured. In addition to the systemic medication, he was now given daily intrathecal streptomycin. On this regime he gradually improved and returned to consciousness after 48 hours. During the next 2 months he became rational and oriented; the left hemiparesis improved to the extent that he had almost full movement of the left arm and could walk with a stick. Serial x-rays of the skull showed that the abscess cavity was progressively decreasing in size.

The patient was sent to a convalescent home on full systemic antituberculous therapy, but within 2 weeks he had a second sudden relapse and had to be readmitted to the Neurosurgical Unit.

Second Examination. On admission he was unconscious and had a severe left hemiparesis with signs of meningitis. The cerebrospinal fluid contained 30 white blood cells per cu mm, the majority of the cells being monocytes. Again no tubercle bacilli were seen or cultured. Intrathecal streptomycin was recommenced.

Improvement was slow, but after 2 weeks the patient could answer simple questions. Two months later the hemiparesis had improved sufficiently to allow him to walk with the help of two people. His condition remained unchanged until July, 1967, when he began to deteriorate slowly. By September he could no longer answer questions, and the left hemiparesis had become total; by December, 1967, he had become unresponsive to all stimuli. Early in January, 1968, he developed hypostatic pneumonia and died. Right up to the time of death he was receiving full systemic antituberculous therapy and intrathecal streptomycin.

Postmortem Examination. Externally, the brain was swollen, and there was slight fibrosis of the basal meninges that included the foraminal exits of the fourth ventricle. A co-

---

**Fig. 1.** Photomicrograph of biopsy specimen showing necrotic cerebral tissue, pus cells, and numerous tubercle bacilli. H. & E., × 850.