DELAYED BRAIN ABSCESS IN RELATION TO RETAINED INTRACRANIAL FOREIGN BODIES

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The late development of brain abscess around a retained foreign body may be a tragic occurrence. The damage from the abscess itself is superimposed on an already extensively damaged and scarred brain. Normal defense barriers are altered by changes in cerebral architecture and even though the patient survives, the functional loss is almost certain to be greater than in the case of a primary abscess or wound at a similar site.

Cushing,4,5 in his papers dealing with war wounds, insisted on thorough cleansing of the wound tract. He believed, however, that removal of deeply embedded foreign bodies should not be done at the risk of materially increasing damage already present. Studies carried out immediately after the first World War10,19 showed that late sequelae, including delayed brain abscess, were less common than anticipated. In World War II adherence to the same surgical principles, combined with antibiotic treatment, significantly reduced mortality, morbidity and eventual permanent disability resulting from such injuries.

The following 2 case histories raise the question of how much or how little should be done at the time of the original injury. These patients' abscesses formed at 6- and 7-year intervals about metallic shell fragments.

Case 1. F.R., 31 years old, sustained a penetrating right frontoparietal wound during combat in 1942. He improved so that by 1944 he walked with a slight limp but had considerable weakness and clumsiness of the left hand. He was admitted to the Cushing Veterans Administration Hospital on Dec. 23, 1949, with a 4-day history of progressive drowsiness and right-sided head pain.

Examination. The patient was lethargic; his neck was stiff and there was marked tenderness over an obvious right parietal skull defect. His temperature was 98.4°F., pulse 84, and B.P. 124/80. He had left hemiparesis and hemihypesthesia. All reflexes were decreased; no pathological reflexes could be elicited. The optic discs and cranial nerves were normal.

Blood count showed 27,650 WBC/c.mm., 96 per cent neutrophils. Spinal fluid pressure was 420 mm. of water. The spinal fluid was slightly turbid and contained 275 WBC/c.mm., 40 per cent lymphocytes and 60 per cent neutrophils; total protein 160 mg. per cent.

Plain x-rays of the skull showed a retained metallic fragment in the parietal
region on the right side just under the posterior margin of a defect in the bone (Fig. 1).

Hospital Course. About 8 hours after admission the patient became irrational and more lethargic. The CSF at that time contained 15,500 WBC/c.mm., with 95 per cent neutrophils; total protein 800 mg. per cent. A smear of the fluid showed gram positive cocci. A small amount of purulent drainage appeared from the old scar overlying the cranial defect.

Operation. The patient was immediately taken to the operating room where a parietal incision was made beginning at the point of drainage. This exposed a large, deep, subdural (subgaleal?) abscess with a sinus tract arising beneath the posterior margin of the skull defect. About 3.5 cm. behind the edge of the bone, within the abscess cavity, the metallic fragment was found, covered by a pyogenic membrane. The abscess itself had ruptured into a large porencephalic cyst which communicated with the right lateral ventricle. There was an opening into the ventricle about 1.5 cm. in diameter. The foreign body was removed and the entire area was irrigated with large amounts of solution containing 1,000 u of penicillin per cc. A rubber tissue drain and catheter were left within the cavity.

The infective organism was cultured as Staphylococcus aureus.

Postoperative Course. Intensive treatment was started with antibiotics, chemotherapy and local irrigations of penicillin solution. The patient improved steadily and the spinal fluid remained sterile. The CSF protein then gradually increased and on Jan. 4, 1950, the CSF pressure was 280 mm. of water; total protein was 1,180 mg. per cent. The patient’s condition gradually deteriorated, and although the lumbar CSF pressure returned to normal there was a steady rise in protein to 3,350 mg. per cent. He expired on Jan. 29, 1950.