Brain Abscess 36 Years After Head Injury

Case Report

E. FLOYD ROBINSON, M.D., RICHARD H. MOIEL, M.D., AND ALEXANDER GOL, M.D.

Division of Neurological Surgery, Veterans Administration Hospital, Baylor University College of Medicine, Houston, Texas

The delayed development of brain abscess associated with a retained intracranial foreign body is not uncommon. Occasionally, masses of granulation tissue may simulate an intracranial neoplasm. We are reporting our experience with a patient whose signs and symptoms of an intracranial mass developed 36 years after a depressed skull fracture.

Case Report

A 57-year-old man was admitted to the Veterans Administration Hospital, Houston, Texas, in January, 1967, with a 30-year history of seizures. In 1931, he had sustained a small laceration of the left frontal scalp which, after suturing, healed without trouble. A few months later a small piece of bone extruded itself through the scar. The wound healed again spontaneously. The patient had no further problems until approximately 6 years later when he started to have convulsions. The seizures were characterized by head and eye movement toward the right followed by 5 to 10 seconds of unconsciousness. Various medications were prescribed during the next 30 years which achieved a fair control of the seizure activity. However, because of increasing severity and frequency of the seizures, the patient was admitted to the Veterans Administration Hospital, Houston.

Examination. The patient, who was left-handed, was conscious and normally oriented. The vital signs and general physical examination were normal except for an old healed scar in the left frontal scalp. The neurological examination was normal, with no papilledema, motor, or sensory abnormalities. Skull films showed a small defect in the left frontal bone. Routine electroencephalography revealed a left temporal slow-wave focus; blood and urine studies were normal. A technetium 99 brain scan showed an area of increased uptake in the left frontal region. A lumbar pneumoencephalogram showed a deformity of the anterior horn of the left lateral ventricle and a depression of the roof of the ventricle on the same side (Fig. 1). The spinal fluid was sterile, and its constituents were within normal limits. Bilateral carotid angiograms were considered to be normal. The preoperative impression was that of a space-occupying lesion in the left frontal region, possibly a meningioma.

Operation. A left frontoparietal craniotomy was performed. The dura was adherent to the undersurface of the frontal bone defect, and there appeared to be some increase of intracranial tension. A firm mass lying just under the surface was palpated in the tip of the frontal lobe and appeared to be contiguous with a small band of fibrous tissue which penetrated the dura just beneath the small bony defect. A cortical incision was made over the mass; just beneath the surface of the cortex a very firm grayish mass was encountered which appeared to be a tumor. The mass was well demarcated from the surrounding brain, and dissection was easily carried out. Before the mass was completely removed, however, a biopsy was attempted which opened a cavity in the supposed tumor that appeared to contain purulent material. Smears of this material at that time showed gram-positive cocci in pairs and clusters.

During the final dissection of the abscess wall, the ventricle was entered but sealed immediately with gel foam. The wound was then closed in a routine manner; a small defect in the dura was patched with temporalis muscle fascia.

Postoperative Course. The postoperative course was relatively uneventful, and the wound healed without complication. Antibiologic coverage with Keflin and Ampicillin was continued for 18 days. For the first 5 days after surgery, the patient had a fever of up to 101°. A lumbar puncture performed on the tenth postoperative day was sterile; the
cell and sugar content was normal. At 6 weeks he had had no recurrence of seizures.

Pathological Studies. The specimen was grayish-brown in color, measured $4 \times 2.5 \times 1.2 \text{ cm}$, and contained a cystic cavity $1.2 \text{ cm}$ in its greatest dimension (Fig. 2). The cavity contained yellow purulent material which, on culture, yielded coagulase positive staphylococcus aureus sensitive to all antibiotics tested. Microscopically, the cavity was lined by polymorphonuclear leukocytes and acellular material. The periphery showed fibroblasts and tissue infiltrated by chronic inflammatory cells consisting of lymphocytes, plasma cells, and occasional eosinophils. The most peripheral portion of the specimen contained hyalinized tissue.

Discussion

The true nature of the space-occupying lesion was not appreciated until the time of surgery, although the history of trauma and the bone defect were known. The abscess did not contain any foreign body. It is known that metallic foreign bodies are better tolerated than bone, but no intracranial foreign body was noted preoperatively or at the time of surgery. The dura had been penetrated, and the abscess, no doubt, was related to the trauma 36 years before. We were surprised to find living organisms in the purulent material. It is usually thought that the virulence of the organisms decreases, although the viability may remain; increased virulence of organisms in intracranial abscesses has usually been associated with acute infectious processes or