Late postoperative tension pneumatocele

Case report

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A subgaleal tension aerocele associated with an extracerebral air collection and rhinorrhea is reported. It occurred 3 months after removal of a frontal en plaque meningioma affecting the frontal sinus.

KEY WORDS - aerocele - frontal sinus - rhinorrhea - tension pneumocephalus - pneumatocele

When the frontal sinus is not properly closed after a neurosurgical procedure, some delayed complications might occur. These include infective complications and air collections under tension with mass effect upon the brain. This paper describes a case of a subgaleal tension aerocele that occurred 3 months after removal of a frontal en plaque meningioma that was filling the frontal sinus.

Case Report

This 50-year-old man was seen by us in May, 1980, because of a right frontal bone tumor that had evolved slowly during the last 20 years.

First Admission. On admission, the tumor was hard and measured about 5 cm in diameter. Neurological examination was unremarkable. Skull radiograms, computerized tomography (CT), and angiography showed the tumor to be a hyperostosing right frontal meningioma that was invading the frontal sinus.

On May 25, 1980, the tumor was totally removed. It grew en plaque from the superior longitudinal sinus and invaded the dura mater, the frontal bone, and the frontal sinus. After removal, the frontal sinus was closed with muscle and fascia. The dura mater and bone were not replaced. On June 16, 1980, the bone defect was repaired with acrylic material. The patient was discharged 7 days later, totally asymptomatic.

Second Admission. On September 16, 1980, the patient was readmitted with headaches, rhinorrhea, and a fluctuant area over the cranioplasty site. A CT scan (Fig. 1) showed a collection of air on both sides of the cranioplasty. The collection was exerting pressure on the right frontal lobe. During the next few days, the subgaleal air became tense, and the patient complained of severe headache when it was compressed.

On October 9, 1980, the cutaneous flap was reelevated. The frontal sinus was in communication with the subgaleal air collection and also with the extracerebral collection. The acrylic plate was lifted, and the sinus was packed with muscle and fascia, then secured with silk stitches and biologic glue. The acrylic

Fig. 1. Computerized tomography scan showing the subgaleal (a) and extracerebral (b) tension aerocele. The line of the cranioplasty can be seen (left).
plastic was replaced and lumbar spinal drainage was carried out.

The patient's postoperative course was uneventful. The rhinorrhea ceased and the subgaleal collection did not refill. The spinal drain was removed 14 days later, and on October 30 the patient was discharged asymptomatic. On the 21st postoperative day, a CT scan showed reexpansion of the frontal lobe and no air collection at any point.

Discussion

In this case, despite a thorough closure of the frontal sinus at the first operation, failure to repair the dura mater was undoubtedly responsible for the occurrence of rhinorrhea. In the third operation, the frontal sinus could be seen to communicate with both sides of the acrylic plastic, causing pressure on the air collection above and below it, which resulted in a valve mechanism. The inert nature of the acrylic plastic, which did not produce any local tissue reaction, was also a factor in the persistence of communication.

If a patient suffers rhinorrhea and a subcutaneous fluctuant collection in the frontal area after the frontal sinus has been opened during craniotomy, the collection is usually thought to be cerebrospinal fluid. The possibility of a subgaleal aerocele should be considered, however. Computerized tomography is extraordinarily useful in making an exact diagnosis of this condition.

Reference


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