Extradural Pneumatocele After Temporal Craniotomy
—Case Report—

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Abstract

A 22-year-old female first presented with a fibrillary astrocytoma in the left temporal region manifesting as complex partial seizure. She underwent left temporal craniotomy to remove the tumor. Surgery was uneventful, but she began to experience a blocked feeling in the left ear after surgery. Computed tomography (CT) obtained 3 weeks after surgery revealed persistent extradural air collection, which developed into an enlarged extradural air mass on follow-up CT obtained 8 months after surgery. She underwent additional surgery for obliteration of the pneumatocele by sealing the mastoidal fenestration with abdominal fat. She reported resolution of the symptom postoperatively. Extradural pneumatocele following temporal craniotomy is extremely rare, but is a possible surgical complication of opening of the mastoid sinuses.

Key words: craniotomy, mastoid sinus, extradural pneumatocele, surgical complication

Introduction

Extradural pneumatocele is a rare condition that most often develops following trauma with skull fracture, but may also occur spontaneously associated with neoplasms involving the air sinuses,5) or in the presence of infection.5) Here, we report a rare case of extradural pneumatocele which occurred after temporal craniotomy for resection of glioma.

Case Report

A 22-year-old female first presented with complex partial seizure at the age of 20 years, and magnetic resonance imaging revealed a cystic mass lesion and an arachnoid cyst in the left temporal region (Fig. 1 left). She underwent left temporal craniotomy to remove the tumor. Part of the mastoid sinus was opened during craniotomy, but was covered with fibrin-soaked collagen sheets. The dura was closed in a watertight fashion. Otherwise, surgery was uneventful. The histological diagnosis was fibrillary astrocytoma. After surgery, she began to experience a blocked feeling in the left ear and frequently blew hard to equalize her ear pressure. Follow-up computed tomography (CT) obtained 3 weeks after surgery demonstrated persistent extradural air collection (Fig. 1 right). During the outpatient follow-up period, the symptom in her left ear did not resolve, and CT performed 8 months after surgery revealed an enlarged extradural air mass in the temporal region (Fig. 2). Accordingly, second surgery was performed for obliteration of the pneumatocele. Mastoidal fenestration was identified and was sealed with abdominal fat. Neither infection nor
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Fluid collection was observed intraoperatively. The patient reported resolution of the symptom postoperatively.

Discussion

Small extradural air collections are often demonstrated after craniotomy, but are usually spontaneously absorbed with time. Extradural pneumatocele following neurosurgical procedures is rare, and most reported cases are associated with cerebrospinal fluid drainage or anterior skull base surgery, and develop early after surgery. Chronic extradural aerocele has been reported previously in a patient with skull fracture associated with extradural hematoma. However, chronic increasing air collection following temporal craniotomy as seen in our case is extremely rare even if the mastoid sinuses are opened. Only one case of extradural pneumatocele following craniotomy has been reported.

Several factors can predispose to the creation of pneumocephalus. We consider that the extradural pneumatocele in our patient may have resulted from increased pressure within the middle ear caused by equalization maneuvers, although other causes such as incomplete closure of the mastoid sinuses or insufficient tenting sutures of the dura mater at the first operation may have been partly involved in the formation of the extradural pneumatocele. Therefore, instructing patients not to equalize ear pressure may be important to avoid this unique surgical complication of opening of the mastoid sinuses, in addition to ensuring correct closing of the mastoid sinuses.

References


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