Retromastoid cisternal Ommaya reservoir for intrathecal therapy of coccidioidomycosis meningitis

Technical note

CHARLES J. WROBEL, M.D., AND JOHN F. ALKSNE, M.D.
Division of Neurosurgery, University of California, San Diego, California

✓ A method is described that simplifies placement of an Ommaya reservoir for chronic access to the basilar cisterns. This technique is useful in treating coccidioidomycosis and other fungal meningitides.

KEY WORDS • coccidioidomycosis • shunt • meningitis

Coccidioidomycosis meningitis is a chronic fungal infection that produces dense cisternal arachnoiditis and attendant cranial neuropathies, hydrocephalus, and vascular occlusions. At present, the only effective therapy is intrathecal amphotericin B administered for a period ranging from months to years. Lumbar injections of amphotericin B may cause severe arachnoiditis resulting in inadequate treatment of the basilar cisterns. Percutaneous puncture of the cisterna magna is uncomfortable to the patient and considerable morbidity may be produced by inadvertent vascular injury. Some investigators have resorted to injectable shunt systems bearing on/off valves and ventricular Ommaya reservoirs. However, ventriculitis per se seldom occurs in coccidioidal infection of the central nervous system, and ventricular delivery systems may not provide adequate drug levels in the basilar cisterns. Midline suboccipital cisterna magna reservoirs have been employed to overcome these problems. Suboccipital Ommaya reservoirs require considerable dissection to insert, are difficult to palpate for routine access, and often fail owing to neck flexion and extension. Placement of a retromastoid Ommaya reservoir is a simple alternative, providing chronic access for therapy directed at the basal cisterns.

Technique

The patient is maintained in a lateral position with the head turned 20° toward the floor to facilitate gravity retraction of the cerebellum. A reverse question-mark retroauricular flap is fashioned and a small cranietomy performed as it is for procedures to correct hemifacial spasm. The dura is opened in a cruciate fashion and cerebrospinal fluid is evacuated. Under magnification, the cerebellum is elevated slightly at its inferior lateral margin and arachnoidal adhesions about the lowest cranial nerves are lysed. A 5-cm ventricular catheter is

Fig. 1. Illustration showing placement of a retromastoid Ommaya reservoir and cisterna magna catheter. A partial-thickness craniectomy aids in the proper seating of the reservoir. The dark broken line shows the retroauricular flap.
passed retrograde to the cisterna magna under direct vision. The catheter is secured to a 2.5-cm side-port flat-bottomed Ommaya reservoir.* The reservoir is anchored to the pericranium so that it resides over bone within the semicircular curve of the flap (Fig. 1). A partial-thickness craniectomy performed with an air drill may also be employed to seat the reservoir. Watertight dural, muscle, and fascial closure completes the procedure. Staged bilateral reservoir procedures are employed in refractory patients with significant sequestration of cerebrospinal fluid demonstrated by radionuclide cisternography.

**Comment**

Chronic meningitis is the most serious complication of disseminated coccidioidomycosis. Particularly severe reactive arachnoiditis occurs and has a predilection for the posterior fossa and upper cervical subarachnoid space. Morbidity and mortality are related to uncontrollable hydrocephalus, progressive bulbar palsies, and brachial amyotrophy. Intrathecal therapy may be facilitated by placement of a retromastoid Ommaya reservoir. The procedure is straightforward and we have experienced no complications related to it.

**References**


*Ommaya reservoir, Model NL 850-1272, manufactured by Heyer-Schulte Corp., Goleta, California.