Nasoethmoidal Encephalomeningocele Demonstrated by Cisternography: Case Report

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A mass at the base of the nose, suspected of containing a nasoethmoidal encephalomeningocele, was shown to communicate with the cerebrospinal fluid by cisternography. The diagnosis of encephalomeningocele was confirmed at surgery.

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Anterior encephalomeningoceles are uncommon lesions (*1*). Plain films and hypocycloidal tomography show the soft-tissue mass and may reveal an associated osseous defect. Angiography may be useful in the evaluation of such herniations, whereas demonstration of air in the herniation by pneumoencephalography has met with variable success (*2,3*). Radiotracer cisternography demonstrating communication of an encephalomeningocele with the intracranial cerebrospinal fluid pathways has been reported in the radiologic and neurosurgical literature (*2,4,5*). In this report, bilateral nasoethmoidal encephalomeningoceles associated with a large cisterna magna were shown by radionuclide cisternography.

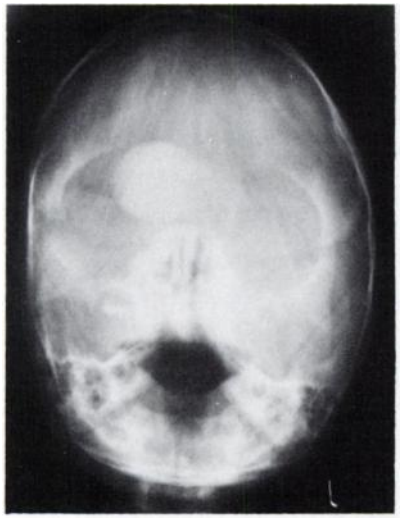

FIG. 1. Anterior radiograph shows a soft-tissue mass between the orbits. Medial orbital walls are bowed laterally.

CASE REPORT

A male infant (CHMC 257070) was born to a 24-year-old gravida-4 para-3 mother after an uneventful pregnancy. The mother was congenitally deaf; no other malformations had occurred in the family.

At birth a mass that expanded with the infant's crying was noted at the root of the nose. The posterior skull transilluminated. Physical examination was otherwise unremarkable. Facial and skull radiographs demonstrated a soft-tissue mass between the orbits, with an underlying smooth-walled bony defect at the nasion approximately 20 × 15 mm in size (Fig. 1). The medial orbital walls were bowed laterally.

An indium-111 DTPA cisternogram at 2 weeks

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of age showed increased and persistent concentration in the posterior fossa, and an anterior and inferior projection of activity into the mass at the root of the nose. Radionuclide movement over the cerebral convexities was delayed (Fig. 2).

At 1 month of age, a right encephalomeningocele was repaired at craniotomy. The next day the remaining paranasal sac was noted to distend with the child's crying. At 6 weeks of age an air ventriculogram showed no communication with the encephalomeningocele, normal ventricles I–IV, and a structure in the area of the cisterna magna consistent with an enlarged cisterna magna or an arachnoid cyst. A computerized transmission tomographic study showed a large cisterna magna and a slightly enlarged left lateral ventricle. A repeat cisternogram at 2 months of age still showed the anterior inferior projection of activity, increased posterior-fossa activity, and slow radiotracer flow over the cerebral convexities (Fig. 2). At 4.5 months of age, the left nasoethmoidal encephalomeningocele was repaired. A third cisternogram showed no abnormal anterior–inferior communication, although the posterior fossa and the abnormalities of flow remained (Fig. 2).

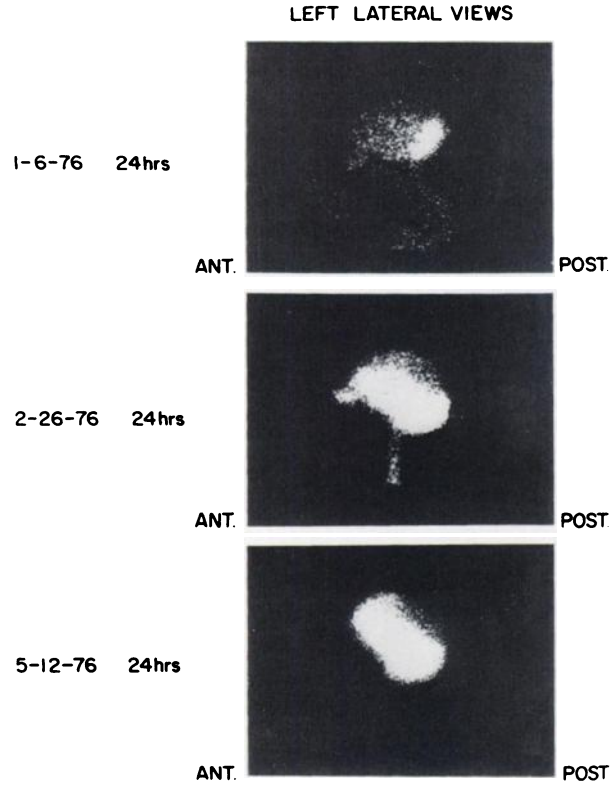

FIG. 2. On serial cisternograms, 24-hr left lateral images show an anterior and inferior projection of activity into the area of mass at the root of nose in the studies of Jan. 6, 1976 and Feb. 26, 1976. After repair of the second nasoethmoidal encephalomeningocele, anterior and inferior projection of activity is no longer seen on the study of May 12, 1976. Persistent concentration of activity in the posterior fossa, and slow flow of radionuclide over the cerebral convexities, are also present in all studies.

DISCUSSION

Moore compiled the following classification of sincipital and basal encephalomeningoceles: (1) nasofrontal, with a mass at the root of the nose; (2) nasoethmoidal, with a lateral nasal mass; (3) nasoorbital, with a medial orbital-cavity mass; (4) sphenopharyngeal, with an upper pharyngeal mass; (5) spheno-orbital, with a posterior orbital mass; (6) intranasal, projecting through the cribiform plate, with a mass in the nasal cavity; and (7) sphenomaxillary, with a zygomatic mass or a mass medial to the ramus of the mandible (*6*).

In only four of ten patients, Suwanwela et al. (*2*) succeeded in showing the communication between the encephalomeningocele and the intracranial cavity by injection of air. In all his cases, however, and in those of Tandon et al. and Glasauer, the cisternographic agent entered the encephalomeningocele (*2,4,5*). In our case the lesion was bilateral. Although separation of the individual encephalomeningoceles could not be achieved by scintigraphy, the abnormality persisted on radionuclide scintigraphy until both encephalomeningoceles were repaired.

A large cisterna magna, a posterior fossa arachnoid cyst, or an occasional Dandy-Walker malformation each may cause similar abnormal accumulations of radionuclide in the posterior fossa on cisternography (*7–10*). In this case, transillumination and cisternography indicated an abnormality of the cerebrospinal fluid space of the posterior fossa, demonstrated to be a large cisterna magna by computerized transmission tomography and pneumoencephalography.

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