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Short Report

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Ultrasound and Magnetic Resonance Imaging Findings of Choroid Plexus Papilloma

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Choroid plexus papillomas are uncommon lesions, constituting 1% to 2% of all childhood brain tumors (1). The most common site of origin in the pediatric age group is within the atria of the lateral ventricle, whereas in adults the primary site is within the fourth ventricle (2, 3). These tumors are histologically benign. Malignant changes are rare and occur almost exclusively in children (4).

A 6-month-old boy presented with 1–month history of increased head size, vomiting, irritability, lethargy. At physical examination, his head circumference measured 47,6 cm (greater than the 97th percentil). His anterior fontanelle was bulging. The eyes were the sunset type. No focal nuerologic deficit was demonstrated. Marked enlargement of the lateral, third and fourth ventricles and a lobulated, echogenic solid mass in the atrium of the left lateral ventricle was present on ultrasound (US) examination (Figure 1). Magnetic resonance (MR) imaging demonstrated lobulated mass within the right lateral ventricle, which was of inhomogeneous intermediate signal intensity on T1W images (Figure 2a). The tumor was hyperintense on T2W images. Postcontrast T1W images showed marked homogeneous enhancement of the tumor (Figure 2b). There was dilatation of the lateral ventricle. Tumor was totally excised. Subduro-peritoneal shunt was applied. Histologic examination demonstrated benign choroid plexus papilloma. There was marked decrease at ventricular dilation 1 month later. The patient was examined yearly intervals. No recurrence was demonstrated at the lesion but some residuel posterior horn dilatation and areas of gliosis at the right parietale lobe.

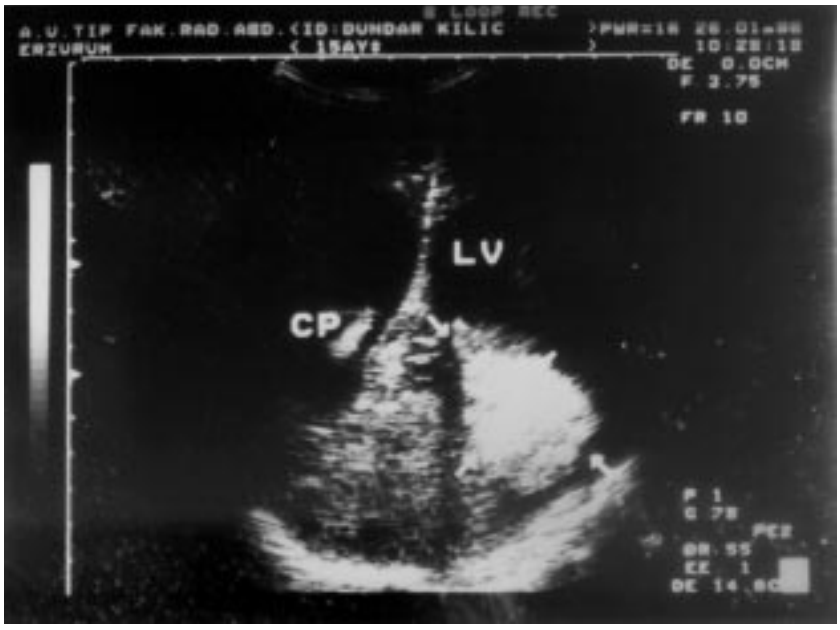

Figure 1. Ultrasound shows lobulated lateral ventricular mass (arrows)

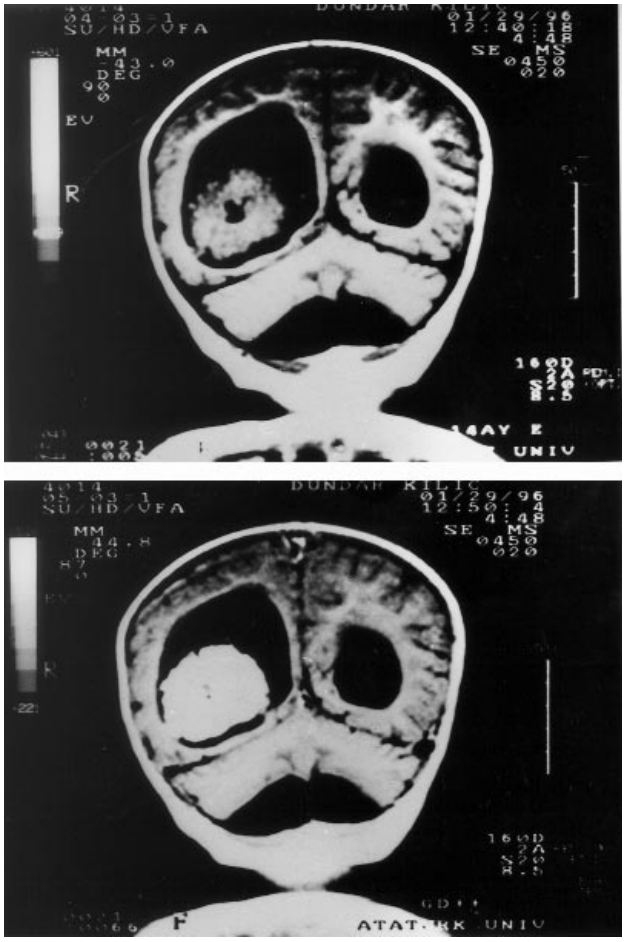

Figure 2. Choroid plexus papilloma on the lateral ventricle

a. T1-weighted coronal MR image of brain shows irregular tumor of intermediate signal intensity within lateral ventricle

b. Postcontrast MR image shows marked homogeneous enhancement of the tumor

Abbreviation : LV lateral ventricle, CP Choroid plexus

Choroid pelxus papillomas are rare intracranial neoplasms (1, 2). The clinical presantation is often related to hydrocephalus and increased intracranial pressure. Ventricular enlargement in those tumors is generally due to overproduction or obstructive, especially if the tumor is localized in the third or fourth ventricle. An other cause of ventricular dilatation is resorptive hydrocephalus due to microhemorrhage, with secondary thickening of the basal aracnoid and block of the normal CSF pathway (1). The clinical diagnosis of choroid plexus papilloma is difficult because such tumors are assosiated with nonspesific signs and symptoms (1). Before the era of US, computerized tomography (CT) and MR imaging, early diagnosis was usually not possible.

In choroid plexus papilloma, US shows marked dilatation of the ventricles and a lobulated, highly echogenic solid mass in the atrium of the lateral the ventricle (5). In our case US showed echogenic, lobulated solid mass in the atrium of the lateral ventricle. Moderately significant dilatation was demonstrated at the lateral ventricles.

On color Doppler imaging, the mass shows hypervascularity. The pedicle is a vascular structure with predominantly venous signals and arterial tracing shows low impedance (6).

CT examination shows an isodense lobulated mass with uniform and marked contrast enhancement (4).

They are similar to gray matter on T1W and brighter on T2W MR imaging. They enhance dramatically after intravenous contrast injection (3). In our case, MR imaging demonstrated lobulated mass within the right lateral ventricle, which was of inhomogeneous intermediate signal intersity on T1W imaging. On T2W imaging, the tumor was of increased signal intensity. Postcontrast MR imaging showed marked homogeneous enhancement of the tumor.

Differentional diagnosis must be first made by choroid plexus carcinoma. Benign papillomas will not show invasion, and vasogenic edema is unusual. Choroid plexus carcinoma invades the ependyma or surrounding brain parenchyma, usually with vasogenic edema (3). On MR imaging, the sequela of hydrostatic edema is easily recognized as a region of hyperintensity in the periventricular white matter on T2W MR imaging. The benign lesions also tend to be homogeneous, whereas the malignant lesions frequently show heterogenity because of necrosis, hemorrhage or calcification. Meningioma, hemangioblastoma, xanthogranuloma, lipoma and cysts also must be taken into consideration in differential diagnosis (7, 8). Meningiomas shows hypervascularity and dense calcification. Cystic lesion with mural nodule and dense enhancement at mural nodule is suggested hemangioblastoma on CT and MR imaging. Homogeneously enhanced masses with central lucencies is thought to be diagnostic of xanthogranuloma of the choroid plexus (9). Lipomas show hyperintensity on T1W MR images due to their internal contents (10).

Choroid plexus papillomas may be present at prenatal period. Prenatal diagnose is possible by US. US can demonstrate ventricular enlargement and the irregular profile of the choroid plexus (11, 12).

Angiography, CT and MR imaging are primary and very important techniques in the diagnosis and follow up of choroid plexus papillomas.

US is frequently the first examination for hydrocephalus in a child with an enlarging head, and one must be alert for an occasional brain tumor as the cause. In infants, most neoplasms are large at discovery and are easily identifiable by US. But differentiating the histologic type of neoplasm is usually not possible.

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