II. NEONATOLOGY

INTERCEREBRAL CYSTIC FORMATIONS

Marioara Boia[1], Daniela Iacob[1], Aniko Manea[1], Mirabela Dima[1], Nicoleta Pavel[2]
[1]University of Medicine and Pharmacy "Victor Babes" Timisoara
[2]Special Services for Children with Dizabilities Timisoara

Abstract

Cerebral cystic formations occur more and more often in pediatric medical practice as a result of widespread using of modern imagistic techniques (cranial ultrasound, RMN, CT). Depending on the size, location, causes they can be asymptomatic or can be accompanied by a major clinical table.

In this abstract authors aim to overview the most frequent causes and also the correlation between specific ultrasound images and clinical signs intensity.

Key words: cerebral cystic formations, causes, correlation between specific ultrasound images and clinical signs intensity.

Discussions

Several cystic formations can be met at the level of cerebral tissue: congenital, inflammatory, neoplasic, traumatic or vascular. The most spread are the arachnoidian cysts which represents 1% from intracranial space replacing formations at child.

Regarding their etiology these can be congenital or achieved by accumulation of cerebrospinal fluid through adhesions, conglomeration of the arachnoid. The cyst is located between brain and dura mater and is lined by the arachnoid; contains cerebrospinal fluid and does not communicate with ventricles. Regarding the location, the most common are met at the level of sylvian, suprasselar fissure, plate quadrigeminal, cerebello-pontine and at the level of internal subtentorial cisterns. Rarely they are located in the interhemispheric fissure or at the level of cerebral convexity. From the echographical point of view they are visualized as formations filled with liquid (transsonics) with a well shaped contour which dislocates adyacent structures. (fig.1).

Intracranial congenital cysts can occur in several congenital malformations. Thus, corpus callosum agenesis and non lobar holoprosencephaly are two malformations often associated with medium line dorsal cysts. These can also be met in Dandy – Walker Complex, but in fact the cyst is a dilated IV ventricle. More often met clinical aspects and also other causes of the posterior cerebral fossa are illustrated in the Table Nr.1.

Another affection in which cystic formations can occur is Zellweger Syndrome (cerebral-hepatic-renal) and trysomy 13. In these two situations, cystic intercerebral formations are followed by other placements, most frequently renal and hepatic.

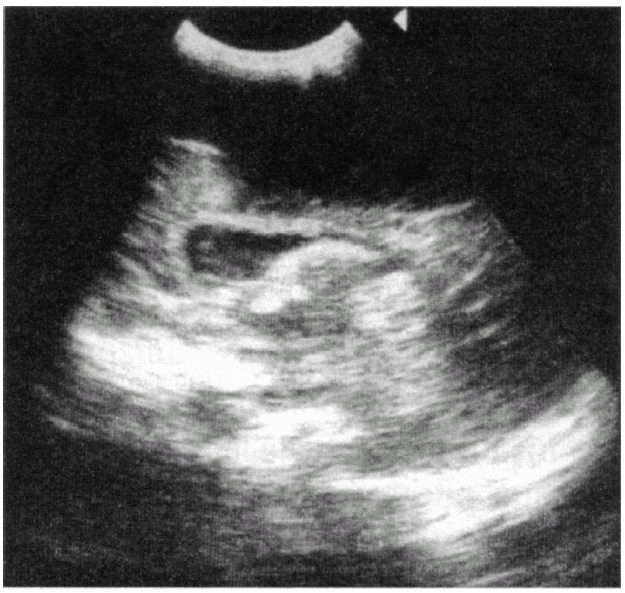

Fig. 1. The arachnoidian cysts.

Medium line cystic formations can also occur in Arnold Chiari II malformation. Their origin is not exactly known but they appear, typically, near the quadrigeminal cisterns.

Pathological cystic formations must be differentiated from the normal cystic areas such as the great cistern, cavity of pellucid septum and cavum vergae. These structures are accompanied by normal dimension ventricles and have no mass effect.

Cystic lesions include areas of encefalomalacia and periventricular and subependymal cysts (fig.2). This type of lesion appears secondary to cerebral necrosis due to hemorrhage, infarct, infection and it is coming after the brain gets glial answer capacity.

Encephalomalacy can be unique – porencephaly or schizencephaly – or can be multifocal. The multifocal form appears when there is a diffused affection of brain. Echographical examination emphasizes a transonic formation, septate, non-homogeneous (Fig.3).

Table Nr.1. Clinical aspects in the posterior cerebral fossa cystic.

AFFECTIONS	CLINICAL ASPECTS
Dandy-Walker Syndrome	Hidrocephaly
Familial vermian agenesis – S. Joubert	Polypnea episodes, ptosis, abnormal eye movements.
Ventricle IV dislocation	Widening of the IV ventricle followed by disfunction of cerebral trunk or increasing intracranial pressure after intraventricular hemorrhage or meningitis
Widening of the magna cistern	Asymptomatic or hypotonic, mioclonii, non progressive macrocephaly
Arachnoidian cyst	Dilatation of the posterior fossa, hydrocephaly

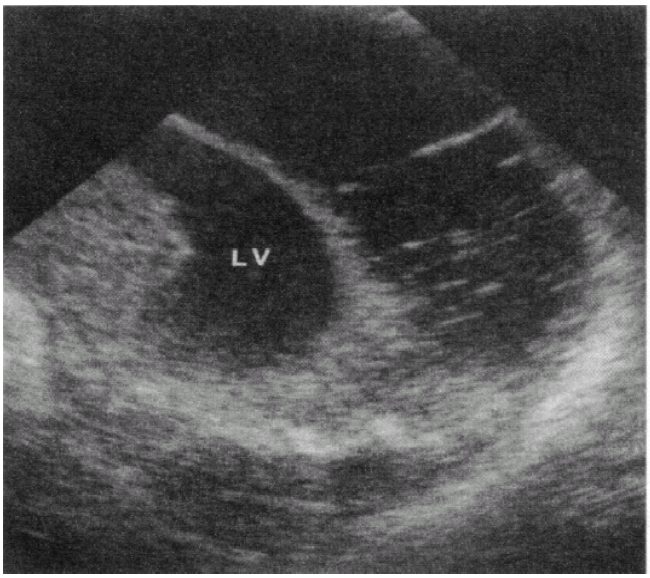

Fig. 2. Porencephaly.

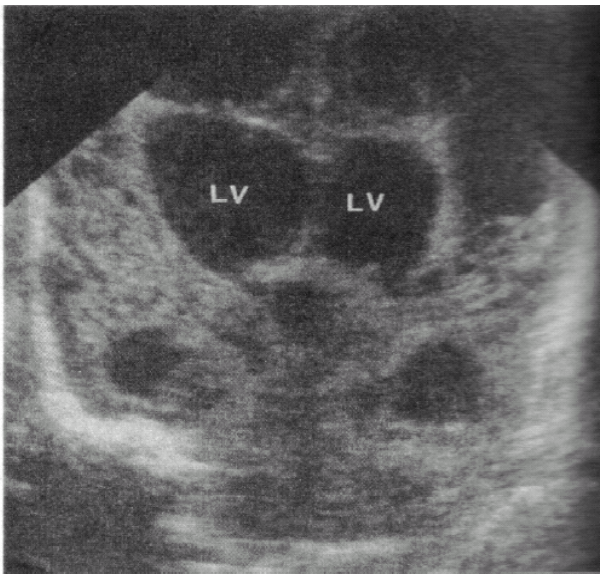

Fig. 3. Encephalomalacy.

In the diffuse forms there are visualized supratentorial cavities, bilateral, glial septate. Usually they are placed in the cortex and peripheral white matter. Generally they are not placed in periventricular white matter, inferior temporal lobes and cerebellum.

Typical for these diffuse lesions is the ultrasound finding of these multiple cysts, bilateral, with several shapes and dimensions, which are not communicating with dilated ventricular system.

Conclusions

1. Cerebral cystic formations can occur secondary to malformations.
2. Also they can be acquired from infections, hemorrhages or cerebral ischemia.
3. The most frequent and severe cerebral malformations accompanied by cysts are holoprosencephaly and Dandy Walker malformation.
4. Multicystic encephalomalacia occurs in diffuse affections of cerebral parenchyma. Depending on dimensions and location can appear neurological sequels, tightly correlated with the dimensions of these cystic structures.

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Correspondence to:
Marioara Boia,
Gospodarilor Street, No. 42,
Timisoara 300778,
Romania
E-mail: boiaeugen@yahoo.com