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Aseptic ascites and chemical meningitis following ventriculoperitoneal shunting for craniopharyngioma: a first case report

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Abstract

This case is about a child who had a ventriculoperitoneal shunt due to a hydrocephalus related to a cystic craniopharyngioma. Postoperative, he presented abdominal distension and meningismus. Imaging showed regression of the tumor. The cyst was drained by the shunt. No previous similar situations was reported in the literature.

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Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy

Aseptic ascites and chemical meningitis following ventriculoperitoneal shunting for craniopharyngioma: a first case report

Key clinical message:

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Craniopharyngioma's cyst rupture is an unusual complication of ventriculoperitoneal shunt. This benign inadvertance should be recognised as it may explain the onset of some unexpected clinical signs in the follows of this procedure.

Abstract:

This case is about a child who had a ventriculoperitoneal shunt due to a hydrocephalus related to a cystic craniopharyngioma. Postoperative, he presented abdominal distension and meningismus. Imaging showed regression of the tumor. The cyst was drained by the shunt. No previous similar situations was reported in the literature.

Keywords:

Craniopharyngioma; Ventriculoperitoneal shunt; Ascites; Meningitis; Neurosurgery

Introduction :

Craniophayngiomas are epithelial tumors, developing from the remnants of the Rathke pouch, and expending within the sellar and supra-sellar areas. Despite their benign histological nature, their propensity to infiltrate surrounding tissues, as well as their close proximity to the pituitary stalk, hypothalamus, optic chiasm, carotid arteries and third ventricle, may lead to serious morbidities and be source for therapeutic difficulties (1,2).

Some craniopharyngiomas, mainly of retrochiasmatic development, may compress the third ventricle or even the foramina of Monroe and cerebral aqueduct, leading to an upward hydrocephalus. This complication, added to the volume of the tumor, may be source of an important intracranial hypertension. Thus, a cerebrospinal fluid (CSF) shunting may be mandatory before resection of the tumor (3,4).

In this paper, we report the case of a child who underwent a ventriculoperitoneal (VP) shunting as he presented a hydrocephalus related to a craniopharyngioma. The ventricular catheter perforated the cyst which expressed through an aseptic ascites and a chemical meningitis. To the best of our knowledge, this is the first case to be reported for such an inadvertence.

Case report:

A 4-year-old male child, who had no pathologic background, presented due to the progressive onset since 1 month of headaches, vomiting, visual blur and diplopia. On physical examination, the patient was fully conscious, presented a 6^{th} cranial nerve palsy without any motor or sensitive deficit. Fundus examination found a grade 2 papilledema. Brain CT scan (Figure n°1) showed a sellar and supra sellar cystic tumor, surrounded by calcifications disposed on its wall. The lesion was responsible for an important mass effect on the third ventricle thus an upward hydrocephalus. A brain MRI (Figure n°2) was also performed showing that this lesion was hypointense on T1-weighted imaging (WI), hyperintense on T2-WI, and slightly enhancing on its fleshy component after injection of Gadolinium. The tumor filled the optico chiasmatic cistern, pushed forward the optic chiasm, and compressed the roof of the 3^{rd} ventricle. Biological and hormonal assessment showed no signs for any endocrinologic dysfunction.

Due to the major hydrocephalus, the decision was first to perform a CSF shunting in order to decrease the intracranial pressure and facilitate an ulterior resection of the tumor. A VP shunt was performed without any peroperative or postoperative inadvertence. Following the surgery, the patient presented a complete resolution of the symptoms, and he was discharged 3 days after surgery.

Four days after discharge, the patient represented for the onset of a low grade fever (38°), headaches, and abdominal distension, with an unchanged neurological status. Physical examination revealed a stiff neck and an abdominal shifting dullness.

Brain CT scan (Figure n°3) showed a significant regression of the volume cystic portion as well as a complete resolution of the hydrocephalus. Abdominal CT scan (Figure n°4) showed an abundant intra-abdominal fluid collection without any evidence septa or partitions.

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A lumbar puncture was performed, showing a hyperproteinorrachia (2,5 g/l), a hypercytosis (40 elements/mm3) and a normoglucorrachia. A puncture of the ascites was also done. This liquid contained contained 6 g of protein per 100ml. Cytologic examination was negative for tumor cells. Both cultures were sterile after 72 hours.

The decision received corticosteroids with observation of the clinical evolution. The boy presented a total regression of both fever and abdominal symptoms. The ascites was completely resorbed as shown by ultrasound.

The patient was discharged after 10 days. Viewing the actual clinical and radiological status of the patient, related to a quasi totally calcified non voluminous supra sellar mass without any major visual or endocrinologic impairment, a regular follow up is planned. Surgery will be discussed in case of clinical or radiological evidence of tumoral progression.

Discussion:

Aseptic meningitis following peroperative extravasation of the content of cystic craniopharyngioma is a well known complication. It is related to an irritation of the subarachnoid spaces by the cyst fluid. Thus, facing a cystic craniopharyngioma, a careful aspiration of its content is recommended before any further manipulation of the walls. Spontaneous rupture of craniopharyngioma cyst after VP shunting is a very uncommon situation, as we have not found any similar reports within the literature (2,5,6).

The patient described here had meningismus and abdominal distension due to ascites with both peritoneal and cerebrospinal fluids. This indicates that he had aseptic meningitis due to the leak of the cystic content of the craniopharyngioma, which passed through the VP shunt into the abdominal cavity causing a peritoneal irritation and a reactive ascites.

The presumed explanation for this inadvertence is that the intracranial hypotension induced by the onset of the VP shunt, created a pressure gradient between the ventricules and the cyst. Thus, the liquid passed through tumor capsule and anterior wall of third ventricle, then to the peritoneal cavity through the abdominal catheter of the VP shunt.

Clinical improvement and disappear of the abdominal collection are presumably due to cessation of discharge of the cystic contents of the craniopharyngioma.

Conclusions:

It would seem to be reasonable to suggest that in case of meningismus and abdominal collection after VP shunting of a cystic craniopharyngioma to suspect and confirm aspetic menigitis and cystic fluid passage in peritoneal cavity after elimination of infectious complications. Follow up may be a good option since spontaneous resolution is a possibility.

Figures:

Figure n°1: Axial sections of a brain CT scan without injection showing a suprasellar cystic lesion surrounded by calcifications responsible for an hydrocephalus

Figure n°2: Axial (A), sagittal (B) and coronal (C) sections of a brain MRI on T2-WI (A), T2 Flair-WI (B) and T1-WI with injection of Gadolinium showing a suprasellar cystic mass compressing the floor of the third ventricle thus a hydrocephalus.

Figure n°3: Axial section of a postoperative brain CT scan showing a regression of the cystic portion and persistence of the calcifications, as well as a contact between the ventricular tip of the VP shunt and the cystic wall.

Figure n°4: Abdominal CT scan showing an ascites in which the peritoneal tip of the VP shunt is visible.

Authors contribution:

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Ghassen Gader: wrote the manuscript Skander Guediche: collected iconographic data Mouna Rkhami: performed bibliographic research Ihsèn Zammel and Mohamed Badri: corrected the manuscript

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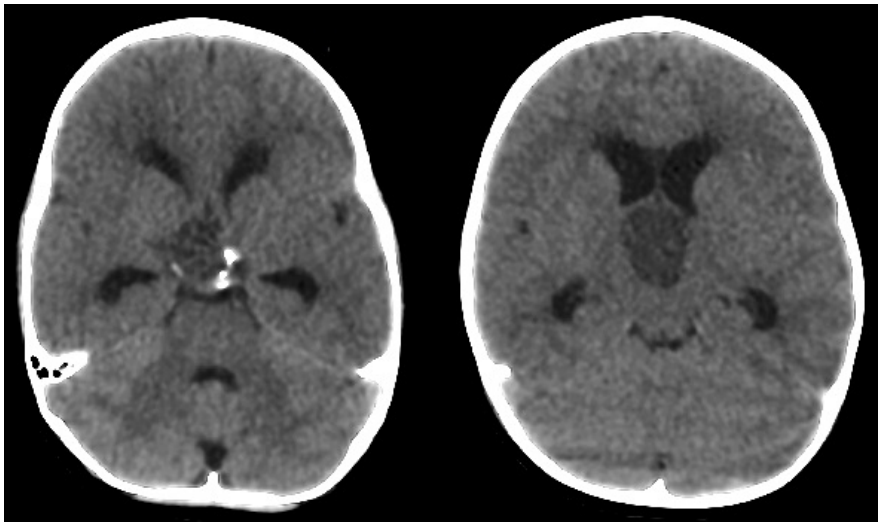

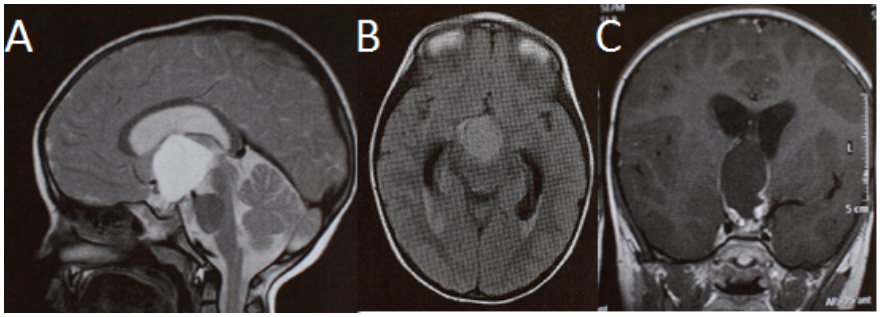

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