Endoscopic third ventriculostomy as a definitive treatment for blake’s cyst: a case report

Terceroventriculostomía endoscópica como tratamiento definitivo del quiste de blake: reporte de un caso

DOI: 10.46919/archv4n4-005

Recebimento dos originais: 22/09/2023
Aceitação para publicação: 26/10/2023

Victor Perez Meireles de Souza
Postgraduate in Neuro-Oncology at Hospital Sirio Libanês
Institution: Hospital de Caridade São Vicente de Paulo
Address: R. São Vicente de Paulo, 223, Centro, Jundiaí - SP, CEP: 13201-625
E-mail: victor@gmeireles.com

Ricardo Vallejo Gutierrez
Specialization in Oncological Neurosurgery by the Instituto Nacional do Câncer (INCA)
Institution: Hospital São Vicente de Paulo
Address: R. São Vicente de Paulo, 223, Centro, Jundiaí - SP, CEP: 13201-625
E-mail: rivagu@terra.com.br

Williams Escalante Encinas
Specialization in Neuro-Oncology by Hospital Sirio Libanês
Institution: Hospital de Caridade São Vicente de Paulo
Address: R. São Vicente de Paulo, 223, Centro, Jundiaí - SP, CEP: 13201-625
E-mail: neurohope01@gmail.com

Allan Zimmermann
Doctor of Science from Universidade Federal de São Paulo (UNIFESP)
Institution: Hospital de Caridade São Vicente de Paulo
Address: R. São Vicente de Paulo, 223, Centro, Jundiaí - SP, CEP: 13201-625
E-mail: adm.clinicaarz@gmail.com

Mateus Regin Neto
Postgraduate in Neuroanatomy, in Vascular Neurosurgery, in Skull Base Neurosurgery and in Neuro-oncology
Institution: Hospital do Servidor Publico do Estado de São Paulo
Address: Rua Pedro de Toledo, 1800, Vila Clementino, São Paulo - SP, CEP: 04029-000
E-mail: mateusneto@icloud.com

ABSTRACT
We report a case of patient with schizophrenia and persistent headache associated with a Blake's cyst, who underwent endoscopic third ventriculostomy (EVT). The data was collected through the review of the clinical history, interview with the patient, photographic records of the diagnostic methods and surgical treatment performed, in addition we reviewed the literature. Accurate diagnosis of Blake's cyst is extremely important; for this reason, it is essential to perform EVT, a resolving procedure with a low risk of complications and which is currently available within the neurosurgeon's therapeutic arsenal.
Keywords: Dandy-Walker Syndrome, endoscopic third ventriculostomy, hydrocephalus, black’s pouch cyst, obstructive hydrocephalus.

RESUMO
Relatamos um caso de paciente com esquizofrenia e cefaleia persistente associada a cisto de Blake, submetido à terceira ventriculostomia (TEV) endoscópica. Os dados foram coletados através da revisão da história clínica, entrevista com o paciente, registros fotográficos dos métodos diagnósticos e tratamento cirúrgico realizado, além de revisão da literatura. O diagnóstico preciso do cisto de Blake é extremamente importante; por isso é fundamental a realização da TVP, procedimento resolutivo e com baixo risco de complicações e que atualmente está disponível no arsenal terapêutico do neurocirurgião.

Palavras-chave: Síndrome de Dandy-Walker, terceira ventriculostomia endoscópica, hidrocefalia, cisto em bolsa de black, hidrocefalia obstructiva.

1 INTRODUCTION

Blake’s pouch cyst (BPC) is a rare posterior fossa malformation that often leads to hydrocephalus. It is characterized by a balloon-shaped cystic membrane over the cisterna magna. BPC is part of the Dandy-Walker complex; however, some authors have recently defined it as a different entity ¹. It appears to be caused by congenital expansion of the posterior membranous area that usually regresses during embryogenesis. Its pathogenesis is poorly understood due to the lack of age pattern and natural history of the disease ².

It has been recently suggested that BPC would be secondary to the congenital persistence of the Blake’s pouch due to non-perforation of the Magendie’s foramen during embryogenesis ¹. BCP is associated with several symptoms, ranging from headache to obstructive hydrocephalus and intracranial hypertension symptoms. Most cases are identified by prenatal tests; however, there is still a lack of data to justify the diagnosis of BCP based on symptoms in adult patients.

Here we report the case of a 33-year-old male patient who was referred to the outpatient neurosurgery clinic with complaints of a headache. Data were collected by reviewing the patient’s medical records, patient interviews, and photographic records of the diagnostic methods and surgical treatment the patient underwent.

2 OBJECTIVE

To report the case of a patient with BCP who was managed using a resolutive and scarcely used treatment option.
3 CASE REPORT

A 33-year-old Brazilian male was referred to the Neurosurgery Outpatient Clinic of Hospital de Caridade São Vicente de Paulo, in Jundiaí, SP, due to a persistent headache.

The patient was being followed up by the psychiatric team due to a suspected diagnosis of schizophrenia. He presented with evidently retarded neuro-psychomotor development and had not completed elementary school due to learning difficulties, as reported by her family.

He had moderate to severe diffuse headaches daily. The pain was worse at night and severe enough to interrupt his sleep. He also had episodes of nausea and vomiting. The patient reported partial improvement with the use of simple analgesics and used them frequently. His family members also reported that he became aggressive and engaged in self-mutilation during episodes of intense pain.

Physical neurological examination showed no objective signs of intracranial hypertension (ICH) or of papillary edema in the fundus of the patient’s eye; therefore, he underwent a computed tomophraphy scan, which showed an apparent communicating dilatation of the ventricular system and a cyst in the fourth ventricle. Cranial magnetic resonance imaging (MRI) confirmed the suspected diagnosis of BPC (Figure A), and ETV was indicated due to the presence of obstructive hydrocephalus.

Intraoperative period: While under general anesthesia and with his head centered, the patient underwent trepanation three centimeters from the midline and at a distance of 2 cm from the coronal suture for adequate visualization of the aqueduct. After identifying the anatomical structures, spontaneous pellucidotomy was visualized (Figure B), confirming the suspected chronic ICH. The aqueduct was visualized (Figure C) with no signs of pathology limiting the correct flow.

Following the procedure for the definitive treatment of the obstructive hydrocephalus, the anatomical structures of the floor of the third ventricle were identified. An endoscopic bipolar catheter and a number 4 Fogarty catheter (Figures D e E) were then used for the third ventriculostomy, with the good flow at the flag test and visualization of the basilar artery completely denuded (Figure F). The procedure was reviewed, hemostasis was achieved, and the planes were closed.

Postoperative period: The patient recovered with significant improvement and reported that the day after the surgery was the first day of his life without a headache, in addition to spending the night in the intensive care unit without waking up, unlike what routinely occurred due to the pain. He remains asymptomatic six months postoperatively, with behavioral improvement, according to family members. He no longer engages in self-mutilation, his social behavior has improved, and he currently expresses the desire to be gainfully employed.
4 DISCUSSION

BPC is a rare genetic malformation of unknown incidence and natural history. It is commonly diagnosed in children; however, this article reports the case of an adult patient.

The pathophysiology of BPC is not completely understood, with many cases being diagnosed in prenatal tests, which corroborates the hypothesis of embryogenic pathophysiology. BPCs are considered an embryological regression failure of Blake's pouch.

BPC is defined as the transient formation of a cyst in the posterior membranous area during embryogenesis. This subsequently becomes the choroidal plexus of the fourth ventricle before the Magendie’s foramen opens.

The diagnosis of BPC is based on radiological findings of a cyst in the fourth ventricle, which can be confusing since it can resemble a communicating hydrocephalus characterized by dilatation of the fourth ventricle. However, specific sequence MRI (FIESTA, CISS) shows that despite the apparent dilatation of the fourth ventricle, there is an obstruction that prevents the correct flow and thus leads to obstructive hydrocephalus. Another finding is a hypoplasia of the cerebellar vermis, which can be justified by a mass effect caused by cyst compression.

The most frequent clinical finding in patients with BPC is hydrocephalus; however, some cases have been diagnosed after routine imaging tests, such as ultrasonography or MRI.

BPC occurs more frequently in children; however, this report presents the case of an adult patient with BPC. This raises the question of whether the patient already had the cyst in childhood when he presented with neuro-psychomotor developmental delay (NPMD) but was not correctly diagnosed or if the cyst developed during later childhood or adolescence. This possibility is supported by a case report by Hirono et al., which describes children who did not show evidence of the cyst during postnatal imaging tests but were later diagnosed with BPC. We also question whether his quality of life and NPMD would have improved if he had been diagnosed and treated in childhood.

5 CONCLUSION

The diagnosis of hydrocephalus should include imaging tests in order to arrive at the correct diagnosis and to provide the best possible treatment. Furthermore, to adequately treat BPC, neurosurgeons should use ETV, which is a resolutive and definitive procedure in most cases. Compared to the use of shunts, ETV has low morbidity and mortality rates and has fewer risks, thus improving the quality of life for patients.
REFERENCES


ABBREVIATIONS

ETV - Endoscopic third ventriculostomy
BPC - Blake's pouch cyst
ICH - Intracranial hypertension
MRI - Magnetic resonance imaging
ANNEX

Figure A. Preoperative MRI.

Figure B. Spontaneous pellucidotomy.

Figure C. The aqueduct.

Figure D. Mamillary bodies, tuber cinereum being perforated using an endoscopic bipolar catheter.
Figure E. Dilatation using a 4 Fogarty catheter.

Source:

Figure F. Endoscopic view at the end of the procedure showing the Liliequist membrane opening and the denuded basilar artery.

Source: