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CASE REPORT

Left supratentorial ependymoma in a pediatric patient: a case report

Bianca Brinques da Silva[1], Fernando dos Anjos Schmitz[2],Rafaela Fernandes Pulice[1], André Bedin[3]

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Ependymoma, Supratentorial Neoplasms, Craniotomy, Frontal Lobe, Neurology.

Abstract

This paper represents a 2-year-old patient case report, which started with gait difficulties and ataxia. Brain magnetic resonance was performed, which confirmed the clinic diagnosis of supratentorial neoplasm. The patient was undergone a left frontotemporoparietal craniotomy procedure. The immunohistochemical evaluation result was suggestive of ependymoma (OMS grade II). The patient was discharged with no observed neurological deficit.

[1] Lutheran University of Brazil, Medicine - Canoas - Rio Grande do Sul - Brazil.
[2] Santa Casa de Misericórdia, Residency in Pediatric Neurosurgery - Porto Alegre - RS - Brazil.
[3] Santa Casa de Misericórdia, Pediatric Neurosurgeon - Porto Alegre - RS - Brazil.

Correspondence to:
Bianca Brinques da Silva.
Universidade Luterana do Brasil. Av. Farroupilha, nº 8001, São José, Canoas, RS, Brazil. CEP: 92425-020. E-mail: bianca.brinques@gmail.com

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INTRODUCTION

Ependymomas are slow growing tumors of the central nervous system. In pediatric populations, a third of intracranial ependymomas are supratentorial and two thirds infratentorial[1]. Infratentorial tumors are more frequent in younger children, while supratentorial ones are seen more often in older children and adults[2]. This article presents the case of an infant with an extensive ependymoma in the left frontal lobe. The patient recovered from surgery without signs of neurologic deficit.

CASE REPORT

A two-year-old female infant was admitted with abnormal gait and ataxia, which began to occur a week prior to admission, particularly as she tried to stand up. She had headaches only once since the start of symptoms. The day before she was taken in, she was somnolent and feverish. Vomiting and generalized tonic and clonic seizures were not reported. Upon arrival, the patient had fever and an unbalanced gait lateralized to the left. Neurologic examination found frontal ataxia and Broca's aphasia secondary to the appearance of the tumor, a condition that alters one's ability to produce language, but not to understand it.

Magnetic resonance image (MRI) scans found a voluminous intraparenchymal tumor affecting the left frontal lobe, measuring 8.6 x 7.3 cm. The solid cystic mass had an irregular contrast uptake pattern consistent with a primary tumor. The tumor caused parenchymal edema and produced compression against adjacent structures, with effacement of the left lateral and third ventricles, and structures pushed as much as 2.0 cm to the right of the midline.

The patient underwent a left frontotemporal craniotomy, in which about 90% of the tumor was removed on account of her low body weight (11 kg) and hemodynamic instability. The patient became hypotensive at the end of the procedure, did not respond to vasopressors, and had no peripheral pulse. She was diagnosed with hypovolemic shock for low cardiac output, which prompted the start of the cardiopulmonary resuscitation (CPR) protocol. CPR was performed for two minutes, until her pulse returned. She responded well to epinephrine and underwent a blood transfusion.

The patient was intubated and on vasopressin and epinephrine when she arrived at the pediatric intensive care unit. She improved gradually, and 36 hours after surgery vasoactive drugs were decreased, sedation removed, and she was extubated. The patient was prescribed vancomycin and cefepime for seven days. Her cultures came back negative and she took hydrocortisone for shock. She stayed six days in the ICU and five days in inpatient care.

Immunohistochemistry assays indicated that the tumor was a WHO grade II ependymoma. Postoperative MRI scans revealed some areas of bleeding and changes consistent with the performed procedure. In her final review, the patient was alert, walking, speaking coherently, and moving all four limbs. She was discharged without apparent neurologic deficit.

COMMENTS

Ependymomas account for 8% of encephalic tumors in childhood; about 60% of the children with ependymomas are aged less than five years at diagnosis[3,4].Supratentorial ependymomas are usually located in areas related to the third ventricle or the lateral ventricles, although ependymal tumors may originate in the hemispheres, in sites far from the ventricular system. The tumors apparently derive from ependymal cell remnants[4].

Histology differentiation does not correlate with progression, since low grade ependymomas, although benign in appearance, may be very aggressive tumors locally[5]. This tumor grows slowly and causes increased intracranial pressure by obstructive hydrocephalus[6].

Children aged 1-5 years commonly have headaches and vomiting. Displacement of adjacent structures and even invasion may produce clinical signs, as in the case of injury to the cerebellar parenchyma causing ataxia and incoordination[5]. Neurologic function was preserved after surgery, but one should notice the importance of postoperative follow-up on account of the risk of recurrence and development of malignant tumors.

In terms of the management of CRP in pediatric patients, the smaller the child the greater the dependence on heart rate to keep cardiac output, since small children have less muscle mass in the ventricle than adults. However, children present a limited heart rate reserve, given that their baseline level is elevated and, the younger they are, the greater the likelihood of an inadequate response. Therefore, systemic vascular resistance increases to keep blood pressure at normal levels[7].

Thus, hypotension becomes a sign of sudden cardiovascular decompensation. If a patient is suspected for severe hypovolemia, hypotension must be recognized as early as possible and treated promptly to allow a good outcome, while making sure that CPR is provided, if needed, by trained staff[8]. In pediatric patients, severe hypovolemia has been associated with septic shock, which, by its turn, has been linked to death[9].

In conclusion, new approaches, particularly those developed to provide local tumor control in younger patients, are needed to improve survival[10]. Total surgical resection of the tumor is the gold standard treatment, followed by imaging follow-up and rigorous surveillance with periodic MRI scans taken every six months during the first two years and annually until the patient reaches the age of five years. Children aged less than three years must be followed for twice as long[11].

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