A Giant Extradural Infantile Hemangioma of the Middle Cranial Fossa with Bone Erosion

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Abstract

Background: Intracranial infantile hemangioma is a very rare disease, and its treatment remains a challenge.

Case Description: A 2-month old boy presented with a giant mass in the left middle cranial fossa. Postcontrast MRI showed homogenous enhancement, and craniotomy was performed. The tumor was totally resected, and diagnosis of intracranial infantile hemangioma was confirmed.

Conclusion: Surgery is a safe treatment option for intracranial infantile hemangioma. It relieves intracranial hypertension instantly, and ensures complete treatment of this rare disease.

Keywords: Infantile hemangioma; Craniotomy; Propranolol

Introduction

Infantile Hemangioma (IH), also known as “capillary hemangioma” or “strawberry birthmarks”, is the most prevalent benign neoplasm in infant, with an incidence of 4% to 10% [1]. However, intracranial infantile hemangioma is extremely rare, and only about 0.1% of pediatric IH patients had intracranial involvement [2]. Most of the lesions are within subarachnoid or ventricular spaces, and extradural IH is rarely reported [3]. In this article, we report a giant extradural IH located in the left middle cranial fossa causing bone erosion in a 2-month old boy.

Case Description

A 2-month and 15-day old baby was referred to our department because of incidental finding of intracranial mass. Ten days prior to his admission, the boy suffered from falling injury, and CT scan in the local hospital revealed a big mass in the left middle cranial fossa, without apparent brain injury. His physical examination in our hospital was unremarkable. A Computed Tomography (CT) angiography showed marked enhancement of the mass, damage to temporal bone, and no apparent vascular supply to the lesion. Gadolinium-enhanced Magnetic Resonance Imaging (MRI) scan showed a giant mass expanding from sphenoid to petrosal ridge, with intense homogenous enhancement. The lesion was about 5 cm in diameter. Left Sylvian fissure and middle cerebral artery was displaced. Bilateral subarachnoid fluid collection was present in frontal and temporal region (Figure 1). Because we could not exclude malignant tumor, such as sarcoma, and stereotaxic biopsy could cause catastrophic bleeding and aggravate its mass effect, we decided to resect the tumor via craniotomy. Under general anesthesia and readiness of blood transfusion, the patient underwent total resection of the tumor. The temporal bone was corroded, and tumor was seen just under temporal muscle. It was pink, yellow and greyish in color, pliable but a little bit tenacious in texture like sponge. The operation went smoothly, with little blood loss and no transfusion. Postoperative pathology confirmed diagnosis of infantile hemangioma. Glut1 was positive in immunohistochemistry. The patient’s postoperative course was uneventful.

Discussion

Infantile hemangiomas are common benign tumors in pediatric population, and they usually affect head and neck region. Intracranial IH is very rare, and up to now, only about 40 cases of...
intrinsic pathological process that is characterized by rapid growth and regression of tumors, which is typically divided into two phases. The first phase, which occurs within the first 6 months of life, is characterized by rapid growth and proliferation of endothelial cells. The second phase, which occurs after the age of 6 months, is characterized by stabilization or regression of the tumor.

The growth pattern of IH consists of two phases. A few weeks after birth, IH begins the rapid growing period until the age of 8-12 months old; after that, IH enters into a secondary recessive or slow growing phase [10]. The bi-phase pattern is closely related to serum VEGF level in serum and tumor samples in 52 children; and they found that the serum VEGF was significantly higher in proliferative IH than recessive counterparts, and local VEGF was lower than that found in proliferative IH samples than those in recessive IH [12].

Propranolol is a classical beta-adrenergic receptor antagonist that is used to treat heart arrhythmia. Recently, it has been applied “off-label” for intracranial IH with satisfactory results [2,8,16]. Propranolol constricts capillary vessels and reduces blood flow inside IH, and also reduces VEGF and MMP level via HIF-1α-dependent signaling pathway [22]. In the long run, it suppresses IH growth through induction of endothelial cell apoptosis [23]. However, since 10% to 30% dermal IH relapse after propranolol treatment, the efficacy and safety of propranolol for intracranial IH needs further study [24].

Conclusion

Our patient underwent total resection of the mass. When fully prepared, surgery is safe. It relieves intracranial hypertension successfully, and ensures complete treatment for intracranial IH.
Funding Source

This study is supported by National Natural Science Foundation Grant No.81602190.

References


