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Topical Review

Beta Blockade as Treatment for Intracranial Infantile Hemangioma: Case Report and Literature Review

Elise Kang BA [a], Neil Friedman MBChB [b], Ihsan Mamoun MD [c], Joan Tamburro DO [d], Alex Golden MD [e,*]

[a] *School of Medicine, Case Western Reserve University, Cleveland, Ohio*
[b] *Center for Pediatric Neurology, Neurologic Institute and Cleveland Clinic Children's Hospital, Cleveland Clinic, Cleveland, Ohio*
[c] *Pediatric and Neuroimaging, Cleveland Clinic Imaging Institute, Cleveland, Ohio*
[d] *Department of Pediatric Dermatology, Cleveland Clinic Children's Hospital, Cleveland, Ohio*
[e] *Department of Pediatric Cardiology, Cleveland Clinic Children's Hospital, Cleveland, Ohio*

ABSTRACT

BACKGROUND: Intracranial infantile hemangiomas are extremely rare, with only 36 patients reported in literature. Treatment for intracranial infantile hemangiomas has been mostly limited to surgery, steroids, and interferon therapy. Propranolol, which is often used to treat cutaneous infantile hemangiomas, is not currently standard treatment for intracranial infantile hemangiomas. **PATIENT DESCRIPTION:** We present a one-month old boy with an intracranial infantile hemangioma treated with propranolol. **RESULTS:** This boy was being treated with oral propranolol for a supraclavicular infantile hemangioma. Subsequent brain magnetic resonance imaging (MRI) scan showed evidence of an associated intracranial infantile hemangioma in the right cerebellopontine angle. Repeat brain MRI scan after two months of propranolol treatment demonstrated a significant reduction in the size of the intracranial infantile hemangioma. **CONCLUSIONS:** This is the first report of successful therapy of an intracranial infantile hemangioma with propranolol.

Keywords: intracranial, infantile hemangioma, capillary hemangioma, propranolol, beta blocker

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Introduction

Infantile hemangiomas are common benign vascular tumors that are often located on the head and neck; intracranial infantile hemangiomas are extremely rare. Large databases of children with infantile hemangiomas suggest that fewer than 0.1% of such children have an infantile hemangioma in an intracranial location.[1,2] We conducted a literature review to identify 36 individuals with an intracranial infantile hemangioma and describe a new child with an intracranial infantile hemangioma who was treated with propranolol.

Intracranial infantile hemangiomas often occur in association with a rare neurocutaneous disorder characterized by posterior fossae anomalies of the brain, arterial anomalies, cardiac anomalies, and eye anomalies (PHACES).[1,3-7] Most patients with PHACES also present with cutaneous infantile hemangiomas,[8-15] and intracranial infantile hemangiomas are rarely found in the absence of other superficial infantile hemangiomas.[10] Intracranial infantile hemangiomas, however, also occur in patients without PHACES.[8-14,16-21]

Although many infantile hemangiomas are uncomplicated and spontaneously involute by ages 5-7 years, some require pharmacologic or surgical intervention due to their size or location.[2] Propranolol was first used to treat infantile hemangiomas in 2008, and is now a Food and Drug Administration–approved first-line treatment.[22,23] Intracranial infantile hemangiomas have been treated with corticosteroids,[2-5,8,9,11,13,14] interferon therapy,[2,9] and surgery.[15,16,18-21,24] Our patient is the first reported example

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* Communications should be addressed to: Dr. Golden; Department of Pediatric Cardiology; Cleveland Clinic Children's Hospital; 9500 Euclid Ave; Cleveland, OH 44195.
E-mail address: goldena2@ccf.org

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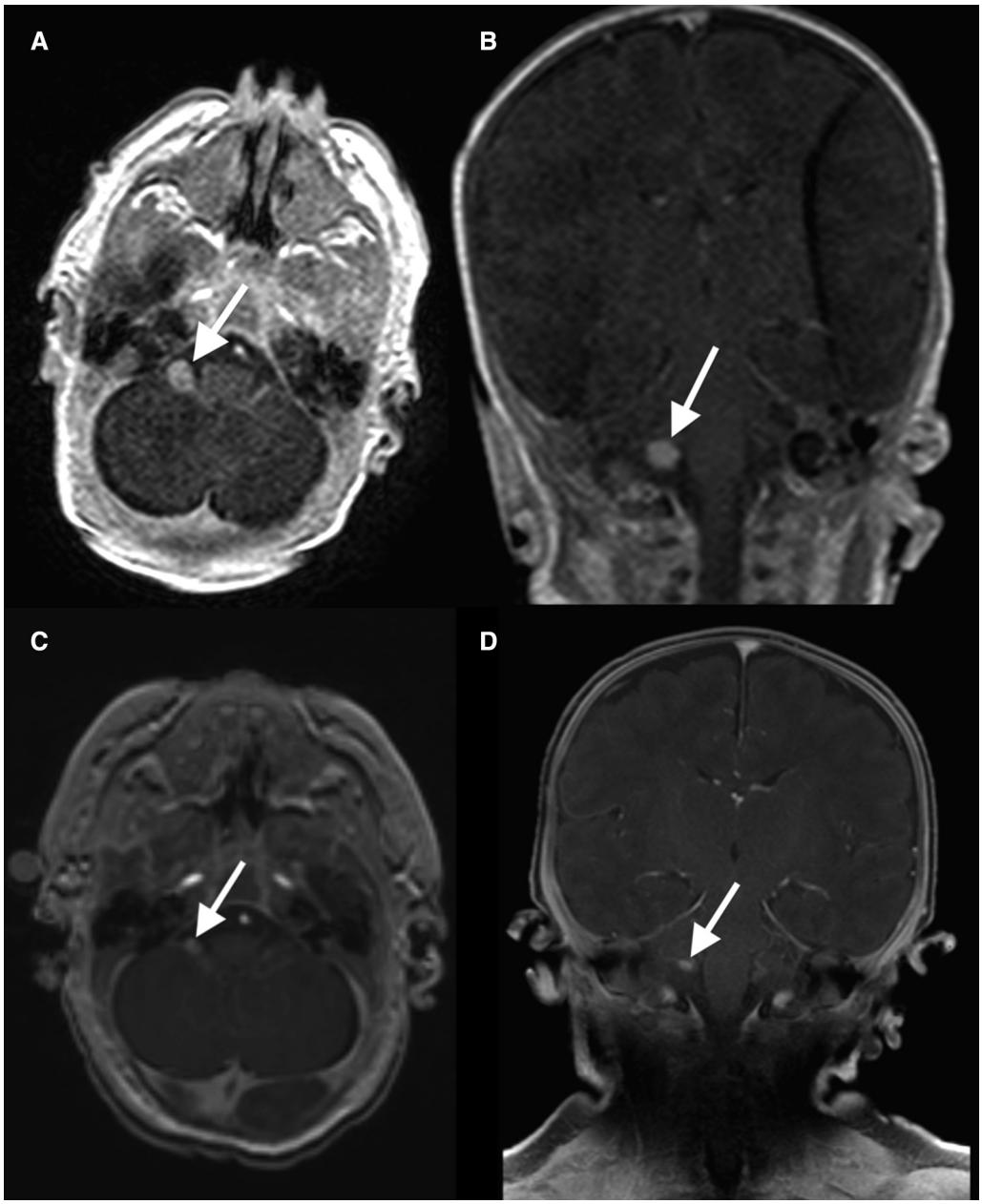

FIGURE.
An magnetization-prepared rapid gradient-echo (MP RAGE), not fat suppressed, axial T1-weighted (A) and coronal T1-weighted (B) contrast-enhanced magnetic resonance imaging scan demonstrates a contrast-enhancing extra-axial lesion in the right cerebellopontine angle (arrow) before treatment with propranolol. After two months of treatment with propranolol, an MP RAGE (not fat suppressed) axial T1-weighted (C) and coronal T1-weighted (D) contrast-enhanced magnetic resonance imaging scan demonstrates decreased size of the enhancing lesion (arrow).

of an intracranial infantile hemangioma managed with propranolol.

Patient Description

A male infant was born at 28 6/7 weeks' gestational age to a 32-year-old primigravida mother via emergency Cesarean section because of maternal HELLP syndrome (a pregnancy complication characterized by hemolysis, elevated liver enzymes, and low platelet count), placental abruption, and acute fetal bradycardia. The pregnancy was additionally complicated by pregnancy-induced hypertension and preeclampsia. The baby was born footling breech, was pale, and exhibited hypotonia at delivery. Resuscitation with a bag-valve-mask, stimulation, and bulb suction were required. Apgar scores were 1 and 7 at 1 and 5 minutes, respectively. The birth weight was 1030 g. Neonatal problems included respiratory distress syndrome, apnea of prematurity, and gastroesophageal reflux.

At age two weeks, a supraclavicular infantile hemangioma on the left anterior neck, which had not been present at birth, began to proliferate rapidly. Head ultrasound imaging at this time showed increased echogenicity in the periventricular white matter, possibly consistent with evolving periventricular leukomalacia, and a stable small grade 1 right germinal matrix hemorrhage. The hemangioma was treated with oral propranolol at 0.5 mg/kg/day with an increase to 1 mg/kg/day after 3 days and to 2 mg/kg/day after an additional week. Brain and neck