Rapidly Involuting Congenital Hemangioma

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A NEWBORN MALE, DELIVERED BY CAESAREAN section after induction at 41 weeks of gestation for failure to progress, was admitted to the **Women and Infants' Hospital (WIH) Neonatal Intensive Care Unit (NICU)** with a large vascular mass on his left knee (Figure 1). Routine prenatal US had been normal and the pregnancy had been uneventful. Physical examination at delivery was otherwise unremarkable. In addition to the WIH NICU team, the baby was followed clinically by pediatric surgical and interventional members of the Hasbro Children's **Hospital Vascular Anomalies Clinic (HVAC)**. On day two in the NICU, the patient developed signs of congestive heart failure. A chest radiograph demonstrated pulmonary edema and mild cardiomegaly (not shown). On day 14, the lesion began to bleed briskly.

Diagnosis

Rapidly Involuting Congenital Hemangioma (RICH) causing high-output congestive heart failure and hemorrhage.

Discussion

Pediatric vascular masses are classified into two basic groups: tumors, which are lesions exhibiting endothelial proliferation, and malformations, which demonstrate normal cellular and macroscopic growth with the child. A large vascular mass in a newborn is suggestive of a **congenital hemangioma (CH)**, of which two additional subtypes are described: RICH, and the less common, non-involuting congenital hemangioma, or NICH. Unlike the more common **infantile hemangioma (IH)**, which generally becomes evident at a median age of two weeks, CHs are fully developed at birth and are often preceded by abnormalities on prenatal ultrasound. They have an equal sex predilection and are most often present on the head or on a limb near a joint.[4] RICH subtype begins to involute promptly after birth and are usually completely resolved by 12–14 months of age whereas NICH will never disappear.[1, 3]

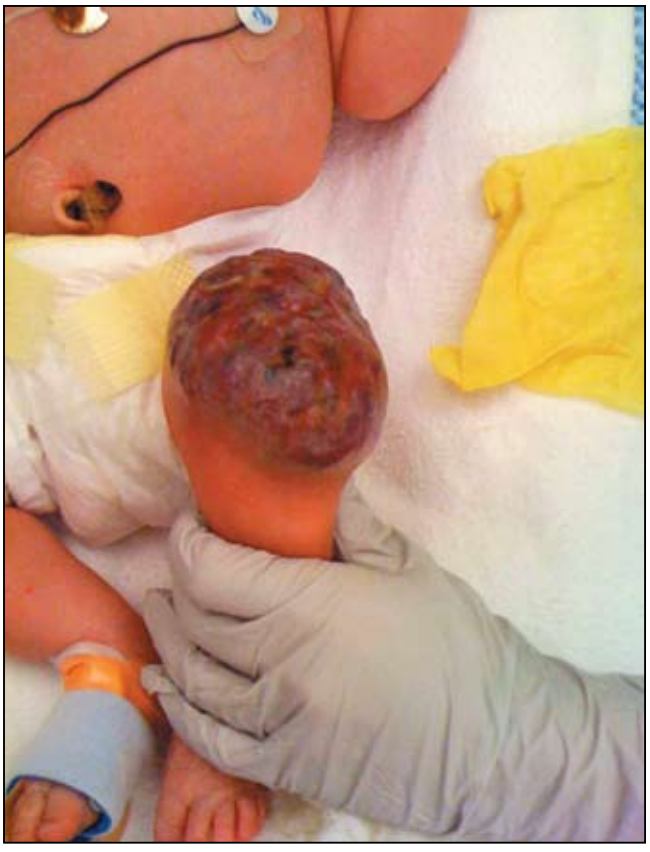

Figure 1. Left knee vascular lesion.

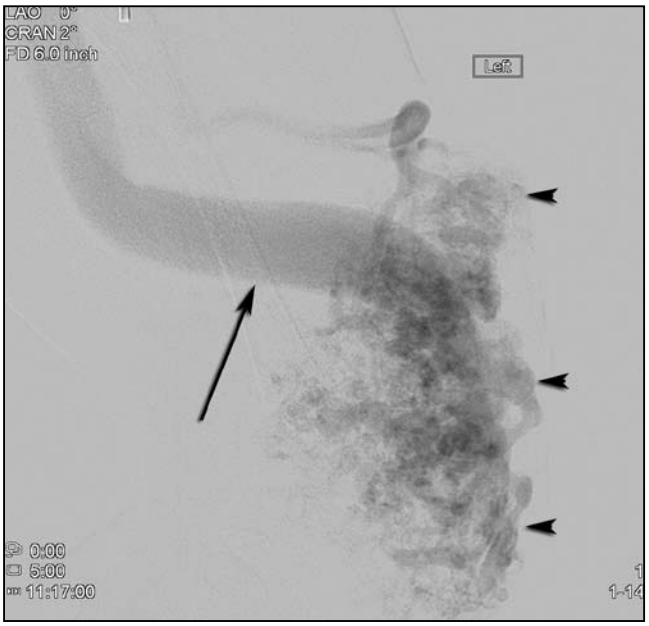

Figure 2. Tangled vessels with early drainage into dilated vein.

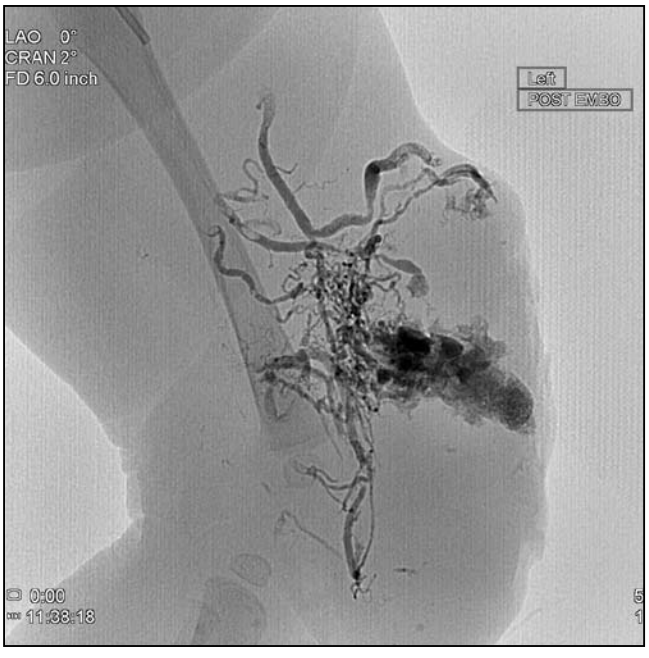

Figure 3. Post embolization; glue "casting" of the central vessels.

Although similar to IH, CH has unique imaging characteristics, and ultrasound and MRI are the most useful modalities. In contrast to IH, calcifications and large tubular structures representing outflow veins in the context of significant intratumoral arteriovenous shunting are more frequently observed in CH with grayscale US.[1] With MRI, large flow voids are present and in post-contrast images there is inhomogeneous enhancement, unlike the typical uniform enhancement seen in IH. Surrounding edema on T2 images, characteristic of IH, is absent in CH. Arteriography may be indicated in cases where fibrosarcoma or arteriovenous malformation are suspected.

In larger tumors, which frequently ulcerate and hemorrhage as involution proceeds, interventional radiological embolization may be required to staunch severe bleeding and help to resolve high output heart failure. The risks of this procedure in a newborn, including a high probability of ispilateral or contralateral limb loss, obviate its use in all but the most extreme situations. This was the case with our patient. He was brought to interventional radiology at Rhode Island Hospital where an angiogram demonstrated large disorganized feeding arteries and massively dilated outflow veins. (Figure 2) The central portion of the lesion was embolized with **n-butyl cyanoacrylate (NBCA)**, a glue embolic agent. (Figure 3) There were no complications, the bleeding abated, and the patient's heart failure improved.

References

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Disclosure of Financial Interests

The authors and/or their spouses/significant others have no financial interests to disclose.

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