

Multislice spiral computed tomography in a neonate with symptomatic non-involuting congenital hemangioma

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Citation

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Abstract

A full-term female was delivered with a 4×6-cm soft, hemispheric and blue-colored tumor on the right temporal scalp behind the ear. The present patient developed tachypnea and feeding difficulty soon after birth. Ultrasound examination revealed typical findings of congenital hemangioma. Multislice spiral computed tomography (MSCT) was performed prior to endovascular coil embolization. MSCT showed that the tumor consisted of tortuous and irregular vessels with feeding arteries including the right occipital artery, the right superficial temporal artery and the right posterior auricular artery. At 12 months of age, the hemangioma remained unchanged, which was consistent with non-involuting congenital hemangioma. We consider that MSCT is a useful and non-invasive imaging tool to depict the precise vascular structure of congenital hemangioma even in a neonate.

We present herewith a case of a neonate with non-involuting congenital hemangioma (NICH) who had symptoms related to arteriovenous shunts. Transcatheter coil embolization or surgical resection is occasionally performed in a symptomatic patient with NICH [3]. We studied multislice spiral computed tomography (MSCT) prior to transcatheter coil embolization to evaluate the vascular structure in a symptomatic neonate with NICH. MSCT is one of useful imaging tools to depict vascular structures of congenital hemangioma.

CASE REPORT

A female neonate was born at term by vaginal delivery after an uncomplicated pregnancy with 3.5 kg of body weight. The present patient had a 4×6-cm soft, hemispheric and blue-colored tumor on the right temporal scalp behind the ear, which had been noticed by prenatal ultrasound examination (Figure 1). The tumor had neither ulceration nor scar. Vascular bruit was noted corresponding to the tumor. Postnatal two-dimensional and color Doppler ultrasounds revealed that the tumor consisted of heterogeneous and tortuous vessels with fast blood flow. She developed tachypnea and feeding difficulty, which suggested cardiac failure. To evaluate the structure of the hemangioma, MSCT was performed at 28 days of age (Aquilion™, Toshiba, Japan). The parameters were following below : collimation, 0.5mm ; table feed, 5.5 mm/rotation; 1 rotation, 0.75sec ; helical pitch, 11.0 = 5.5/0.5 (0.68 = 5.5/0.5 × 16 beam pitch) ; mAs, 112 ; kVp, 120. Intravenous contrast medium (Omnipaque 300™, 2 ml/kg) was administered at 0.6 ml/sec with automatic injector. Scan was obtained at 17 sec after starting the injection of contrast medium. Information of scanning was modified and reconstructed to three dimensional images by a workstation (ZIOSOFT M900

QUADRA™). It took within 15 minutes to complete image processing of MSCT. MSCT showed that the tumor consisted of tortuous and irregular vessels with feeding arteries including the right occipital artery, the right superficial temporal artery and the right posterior auricular artery (Figure 3). It was also shown that smoothly dilated veins drained to the sigmoid sinus. These findings were consistent with congenital hemangioma. At 30 days of age, transcatheter coil embolization was performed. The right superficial temporal artery and the right posterior auricular artery were embolized with the combination of interlocking detachable coils (IDC™, Boston Scientific, MA, USA) and tornado-shaped coils (VORTEX™, Boston Scientific, MA, USA). After coil embolization, bruit and symptoms related to cardiac failure has disappeared. At 12 months of age, the hemangioma did not regress and remained unchanged, which suggested that she was diagnosed of non-involuting congenital hemangioma.

Figure 1

Figure 1: A blue-colored hemispheric tumor on the right temporal scalp.

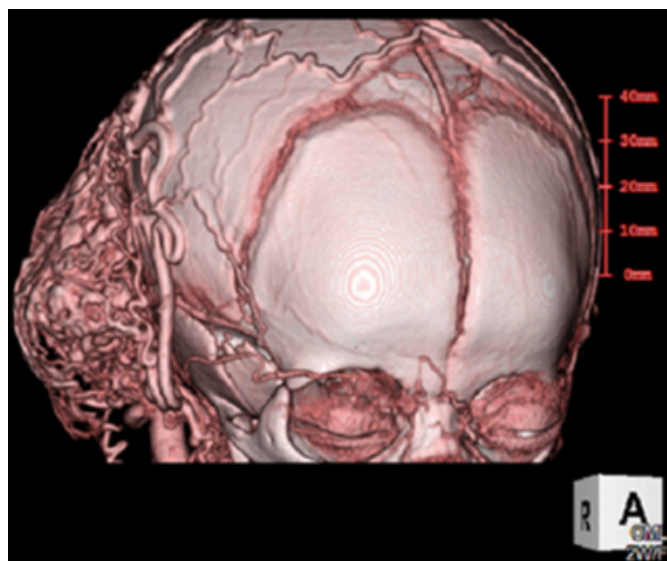


Figure 2

Figure 2: The tumor consists of tortuous and irregular vessels with inhomogeneous parenchymal staining.

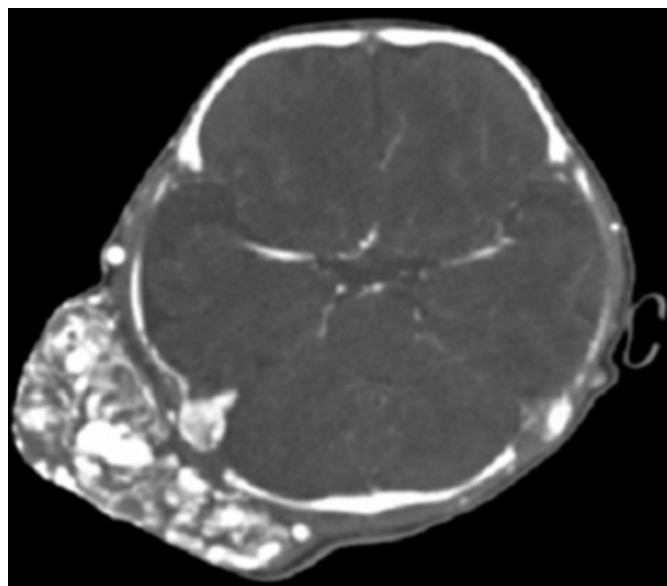


Figure 3

Figure 3: MSCT shows the structures of congenital hemangioma. The feeding arteries includes the right superficial temporal artery, the right occipital artery and the right posterior auricular artery.



DISCUSSION

This is the first case report of a symptomatic neonate with NICH in whom MSCT is obtained prior to transcatheter coil embolization. MSCT can clearly demonstrate the unique findings of congenital hemangiomas including inhomogeneous large and irregular feeding arteries in a disorganized pattern, multiple carious sized aneurysms and direct arteriovenous shunts. Congenital hemangioma fully developed at birth, in which two courses have been identified as rapidly involuting congenital hemangiomas (RICH) and non-involuting congenital hemangiomasis (NICH) [1,2]. Gorincour et al [3] described that imaging findings on ultrasound, CT and MRI were very similar both in RICH and NICH. However, the presence of significant arteriovenous shunt was demonstrated in 27% of NICH, on the other hand, no shunt was demonstrated in RICH. Mulliken et al described that RICH and NICH could coexist. In the present case, MSCT demonstrated tortuously dilated feeders and drainers, which indicated the significant arteriovenous shunt consistent with NICH.

It is important to recognize the precise architecture of feeders and drainers before successful and safe transcatheter

coil embolization is achieved [5]. Giordano et al [6] described that MSCT could depict variation of venous drainage patterns in cerebral vascular lesions and provides important information for surgical planning. Although MRI is also available to access such vascular structures, MSCT consumes less time to complete image processing than MRI. We considered that MSCT is one of the useful imaging tools to evaluate vascular structures of congenital hemangioma in such a critical neonate with heart failure. However, we should pay attention about the amount of radiation involved in MSCT and its impact on the neonatal brain.

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