Congenital Cystic Neuroblastoma

We report a cystic neuroblastoma in a neonate diagnosed prenataly by ultrasound with emphasis on the Magnetic Resonance Imaging (MRI) findings. There are not many cases in the literature that have been diagnosed with MRI. We review the MRI imaging features of this entity.

Imaging Findings:

A 23 year old woman was evaluated by routine prenatal ultrasound at 30 weeks gestation, which showed a cystic left 4x3 cm suprarenal mass in the fetus. A 3.410 g female infant was delivered vaginally at 40 weeks gestation, the APGAR scores were 9 and 10. An abdominal mass was palpable on physical examination. Preoperative diagnostic evaluation was normal including bone scintigraphy, urine vanillylmandelic acid, homovanillic acid and liver function tests. Postnatal ultrasound confirmed the diagnosis. MRI was performed in 1.5 Tesla magnet using the adult head coil as a transmitter and receiver. Axial and Coronal T1Weighted, Axial, Coronal and Sagittal T2Weighted images and gadolinium enhanced (0.1mmol/kg) Axial and Coronal images were obtained. MRI demonstrated a left cystic adrenal mass that was hypointense on T1 weighted images and markedly hyperintense on T2 weighted images that displaced the upper pole of the kidney (Figures 1and 2). There was capsular enhancement on the post gadolinium images. No other abnormalities were found in the abdomen, liver parenchyma was normal. The adrenal mass was resected at 20 days of age. Pathological examination showed an encapsulated cystic neuroblastoma stage I.

Discussion:

Neuroblastoma is the commonest solid tumor of childhood and the prognosis is inversely related to the age at diagnosis. The prenatal diagnosis may confer the advantages of early diagnosis and early therapy, improving the outcome. The adrenal glands are the site of the majority of neuroblastomas and the fetal adrenals can be reliably imaged before 26th week of gestation. Prenatal ultrasound has a great potential for demonstrating adrenal gland tumors. The sonographic features of fetal adrenal neuroblastoma varies from cystic to solid and it can contain calcified foci, in our case the mass was demonstrated in a prenatal ultrasound and it was cystic. In general most cystic neuroblastomas are nonfunctioning tumors. In our patient the laboratory tests did not show any abnormal levels of urine vanillylmandelic or homovanillic acid. Cystic neuroblastoma and adrenal hemorrhage have both been described on prenatal and postnatal sonography and have a similar appearance. Neonatal adrenal haemorrhage associated with neuroblastoma has also been reported. Adrenal haemorrhage may be differentiated by its evolution of echo characteristics at follow-up examinations. A cystic adrenal mass with irregular thickened walls or with a prominent soft tissue component is more likely to represent cystic neuroblastoma. MRI may be better in defining the cystic nature of the lesion and to establish the exact organ dependence as well as identifying liver metastases. On T1 weighted images cystic neuroblastomas are of low signal intensity and they show high signal intensity on T2 weighted images. Gadolinium enhanced images better depict the wall of the cyst and the type of enhancement. A small area of thickening and enhancement might indicate small amounts of solid component in the cyst wall. Necrosis and haemorrhage are frequent morphologic characteristics of neuroblastoma. MRI is particularly helpful in
diagnosing intracystic haemorrhage, although cystic neuroblatomas containing serous or gelatinous fluid due to
degeneration of tumor cells or coalescence of microcysts have been described, in our case the content of the cyst
was gelatinous and no haemorrhage was demonstrated within it. The differential diagnosis of a cystic adrenal mass
includes extralobar sequestration, dilation of upper pole renal calyces, congenital adrenal cyst and adrenal abscess.
Bone scintigraphy may be used to exclude the unlikely event of skeletal involvement. The treatment of choice is
surgery and the prognosis for patients with these lesions appears to be excellent.

**Differential Diagnosis List:**

- Congenital Cystic Neuroblastoma

**Final Diagnosis:**

Congenital Cystic Neuroblastoma

**References:**


Figure 1

Description: Coronal T2Weighted MRI demonstrating the left adrenal mass highly hyperintense with downward displacement of the left kidney. Origin:
**Figure 2**

**Description:** Gadolinium enhanced Coronal T1Weighted MRI shows the cystic nature of the tumor. The mass did not show any enhancement except for the wall and appears hypointense. **Origin:**