



Ultrasound Diagnosis of Neonatal Intra-Abdominal Cysts: A Pictorial Essay

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Introduction

Neonatal intra-abdominal cystic lesions are uncommon. They are often discovered on antenatal ultrasonography or incidentally by the neonatologist soon after birth. The more common differential diagnoses include multicystic-dysplastic kidneys, hydronephrotic kidneys, ovarian cysts, mesenteric cysts, enteric-duplication cysts, meconium pseudocysts, choledochal cysts, lymphangiomas and less frequently cystic neuroblastomas, adrenal haemorrhage, teratomas and liver haemangiomas/haemangioendotheliomas. Ultrasound can provide a specific diagnosis or narrow the differential diagnosis. In some cases, CT and MRI may be indicated to further characterize these lesions and to provide a surgical roadmap for the surgeons. After reviewing this poster, the reader should be familiar with the imaging features of the different intra-abdominal cysts in the neonate and how to accurately diagnose many of these lesions on ultrasound.

Neonatal adrenal hemorrhage

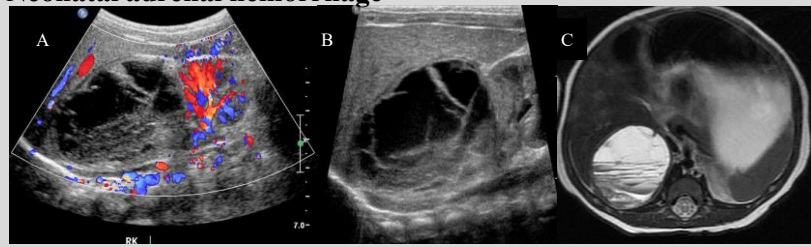


Fig A and B: A 3 week-old baby with a prenatal diagnosis of a cystic mass in the right upper quadrant. Post-natal ultrasound shows an avascular cystic mass with internal septations and debris, likely blood products.

Figs C, D and E: Axial T2W, T1W and Coronal GRE shows cystic mass in the right adrenal region with high signal intensity in T1W and T2W signal and multiple hemosiderin levels consistent with adrenal hemorrhage



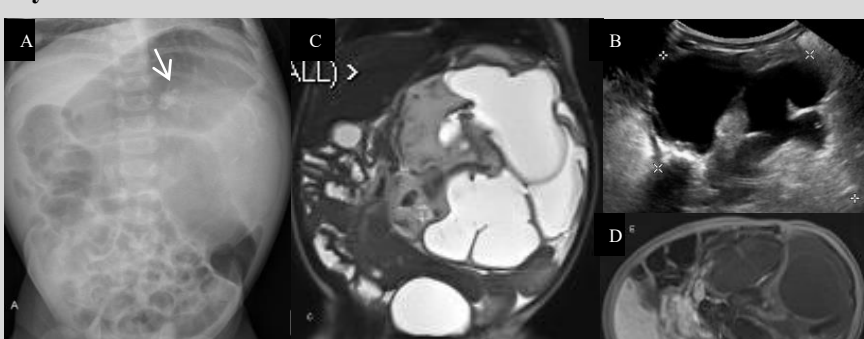
Giant meconium pseudocyst



Fig A: Chest and Abdomen radiograph of a 1-day-old baby with prenatal diagnosis of a large abdominal cystic mass shows abdominal distension with elevation of the diaphragms and thin curvilinear calcifications outlining the cyst (arrows).

Figs B and C: Longitudinal and transverse ultrasound of the abdomen shows a large multiloculated cystic mass with a fluid-debris level. A meconium pseudocyst was found at surgery.

Cystic teratoma



Down's patient with an antenatally diagnosed abdominal cyst.

Fig A: Abdominal radiograph shows a large abdominal mass with curvilinear calcifications (arrow).

Fig B: Abdominal ultrasound shows a mass with cystic and solid echogenic components.

Figs C,D and E: MRI Coronal T2W, axial T1W and axial T2W fat saturation images show a large intra-abdominal fat-containing (arrows) mass situated in the left side of the abdomen causing bowel displacement. The diagnosis of a cystic teratoma was confirmed at surgery.

Enteric duplication cyst

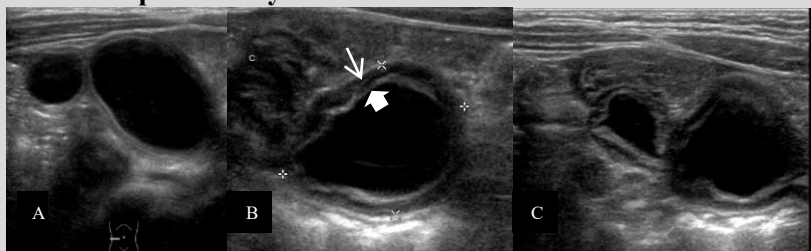


Fig A: Post-natal abdominal ultrasound in a 4-month-old boy who had antenatally detected abdominal cysts, shows two cysts in the right lower abdomen.

Figs B and C: Follow up ultrasound after two months clearly shows the outer muscle wall to be hypochoic (arrow) while the inner mucosa is echogenic (thick arrow) resembling bowel, consistent with an enteric duplication cyst which was confirmed surgically.

Multicystic dysplastic kidney



Fig: Abdominal ultrasound in 1-day-old baby shows an enlarged right kidney containing multiple non-communicating cysts consistent with a multicystic dysplastic kidney.

Ovarian torsion.

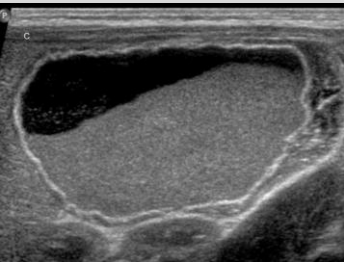


Fig: Abdominal ultrasound in a neonate with an antenatal diagnosis of an intra-abdominal cyst shows a cyst in the right upper abdomen with a fluid-debris level on post-natal US. A torsed haemorrhagic ovarian cyst was found at surgery.

Infantile hemangioendothelioma

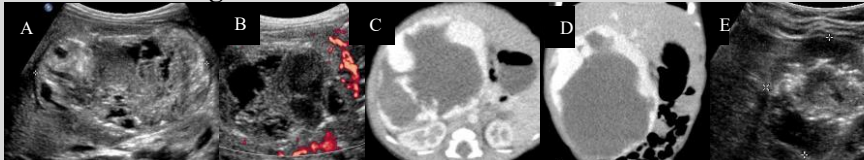


Fig A and B: Abdominal ultrasound in a 23-day-old baby shows large right hepatic lobe heterogeneous mass with septations. Color Doppler US demonstrates a hypovascular mass with vascular flow around its perimeter.

Fig C and D: Axial and coronal contrast-enhanced CT images show a relatively hypovascular mass with nodular peripheral enhancement.

Fig E: Ultrasound after 4 months shows involution of the mass. These findings are compatible with an infantile hemangioendothelioma.

Conclusion

The clinical presentation of intra-abdominal cystic lesions in the newborn is often non-specific. Awareness of the differential diagnosis and the ultrasonographic signs is essential. Many of these lesions have characteristic features on ultrasound that aid the radiologist in making a specific diagnosis. The role for other imaging studies may sometimes be indicated.

- References**
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