Multilocular cystic renal tumour

1-day-old female patient from a twin pregnancy. Physical examination was normal, however, laboratory data
demonstrated moderate anaemia (haemoglobin 7.9 g/dl). The neonatologists decided to transfuse the patient, and
an umbilical venous catheter was inserted. All prenatal ultrasounds were normal, and the delivery of the twins was
uncomplicated. The male sibling was healthy.

Imaging Findings:
An abdominal ultrasound was performed to study the anaemia and to rule out vascular catheter-related
complications. A 3.0 x 2.5 cm well-defined multiloculated mass was seen in the mid-pole of a slightly enlarged right
kidney. There was no associated pelvicalyceal system dilation.
Chest and abdominal X-rays were normal.
An abdominopelvic CT exam with IV contrast confirmed the sonographic findings: a cystic mass with fine,
moderately enhancing internal septations was seen to extend into the middle part of right kidney. The mass was
clearly separate from the right adrenal gland. No other abnormality was identified.
Due to the age of the patient and the imaging findings, a diagnosis of cystic variant of mesoblastic nephroma was
suggested, with a multilocular cyst renal tumour being the differential diagnosis.
Right nephrectomy was performed and pathology confirmed a cystic nephroma.
The patient was asymptomatic on follow-up after 7 months.

Discussion:
Mesoblastic nephroma (MN) is the most common solid renal neoplasm in the neonate. Ossifying renal tumor is
differentiated from MN by the presence of ossified elements. Multilocular cystic renal tumour (MCRT) has a biphasic
age and sex distribution, affecting young boys (between 3 months and 4 years) and women older than 40 years of
age.

MCRT is an uncommon, nonhereditary and benign [1] neoplasm of uncertain cause. It is usually unilateral.
Pathologic findings include an encapsulated mass containing multiple non-communicating epithelial-lined cysts
separated by fibrous septa. Histologically, there are two types: cystic nephroma (CN), with mature septal elements,
and cystic partially differentiated nephroblastoma (CPDN), with immature septal elements (blastemal cells) and may have aggressive behaviour.

Foci of Wilms may be found in the septa or cyst wall.

Children usually present with a palpable, unilateral and painless abdominal mass. Haematuria, urinary tract infection or hypertension are less frequent.

CN and CPDN are histologically distinct but anatomically and radiologically identical and can be lumped under the term MCRT. Histopathological examination provides the final diagnosis.

Radiographs may show a large renal mass with displacement of adjacent structures. Calcification is uncommon. US is often the initial modality used to evaluate abdominal masses. Typically, MRCT appears as a non-communicating multicystic intrarenal mass with no solid elements and there is a claw of normal-appearing renal parenchyma at the periphery of the mass.

On CT, MCRT appears as a well-circumscribed, encapsulated and intrarenal mass containing multiple fluid locules and interspersed septa with variably enhancing and no excretion of contrast agent into the loculi. Thickened, nodular or intensely enhancing septa or walls should raise a suspicion of malignancy (e.g., Wilms tumour). US better delineates the internal architecture than does CT, especially if the septa are thin and do not enhance vigorously.

US and CT are the commonly used imaging modalities in evaluating and allow preoperative diagnosis of renal tumours, appropriate surgical planning and patient follow-up. MR can also help characterise these lesions and show the extent.

CPDM and CN are indistinguishable on all imaging modalities but both of them are successfully treated by nephrectomy alone. However, CPMD can recur locally if excision is incomplete.

Metastasis or local recurrences have not been reported in cases of CN. The prognosis is excellent.

Radiology, together with clinical and epidemiological data, enables the diagnostic work-up of pediatric renal tumours. Histological diagnosis remains indispensable.

Differential Diagnosis List: Multilocular cystic renal tumor (cystic nephroma), Cystic Wilms’ tumor, Cystic renal cell carcinoma, Cystic mesoblastic nephroma, Multicystic dysplastic kidney.

Final Diagnosis: Multilocular cystic renal tumor (cystic nephroma).

References:


Description: Images of the right renal fossa show an intrarenal mass with multiple anechoic spaces separated by septa without solid elements. A beak of compressed upper pole renal parenchyma (arrows) is seen adjacent to the mass. Origin: Department of Radiology, Complexo Hospitalario Universitario de Ourense, Spain.
Description: Renal vasculature and inferior vena cava (not shown) demonstrate no vascular involvement. Origin: Department of Radiology, Complexo Hospitalario Universitario de Ourense, Spain.
**Figure 3**

Description: Radiograph of the thorax and abdomen shows no abnormalities. **Origin**: Department of Radiology, Complexo Hospitalario Universitario de Ourense, Spain.
**Description:** Axial enhanced CT image shows a low-attenuation right renal mass with thin septations. The septa enhancement is moderate and the cysts does not accumulate contrast material. The left kidney appears normal. **Origin:** Department of Radiology, Complexo Hospitalario Universitario de Ourense, Spain.