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Case Report
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Navigating Uncertainty: A Case Report of Simple Renal Cyst in an Infant

*Nkika J[1], Bowah C[2], Tumain N[2] and Ngowi N[2]**

[1]Department of Surgery, Muhimbili National Hospital (MNH), Tanzania

[2]Department of Surgery, Muhimbili University of Health and Allied Sciences (MUHAS), Tanzania

Abstract

Introduction: Solitary Simple cysts are rare in children. They are usually asymptomatic, so they are incidentally detected by imaging performed for suspected urinary tract infection or for other reasons unrelated to the urinary tract.

Case Report: We present a case of a 1-month-old male baby, who was referred from primary health facility, presented with history of abdominal distension for 3 days accompanied with vomiting and difficulty in passing stool. He was clinical stable with palpable left flank mass, where abdominal ultrasound done revealed intraabdominal anechoic mass with features more suggesting of mesenteric cyst. Explorative laparotomy was done, left renal cyst was found on the inferior pole, mobilization of the renal cyst, and then de roofing the cyst was done.

Conclusion: Simple renal cysts in infants represent a rare entity with diverse clinical presentations and management considerations. Since surgical intervention may be warranted in cases of symptomatic cysts, requires high suspicious index for clinical diagnosis in newborns.

Keywords: Simple renal cyst; Infant; Ultrasound

Introduction

Simple renal cysts are fluid-filled sacs located in the kidney parenchyma. Although they are commonly observed in adults, their occurrence in infants is very rare being found in a small percentage of cases, 0.2% to 2% prevalence during childhood [1]. Renal cysts may appear as a benign or malignant, focal, multifocal, unilateral, or bilateral, and congenital or acquired form.

Several classifications of cystic kidney pathology have been proposed ranging from the historical classification of Potter to more recent ones, the latter mainly based on the distinction between hereditary and non-hereditary diseases [2]. The etiology of renal cysts is unknown. However, there are some theories on the mechanism of development of renal cyst, from hypothesis suggests that focal ischemia in a renal tubule causes localized obstruction to calyceal diverticula that have lost contact with the adjacent calyx.

The role of imaging, and especially of Ultrasound (US), is to contribute to establishing or ruling out a diagnosis in the least invasive way for young patients. Ultrasound is the first-line modality for investigating kidney cysts, which appear as anechoic areas in the renal parenchyma. An accurate echo-graphic assessment of neonatal and pediatric renal cystic pathology examines both cystic characteristics and the general appearance of kidneys such as morphology, size, and echo-structure [3].

The vast majority (95%) of children remain asymptomatic with simple renal cysts therefore the management is largely conservative [4]. Symptomatic renal cysts present with discomfort, flank pain, hematuria or a palpable mass related directly to the cyst. The surgical strategy in symptomatic patients varies from a minimally invasive procedure that is a percutaneous puncture with or without sclerotherapy to either marsupialization, total cyst resection, deroofing or nephrectomy by laparoscopy or laparotomy [5].

Case Presentation

A 1-month-old male baby, who was delivered at term, with birth weight of 2.5 kg referred from primary health facilities to tertiary health facility with history of blood transfusion prior to referral, presented with history of abdominal distension for 3 days. The distension started gradually and

Correspondence:
Novath Ngowi, Department of Surgery, Muhimbili University of Health and Allied Sciences (MUHAS), P.O. Box: 65001, Dar es Salaam, Tanzania, Tel: +255712330754;

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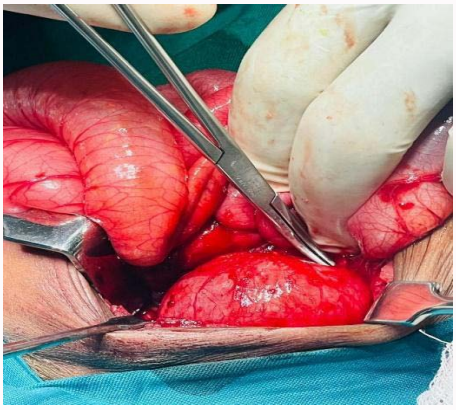

Figure 1: Intraoperative findings of the left renal cyst with large bowel adhesions.

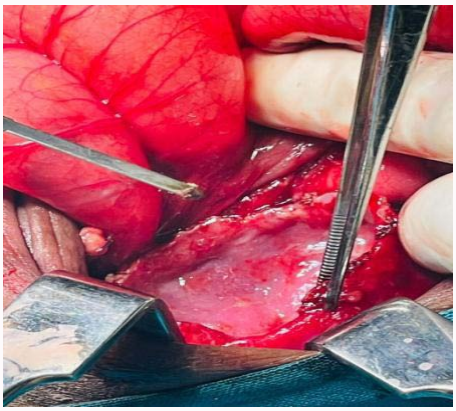

Figure 2: Post cyst de-roofing with normal renal tissue seen at the base of the cyst.

progressive increasing in size associated with history of vomiting recently breastfeed, failure to pass stool. Vomiting was non-projectile in nature; however, he had no history of fever or history of reduced urine output no blood in urine. Mother reported that the baby passed meconium within 24 h after delivery.

Clinical findings

On general examination the baby was clinically stable however per abdominal examination, had generalized distended abdomen, moves with respiration, visible veins, umbilicus was centrally located, he had soft abdomen with palpable mass on the left lumbar region, measured about 7 cm by 8 cm in greatest dimension while other system were found clinically normal.

Laboratory and imaging investigations

On workup complete blood count showed leukocytosis (32.42), with predominant rise of neutrophils (22.31) and moderate anemia (10 g/dl), increased serum creatinine levels 556 mmol/l. Abdominal ultrasound showed ascites with intraabdominal anechoic mass with features more suggesting of mesenteric cyst. The level of creatinine was progressively decreasing on follow-up. He was received broad spectrum intravenous antibiotics and transfused blood. The diagnosis of mesenteric cyst was reached planned to be optimized for explorative laparotomy.

Surgical intervention

Explorative laparotomy was done, through transverse supra-umbilical incision, abdominal cavity was entered, grossly distended large bowel, cecum to sigmoid colon seen, and left cystic mass arising from retroperitoneum. Adhesion of the descending colon to cyst was also observed, and persistent urachus. Adhesiolysis of the colon from the cyst, mobilization by dissection from white line of Toldt, left renal cyst on the inferior pole of left kidney was found, measuring about 7 cm by 8 cm, with normal renal tissue on superior pole, de roofing the cyst with margin of about 2 cm from the normal renal tissue done. Isolation of the persistent urachus and ligation was done. Hemostasis achieved then abdomen closed in layers and the baby was sent to the ward after recover from anesthesia (Figure 1, 2).

Discussion

Simple renal cysts in infants represent a distinct clinical entity with unique characteristics compared to their counterparts in adults. While they are relatively rare in this population, understanding their implications and management is crucial for pediatric surgeons and nephrologists.

The exact etiology of simple renal cysts in infants remains poorly understood. Unlike in adults where cyst formation is often attributed to age-related degenerative changes, the development of renal cysts in infants may involve different mechanisms. Some studies suggest that these cysts may arise from aberrations in nephrogenesis during fetal development, leading to the formation of cystic structures within the kidney parenchyma. Additionally, genetic factors may play a role, although specific genetic mutations associated with infantile renal cysts have yet to be elucidated.

Renal cysts in infants are frequently asymptomatic and are often incidentally detected during prenatal ultrasound screening or imaging studies performed for unrelated reasons. In rare cases, large or multiple cysts may cause symptoms such as abdominal pain, palpable abdominal masses, hematuria, or urinary tract obstruction [5]. However, these manifestations are relatively uncommon, as to the baby we report presented with progressive increasing abdominal swelling associated with history of vomiting and difficult in passing stool, features unrelated with renal cyst but its compression effect to adjacent structure.

The diagnosis of simple renal cysts in infants primarily relies on imaging modalities such as ultrasound and, in some cases, Magnetic Resonance Imaging (MRI). Ultrasound is the preferred initial imaging modality due to its non-invasiveness, lack of ionizing radiation, and high sensitivity in visualizing renal cysts. Sonographic findings are a well-defined anechoic formation with smooth, thin walls and posterior acoustic reinforcement, without signal at color and power Doppler [2] however in this report the ultrasound showed ascites with intraabdominal anechoic mass with features more suggesting of mesenteric cyst.

Management of simple renal cysts in infants is largely conservative, especially in asymptomatic cases. Close monitoring with periodic imaging surveillance is typically recommended to detect any changes in size or morphology. The cyst can be a surgical or non-surgical mass which can be identified using the Bosniak classification. This classification helps in the management of renal cyst once it has been diagnosed by CT scan but is rarely used in children due to the high radiation exposure with CT scanning [6]. Surgical intervention may be considered in symptomatic cases or when cysts lead to complications. Surgical options include cyst aspiration, sclerotherapy, or laparoscopic cyst decortication, with the

choice depending on the individual patient's clinical presentation and cyst characteristics while in the infant mobilization and de roofing of the cyst was done.

In conclusion, simple renal cysts in infants are uncommon entities that are typically benign and asymptomatic. Since surgical intervention may be warranted in cases of symptomatic cysts, requires high suspicious index for clinical diagnosis in newborns.

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