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CASE REPORT

Unilateral Renal Cystic Disease

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Abstract

Background: *Unilateral renal cystic disease of kidney is a non familial and non progressive disorder, characterized by replacement of the renal parenchyma by a cluster of multiple cysts with a normal contralateral kidney.*

Case: *A 2-day-old newborn baby came to the Urology Department of the Perinatology Department of Andalas University Hospital. The baby with prenatal ultrasound results showed unilateral hydronephrosis and multicystic kidneys. From the postnatal ultrasound, it was found: The right kidney was normal in shape and size; clear differentiation of the cortex and medulla; the pelvic calyx system was not dilated; No stones were seen; There were multiple cystic lesions with regular borders in the renal cortex, the largest cyst size was 5.5x4 cm. The left kidney was normal in shape and size; clear differentiation of the cortex and medulla; The pelvic calyx system was not dilated; No stones or sludge were seen. The impression of multiple renal cysts. The patient was followed up for renal function and cyst development.*

Conclusion : *This case highlights the importance of early diagnosis and follow-up in infants with unilateral renal cystic lesions. Differentiating URCD from other cystic renal diseases is essential for appropriate management and counseling. Further studies are needed to elucidate the pathogenesis and long-term outcomes of URCD.*

Keywords: *Unilateral renal cystic disease, renal cysts, newborn, ultrasound*

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INTRODUCTION

Renal cystic disease (RCD) is a heterogeneous group of conditions characterized by the abnormal formation of fluid-filled cysts within the kidney. These cysts can arise from various etiologies, including genetic, acquired, or unknown factors. The clinical presentation of RCD is highly variable, ranging from asymptomatic cases to severe renal dysfunction and associated systemic manifestations. The incidence of RCD spans a wide range, from rare genetic forms to more common sporadic occurrences. Some types of RCD can have life-threatening consequences, including progression to chronic kidney disease (CKD) and liver disease. [1,2]

Unilateral renal cystic disease (URCD) is a distinct subset of RCD characterized by the presence of multiple cysts confined to a single kidney. Unlike its more common bilateral counterpart, autosomal dominant polycystic kidney disease (ADPKD), URCD is typically non-hereditary and non-progressive. This condition involves the replacement of normal renal tissue with cystic structures, leading to a gradual decline in renal function. Key differentiating factors between URCD and ADPKD include the unilateral nature of cyst formation in URCD and the absence of associated extrarenal manifestations, such as hepatic and pancreatic cysts, in URCD.

While URCD is a relatively rare condition, its impact on affected individuals can be significant. The diagnosis of URCD often requires careful evaluation to exclude other renal cystic diseases, particularly ADPKD. Long-term follow-up is essential to monitor renal function and detect any potential complications. Although the exact cause of URCD remains unknown, ongoing research is focused on understanding its pathogenesis and developing effective management strategies. [1,3]

In addition to its impact on renal function, URCD can also affect the overall quality of life. Patients with URCD may experience pain, hematuria, or other symptoms related to the cysts. The psychological burden of a chronic kidney disease diagnosis can also be significant. Therefore, comprehensive care for patients with URCD should address both the physical and emotional aspects of the condition. This case report aims to describe a case of unilateral renal cystic disease (URCD), highlighting its clinical presentation and diagnostic challenges. By presenting this case, we aim to contribute to the limited literature on URCD, emphasizing the importance of differentiating it from other renal cystic diseases, particularly autosomal dominant polycystic kidney disease. Ultimately, this report seeks to raise awareness of URCD as a potential differential diagnosis in patients with renal cystic

CASE REPORT

A newborn baby aged 2 days old was consulted to Urologic Department from the perinatology department of Universitas Andalas Hospital. Previously the patient prenatally was consulted to urologic department Universitas Andalas Hospital by Maternal Fetal Medicine Department at the joint conference with diagnosed Hydronefrosis unilateral grade mild, multicystic right kidney, left kidney in normal condition and there were no abnormalities in other organs. From the prenatal ultrasound, impression; Hydronefrosis and multicystic kidney unilateral, DD/ Autosomal dominant Policystic Kidney Desase (ADPKD). Adviced management; postnatal

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reexamination for abnormalities of the kidneys and other organs, reguler follow up of kidney function.

After birth the baby condition was good, hemodynamically was stable, diuresis and kidney function test were in normal limit. From postnatal ultrasound found : The right kidney is normal in shape and size; the differentiation of the cortex and medulla is clear; the pelvic calyx system is not dilated; No rocks in sight; There were multiple well defined cystic lesions with regular edges in the renal cortex, the largest size of the cyst is 5.5x4 cm. The left kidney is in normal in shape and size; the differentiation of the cortex and medulla is clear; The pelvic calyx system is not dilated; No rocks or sludge in sight. Impression multiple renal cyst. Then the baby underwent outpatient follow up in urologic polyclinic of Andalas Universitas Hospital to follow up the urinary tract especially the condition of Kidneys.



Figure 1. Ultrasound Finding

DISCUSSION

Unilateral renal cystic disease (URCD) is a distinct renal anomaly characterized by the presence of multiple cysts within a single kidney. While it shares certain morphological similarities with autosomal dominant polycystic kidney disease (ADPKD), URCD is distinguished by its unilateral nature, absence of familial inheritance, and lack of associated systemic manifestations. [2,4]

Differentiating URCD from other cystic renal lesions is crucial for appropriate management. Conditions such as multilocular cystic nephroma, cystic renal cell carcinoma, and multicystic dysplastic kidney (MCDK) can mimic URCD on imaging studies. A careful evaluation of cyst distribution, renal parenchyma involvement, and renal function is essential to establish an accurate diagnosis. [4–6]

The pathogenesis of URCD remains largely unknown. While some theories suggest a developmental origin, the exact mechanisms underlying cyst formation in URCD are still under investigation. The morphological resemblance between URCD and ADPKD has led to speculation about shared genetic or developmental pathways. However, the absence of familial inheritance and extrarenal manifestations in URCD suggests distinct etiological factors. [1,2,7]

URCD is often asymptomatic, and patients may present with nonspecific complaints such as flank pain or hematuria. In some cases, URCD may be incidentally discovered on imaging studies performed for unrelated reasons. The clinical course of URCD is typically benign, with most patients

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experiencing stable renal function over time. [5,6]

Management of URCD is primarily conservative, with regular follow-up to monitor renal function and cyst growth. Surgical intervention is rarely indicated and is usually reserved for cases with complications such as intractable pain, recurrent infections, or rapidly enlarging cysts. Given the rarity of URCD, long-term follow-up studies are needed to better define its natural history and potential complications. [1–7]

CONCLUSION

This case highlights the importance of early diagnosis and close monitoring of unilateral renal cystic disease (URCD) in newborns. While generally benign, accurate differentiation from other cystic renal conditions is crucial for optimal management. Given the limited understanding of URCD's long-term implications, continued research and patient follow-up are essential to refine diagnostic and therapeutic strategies.

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