



A Rapidly Refilling Huge Renal Cyst: A Case Report

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Abstract

Cysts of the kidney are acquired lesions. It is likely that the diverticulum of the distal convoluted tubule is the source of these lesions, which commonly occur in the renal cortex. They are typically found as an incidental finding and often cause no symptoms and thus generally they do not need to be treated. When they are sufficiently large, they can cause a variety of clinical symptoms. The anomaly is generally considered harmless. Huge rapidly refilling renal cysts, however, are extremely rare. Our case report describes the case of a 56-year-old female who initially presented with an extraordinary abdominal distension that gradually worsened until she was seen by our urological department after two months from initial presentation. It is not only the large size of this cyst (7000 ml) that makes it unique, but also the rapid refilling of the cyst with serous fluid (48 hours) that led us to question whether it is merely connected with the renal collecting system.

Keywords: *Renal cyst, Kidney cyst, Huge cyst, Refilling cyst.*

Case Presentation

A 56-year-old female patient was admitted to our department of urology at two months after initial presentation for early satiety, difficulty breathing, and indeterminate significant abdominal distension that was getting worse over time [Image 1]. The patient had a past medical history of asthma and hypertension. Urological symptoms were absent. As reported by a positive fluid thrill sign, a hugely distended tough abdomen was painless on palpation and percussion. There were no abnormalities in hematology, biochemistry, urine analysis, or serum tumor markers. An exceptional giant renal cyst measuring 220x 229x 234 mm was found on the right kidney following a computed tomography (CT) of the abdomen and pelvis [Figure 1]. The cyst was eccentric and broadly spherical, displacing the kidney posteriorly. It had a slightly thickened, enhancing wall with no focal nodularity and no septation or internal complexity (Bosniak 2F). The cyst contents on unenhanced CT averaged 19 HU and were echo-free on subsequent ultrasound assessment. The right kidney appeared compressed, slight prominence of renal pelvis and calyces with preserved parenchyma. We performed an aspiration under ultrasound guidance and gained approximately 7000 ml of serous fluid without any complications. Forty-eight hours later, the patient presented with the

same complaint and CT scan revealed that the right cyst refilled almost to the same extent as before. After a second aspiration, 6000ml of serous fluid were obtained without complications. The patient presented again two weeks later with the same complaint.

Upon admission, Ultrasound guided pigtail drain was inserted, 6000 ml of serous fluid drained until the cyst was completely collapsed and the drain was clamped. A computerized tomography urogram (CTU) was performed and showed that the right kidney was excreting contrast normally, but none of it passed into the collapsed cyst remnant [Figure 2]. Forty-eight hours later, CT non-enhanced showed the cyst had refilled to similar extent as before with no visible contrast present in the cyst. 200 ml of contrast (Omnipaque 300) was injected into cyst through drain, fluoroscopy was done 30 minutes after, and no contrast was seen outside the confines of the cyst [Figure 3]. The cyst was drained, and the drain was removed. Lab tests on fluid revealed microbiological and creatinine levels reflecting serum levels of pH, sodium, urea, and creatinine rather than levels that would be expected in urine, as well as no cytological evidence of malignancy. Dimercaptosuccinic acid (DMSA) scan showed normal left renal uptake (89%) and poor uptake of the right kidney (11%). A robotic cyst drainage (7000mls) and simple nephrectomy was performed subsequently on the right kidney. On histopathology, there was a large unilocular cyst with a dense, band-like zone of capillary vessels subjacent to the cyst wall in areas. The cyst lumen did not contain any preserved lining cells and there were no features of malignancy. No major post-operative complications were reported by the patient; rapid weight loss and appetite restoration occurred within days.



Image 1: Significant abdominal distension caused by huge right renal cyst

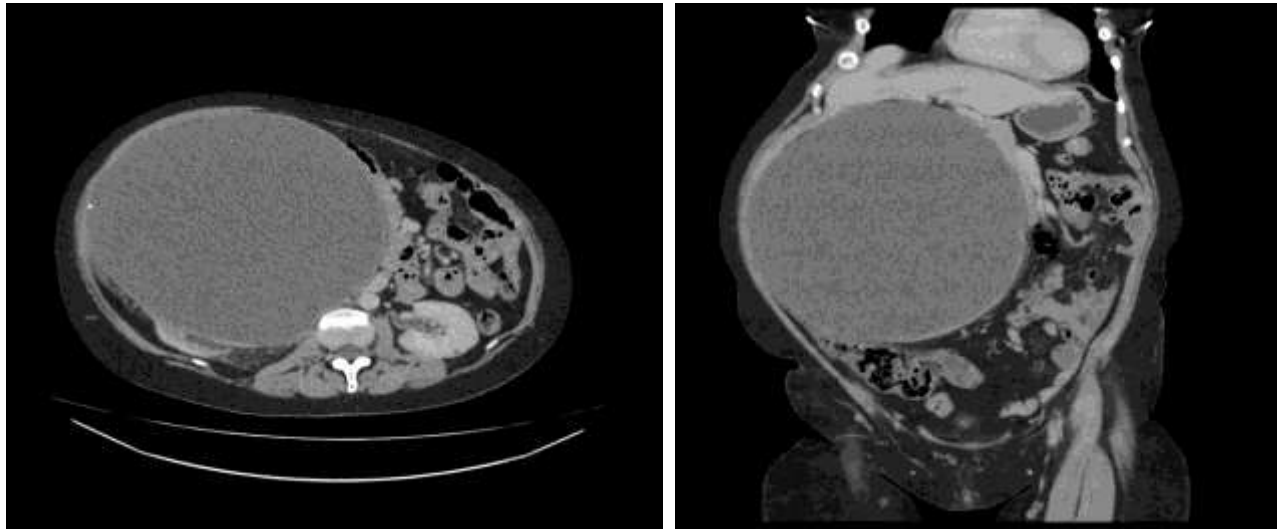


Figure 1: Computed Tomography (CT) axial and coronal view imaging of the abdomen and pelvis showing a giant renal cyst measuring 220 X 229 X 234mm on the right kidney.



Figure 2: Computerized Tomography Urogram (CTU) coronal view imaging showing right kidney excreting contrast normally with no passage of contrast into the collapsed cyst remnant.



Figure 3: Fluoroscopy imaging 30 minutes after contrast injection into cyst with no contrast seen outside confines of the renal cyst.

Discussion

Among kidney lesions, renal cysts are the most common. It has been reported that approximately 40% of all patients undergoing imaging have renal cysts. There are several forms of cystic renal disease, including focal, multifocal, unilateral, and bilateral. An acquired or congenital renal cyst can develop. Commonly idiopathic, the acquired form is the most common [1,2]. The formation of renal cysts may result from an infection, from multisystem diseases like Von-Hippel-Lindau and tuberous sclerosis, or from end-stage renal disease. Furthermore, patients with hypertension, obesity, and smoking history have a higher prevalence of the disease [3]. They can be found on the surface or within the kidney, round or oval in shape, with a smooth outline lined with a flattened epithelium and filled with a clear or straw-colored fluid. [4]. There is a wide variety of renal cysts, ranging from benign to malignant. Adult renal cysts are classified according to the Bosniak classification, which was introduced in the late 1980s to standardize renal cyst characterization and management [5,6,7]. Depending on the etiology of the renal cyst, the prognosis varies greatly. Compared to Bosniak type I cysts, Bosniak type IV cysts are significantly more likely to harbor malignancy with a significantly worse prognosis.

There are extremely few cases of giant renal cysts measuring more than 15 cm [8]. Our patient's cyst measured 220 X 229 X 234mm. We reported a case in which a giant cyst was visible on inspection and caused positive fluid thrill sign in a patient presenting with progressive abdominal distension, which might be mistaken for obesity or ascites. Imaging scans such as ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) are available for the diagnosis of renal cysts. Cysts can be treated percutaneously or surgically using aspiration (with or without sclerosing agent), marsupialization, or unroofing (laparoscopic or open). [9]. In the treatment of benign renal diseases in which renal function has been permanently lost, laparoscopic simple nephrectomy is indicated. [10]. There is little medical literature on this type of giant cyst. Brown et al. [19] reported an abdominal distention associated with a 25 cm giant renal cyst. Additionally, a large renal cyst mimicking ascites has also been reported [11]. We believe that this is the first rapid refilling cyst reported in medical literature, and the third case of a giant renal cyst mimicking ascites in the literature. In such a non-functioning kidney, the authors concluded that robotic right renal cyst drainage and simple nephrectomy were the best options to prevent patient suffering and ensure rapid recovery time with minimal scarring, after multiple pointless aspirations and drainage of the right renal cyst.

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