

Giant hydronephrosis: case report and review of literature

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Introduction

Giant hydronephrosis (GH) was described by Sterling in 1939 as the presence of more than one litre of urine in the collecting system of the kidney (1, 2). It is seen more often in males than in females (2.4:1) and more often on the left than on the right side (1.8:1) (1). GH usually occurs secondarily due to ureteropelvic junction obstruction (UPJ) (3). The other causes are: stone disease, trauma, renal ectopia and ureterovesical junction obstruction (4, 5). Most patients are asymptomatic because GH develops gradually over a long time but they usually have abdominal enlargement (4). Symptoms

Giant hydronephrosis (GH) is a rare entity that should be considered in the differential diagnosis of huge intraabdominal cystic masses. A hydronephrotic kidney usually contains 1–2 litres of fluid in the collecting system. We report a case of a 24 year old man with a hydronephrotic left kidney, from which 14 litres of fluid was surgically drained. In this report the importance of computed tomography in the diagnosis and differential diagnosis of giant hydronephrosis to other cystic masses is emphasised. **Conclusion.** GH should be included in the differential diagnosis of huge intraabdominal cystic masses. CT alongside MR should be the method of choice.

Key words: Hydronephrosis, Computed tomography.

that arise are due to compression of the surrounding organs. Usually the first signs of disease are: opstipation, dysuria, obstructive jaundice (6). Possible complications are: hypertension, renal failure, malignant change and rupture of the kidney (7-9).

Case report

A male patient, 24 years old was admitted to the Department of Internal Medicine because of abdominal distension, abdominal pain, opstipation and dysuria over the last two months. The abdomen was tense and above the patient's chest level, with a palpated mass in the left hemiabdomen. Apart

from 10-15 leucocytes with some bacteria in the urine and mild sedimentation increase, the other laboratory tests, including creatinine and blood urea, were within the normal range. Abdominal ultrasonography revealed a huge cystic mass in the retroperitoneum on the left. Seven litres of clear fluid were drained from the cystic mass under ultrasound control. The cystic mass was continually drained daily for one month. Every day up to two litres of fluid were drained off. The patient was discharged from hospital with the diagnoses: *Cysta per magna abdominis congenita* and *Agenesio renis l. sinistri*. Seven days after removing the drainage catheter, the patient was re-admitted to hospital for the same reasons. Urgent computed tomography (CT) of the abdomen was performed with a 6-row multidetector scanner (MDCT Simens Emotion). Unenhanced and enhanced CT scans with sagittal and coronal reconstruction revealed a huge hypodense, fluid density area, 350x250x200 mm, with a significant peripheral enhancement which occupied the entire left hemiabdomen from the diaphragm to the pelvis (Figure 1, 2, 3).

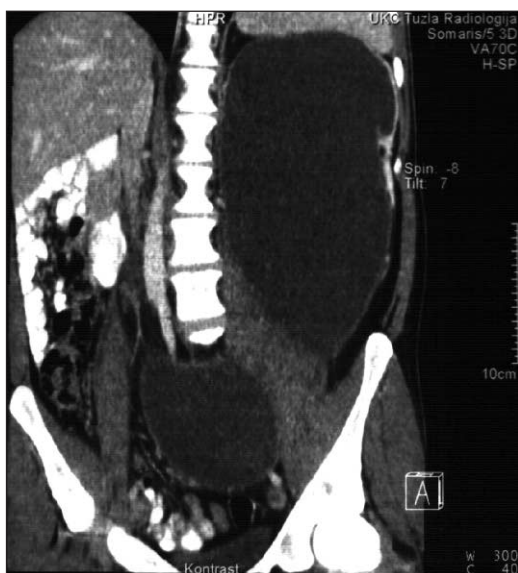


Figure 1 Coronal CT multiplanar image visualize a cystic mass occupying the left hemiabdomen and crossing the midline on the right. The mass is displacing the intestine to the right.

CT exam showed an extremely enlarged hydronephrotic left kidney with an enormously dilated collecting system and considerably reduced, partly immeasurable parenchyma, although with some signs of secretion. The hydronephrotic kidney displaced the intestine and pancreas to the right with compression on huge abdominal and right renal vascular structures (Figure 2, 4). The ureter of the kidney was not dilated. On coronal CT images of the caudal part of renal pelvis, a structure was shown that could correspond to the ureteropelvic junction with high insertion of the ureter.

After partly evacuation of the urine, an emergency left nephrectomy was performed. From the hydronephrotic kidney 14 litres of urine was evacuated, after the kidney measured 240x170x150 mm (Figure 5). The kidney was adhered to adjacent organs. The hilum of the kidney was identified as high with high insertion of the ureter and gracile renal hilar vessels. The histopathological examination confirmed hydronephrosis of the left kidney with chronic pyelonephritic changes and microabscesses (Figure 6). There was no



Figure 2 Oblique CT multiplanar image showing a giant cystic mass with compression of vascular structures

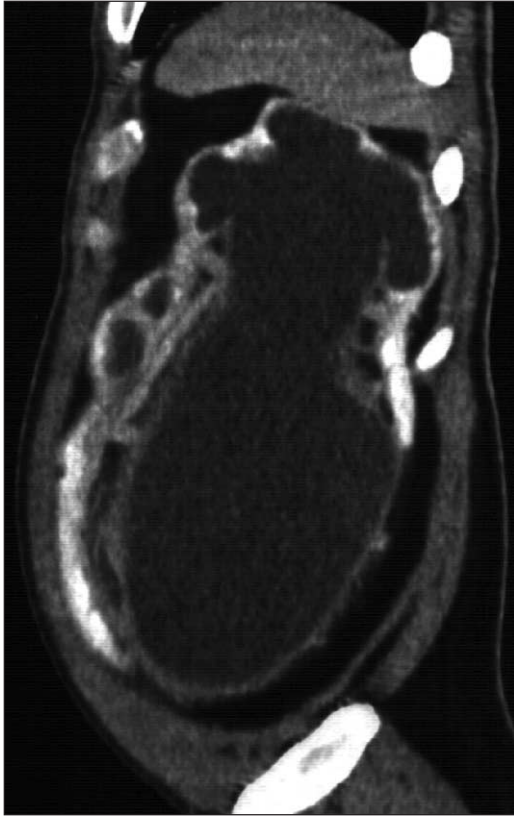


Figure 3 Sagittal CT image of extremely enlarged left kidney with enormous dilated collecting system and considerably reduced parenchyma that shows signs of secretion



Figure 4 Axial CT image shows cystic mass displacing intestine

evidence of malignant growth. The renal pelvis was 200 mm in diameter. The ureter was not widened nor was stenosis of the uretero-

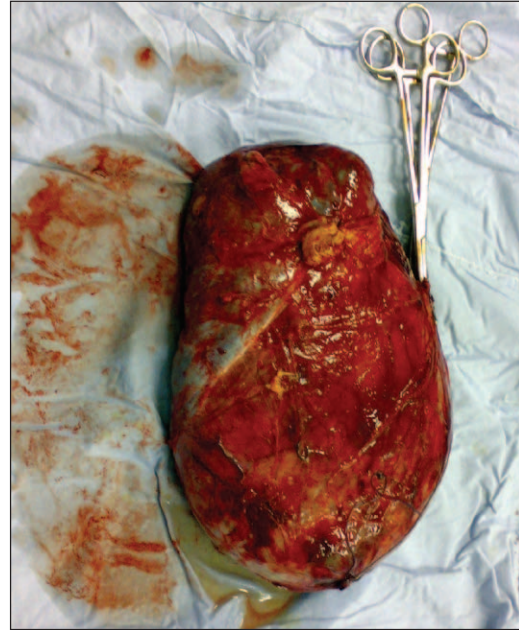


Figure 5 Kidney after 14 litres urine evacuation



Figure 6 Pathologic specimen

pelvic junction found. The histopathological examination of ureter revealed an ureteritis.

Discussion

Giant hydronephrosis is rarely seen in adults. In literature more than 500 GH cases have been published, and in six cases malignant alteration was proven (1). A hydronephrotic kidney usually contains no more than 1–2 li-

tres of fluid (1, 2, 10). Chiang et al. reported 4 cases of GH containing 1900 ml, 3400 ml, 2100 ml and 3200 ml (1). Turgut et al. 2007 reported a case with 5000 ml of fluid in the collecting system (11). Schrader et al. reported GH with a kidney of more than 15 kg (12). Yilmaz et al. reported hydronephrosis in a 12 year-old boy with 13.5 litres of urine in the collecting system (13). As in our case the hydronephrotic kidney contained 14 litres of urine, where previously the largest amount was reported by Schrader et al. (12).

The most common cause of UPJ that usually induces GH is the high insertion of the ureter, and not congenital stenosis (3). In our case, the ureter, which was not dilated, indicated the UPJ obstruction. Some coronal CT multiplanar images and surgical findings proved the high insertion of the ureter while the histopathological finding eliminated the narrowing of the UPJ as the possible reason for GH.

The first radiological method in GH diagnostics is abdominal ultrasonography but in many cases differential diagnosis between GH and another cystic formation is difficult. The list of differential diagnosis is wide and includes: ovarian cysts, retroperitoneal haematoma, hepatobiliary cysts, mesenteric and hepatobiliary cysts, pseudomyxoma, renal tumour, retroperitoneal tumours, ascites and splenomegaly (10).

In most cases, CT and magnetic resonance (MR) are the methods of choice in the differential diagnosis of GH with other intraabdominal cystic masses, especially if renal parenchyma is partially preserved and functional, with contrast enhancement. Even if contrast enhancement is absent due to the atrophy of the renal parenchyma, GH should be included in the differential diagnosis of intraabdominal cystic masses.

Conclusion

GH should be included in the differential diagnosis of huge intraabdominal cystic masses.

es. CT alongside MR should be the method of choice.

Conflict of interest: The authors declare that they have no conflict of interest. This study was not sponsored by any external organisation.

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