Giant hydronephrosis secondary to ureteral calculi in adults: Case report and literature review

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ABSTRACT

Giant hydronephrosis is rare to be seen in adults and is often the cause of misdiagnosis. It is usually caused by ureteropelvic junction syndrome. We here report the unusual case of a patient hospitalized with giant hydronephrosis secondary to ureteral calculi, associated with impaired general condition. Diagnosis was based on CT scan. The patient underwent deferred nephrectomy after percutaneous drainage.

Introduction

Giant hydronephrosis is a rare entity. Its etiologies are variable. It was first arbitrarily defined by Sterling in 1939 as the presence of more than 1000 ml of fluid in the collecting system. In 1979 Crooks et al., defined giant hydronephrosis as of renal origin occupying half of the abdomen or extending over the midline with the length of the kidney exceeding 5 vertebrae. We report a case of giant hydronephrosis secondary to lithiasis with a review of the aetiological and therapeutic aspects.

Case presentation

A 63-year-old patient, hypertensive, received in a table of painless abdominal mass associated with fever, vomiting, unstated weight loss, and constipation evolving for about 1 year. The physical examination objectified an enormous left abdominal mass, of liquid aspect, giving the lumbar contact and overflowing on the median line. The biology had objectified a good renal function with a creatinine level of 10 mg/l, a positive urine test, a CRP 200 mg/l, and anemia with a hemoglobin level of 9 g/dl. Ultrasound revealed a large left multi cystic kidney with poor cortico-medullary differentiation.

The morphological assessment, in particular, the Uroscanner revealed voluminous left hydronephrosis, compressive, occupying the entire retroperitoneal cavity and extending to the pelvis (Fig. 1).

The patient initially benefited from percutaneous nephrostomy which drained over 8 L of fluid from the dilatated collecting system, combined with antibiotic therapy for 2 weeks with a good response. The second stage of therapeutic management was nephrectomy (Fig. 2). The evolution was marked by an improvement in general condition and a resumption of activity after a few weeks.

Discussion

The first case of giant hydronephrosis reported in the literature by Glass in 1749 contained 15 L of urine found in a postmortem woman. Giant hydronephrosis is characterized by a significant dilation of all the excretory cavities of the kidney, most often with very significant atrophy of the renal parenchyma, which can be preserved depending on the evolution of hydronephrosis. The destruction of the parenchyma by the obstruction can be done gradually (discovered at a late age), as it can be done quickly without any sign of alarm. At the final stage, hydronephrosis constitutes only a pocket compartmentalized by partitions, remnants of the dilated calyces. It contains unconcentrated aqueous urine and its wall is formed by the attachment of the excretory tract to the kidney capsule.

The most common cause of giant hydronephrosis is pyelo-ureteral junction syndrome. The second cause is represented by obstructive stones as in our case, followed by congenital malformations, renal ectopy and ureteral tumors have been reported.3

The clinical symptoms of these patients are not specific but generally involve an increase in abdominal girth due to the presence of a mass in the flank. Other symptoms have been described in the literature, including flank pain and hematuria.4 The plain abdominal x-ray shows a

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water-toned mass occupying half of the abdomen with repression of the digestive structures. Intravenous urography, when performed, shows either an obstructive syndrome with delayed secretion and progression of opaque urine or a completely mute kidney depending on the evolution of symptoms and etiology. It also helps to assess the function of the contralateral kidney. Ultrasound shows an extensive cystic mass of transonic contents with a few incomplete septa. Lithiasis can be visualized. The CT scan is the key examination for the diagnosis and it also helps to appreciate the importance of hydronephrosis and to clarify its etiological diagnosis. It is performed before and after injection of iodine, Sections without injection look for associated stones which are most often rounded stasis stones with regular contours. The iodine injection assesses the thickness of the parenchyma and shows kidney function. CT can also rule out certain aetiologies responsible for a significant increase in the volume of the abdomen: massive ascites, intraperitoneal cysts, renal or adrenal retroperitoneal cysts, pancreatic pseudocysts, and ovarian cysts or tumors.

Nephrectomy is usually the treatment of choice, as in most cases there is irreversible damage to the kidney and collecting system. A conservative and etiologic treatment may be attempted when the kidney has a parenchymal thickness of more than 1 cm and a glomerular filtration rate of more than 20 ml/minute, especially if hydronephrosis occurs bilaterally or on one kidney only or if the contralateral kidney alone can not ensure normal renal function. Most reported cases are treated by a progressive nephrostomy tube decompression and open nephrectomy as in our case.

Conclusion

Percutaneous drainage with deferred nephrectomy in case of giant hydronephrosis represents a reliable therapeutic approach, it allows a good symptomatic recovery and facilitates the secondary surgical approach.

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Fig. 1. Axial CT scan showed severe left hydronephrosis crossing the midline with thinning of renal parenchyma.

Fig. 2. (A, B) Macroscopic specimen shows a giant hydronephrotic kidney with severe thinning cortex secondary to a lithiasis

water-toned mass occupying half of the abdomen with repression of the