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## A case of giant hydronephrosis on obstructive ureteral lithiasis

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### Abstract

Adult giant hydronephrosis is a rare clinical entity. His clinical diagnosis is not obvious. We report a case of a 42-year-old man, who was admitted for a large intra-abdominal mass, painless, evolving for about 8 months. The clinical examination showed a very distended abdomen. The abdominal CT confirms the diagnosis of left giant hydronephrosis on ureteral lithiasis. Surgical treatment consisted of an emergency percutaneous nephrostomy followed by a secondary left nephrectomy. The evolution was favourable and the aftermath were simple.

**Keywords:** adult, giant hydronephrosis, lithiasis, CT scan, nephrectomy

### Introduction

The definition of a giant hydronephrosis was established in 1939 by Sterling as a major pyelocaliceal dilatation resulting of accumulation of more than 1,000cc of fluid in the collecting system <sup>[1]</sup>. Giant hydronephrosis in adults is an unusual case, a serious situation responsible for the destruction of renal parenchyma <sup>[2]</sup>. The diagnosis can performed by abdominal ultrasound or CT scan. According to the literature, it is often secondary to an obstruction of the ureteropelvic junction <sup>[3]</sup>. Our objective is to report a case of left giant hydronephrosis secondary to a left ureteral obstruction by lithiasis.

### Case report

This was a 42-year-old patient, without particular history, referred in Emergency Unit care in Soavinandriana Hospital Center for a voluminous abdominal mass, evolving since 8 months, sometimes associated with stress dyspnea. Abdominal examination revealed a voluminous distended abdomen (Figure 1). The percussion showed an extensive dullness of the abdominal cavity. The biological examination showed a moderate high creatinine levels (135µmol/l). The remains of the biological tests were without particularity. The abdominal ultrasound showed a giant hydronephrosis in the abdominal cavity. The abdominal-pelvic CT scan without injection of iodinated contrast material showed a giant left hydronephrosis occupying almost the entire abdominal cavity, measuring 300x150x200mm in volume (Figure 2) with an image of dilation of the left excreta pathways upstream of an obstructive pelvic ureteral lithiasis of 44x36mm of large transverse axes over 60mm in height (Figure 3). The left renal parenchyma is laminated, multicompartimentalized, pushing the digestive handles to the right, contrasting with the right kidney with good cortico-medullary differentiation (Figure 4). A percutaneous nephrostomy was performed urgently, allowing 16500ml of urine to be evacuated. Left nephrectomy by left lumbotomy was performed 3 weeks later (Figure 6). The post-operative follow-up was simple.

### Discussion

A giant hydronephrosis is a rare clinical entity <sup>[2]</sup>, defined as a presence of a fluid collection of more than 1 liter in collecting systems <sup>[1]</sup>. In children, Crooks *et al.* define a giant hydronephrosis as a large dilated kidney that occupies a hemi-abdominal area, reaches or crosses the midline, and at least 5 vertebrae in length <sup>[4]</sup>.

There have been few cases reported in the literature. Currently, about 600 cases have been reported in the literature since the first description by Ochsner in 1746 [3]. The most cases reported in the literature are in children. There were a few cases of giant hydronephrosis of adult. Giant hydronephrosis is more common in men than women and more frequent on the left side than on the right side [5]. In the literature, the main causes of giant hydronephrosis are congenital abnormalities of the pyelo-ureteral junction, which are found in 80% of cases [6]. The majority of cases of adult giant hydronephrosis result from obstruction of the urinary excretory tract by a lithiasis [6, 7].

The clinical diagnosis of giant adult hydronephrosis is not obvious. In front of a progressive increased of abdominal volume, the clinical signs is similar of an ascitis or an evolution of a tumor process [7]. The dullness heard on percussion is similar to an ascitis. Imaging examinations, including ultrasonography and abdominal CT-scan, confirmed the diagnosis for showing an excessive dilation of pyelocalceal and renal cavity. According of Lemaître's study, abdominal ultrasonography is the first imaging examination in front of lumbar pain to search an ureteropelvic obstruction [8]. Nevertheless, the majority of cases reported in the literature were diagnosed with an abdominal-pelvic CT-scan. In addition, CT-scans can also be used to assess the condition of the renal parenchyma and to make the differential diagnosis with a large intra-abdominal cystic

mass or a voluminous ascitis [9]. Other useful diagnostic imaging techniques include abdominal radiography with observable radiopaque lithiasis, intravenous urography (IVU) showing no excretion in the affected kidney.

According the cases reported in the literature, the quantity of fluid evacuated varies from 1000ml of urine to 24000ml : 1500ml in Noh's case report [7], 2740 ml in Diallo's case report [2], 5000ml in Wu's case report [10], and 24000ml in Wang's study [11]. In our case, there were 16500 ml of fluid evacuated during urinary nephrostomy drainage.

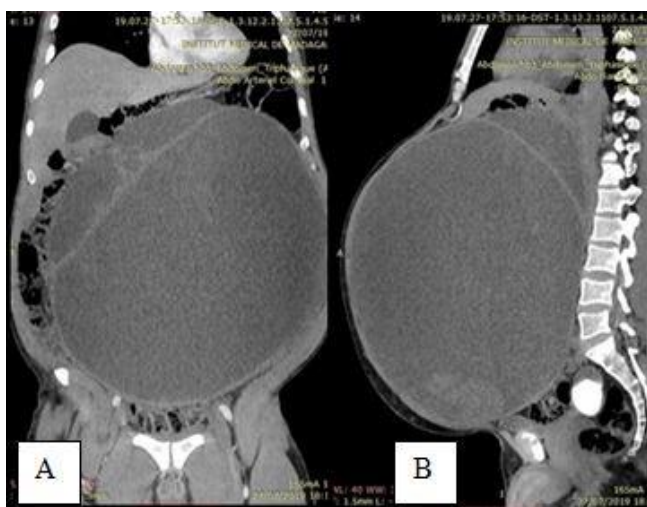
According Jiang's study, outside of destruction of renal parenchyma, there were a potential risk factor for pulmonary thromboembolic disease in patient who presented a giant hydronephrosis [12]. So, it's important to perform a color doppler ultrasound in preoperative patient to detect this risk of pulmonary thromboembolic disease.

The surgical treatment of giant hydronephrosis is a nephrectomy is when there are a total destruction of renal parenchyma with an excess urinary retention. For some authors, it is more appropriate to perform a percutaneous nephrostomy before to make a decision of nephrectomy and discuss the possibility to nephrectomy conservative surgery based on renal function [2, 12].

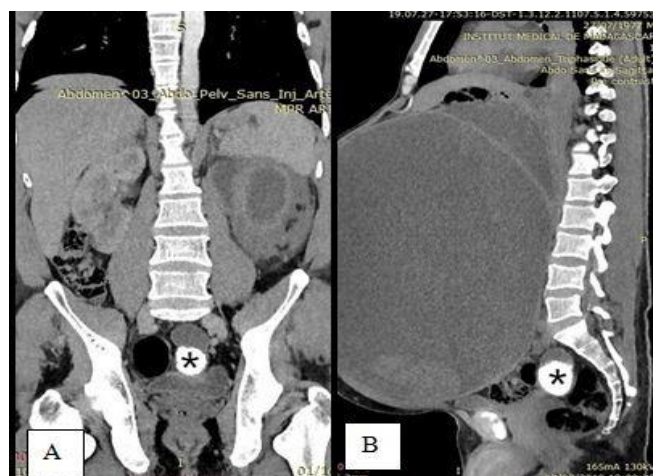
**Figure**



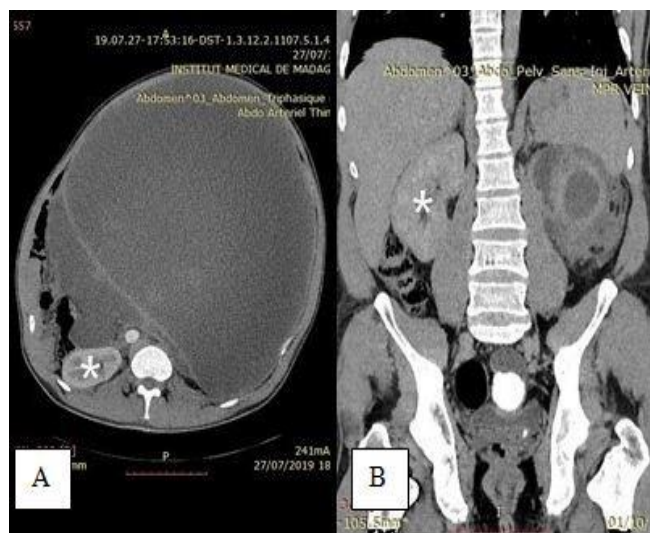
**Fig 1:** Increase in the volume of the patient's abdomen on inspection



**Fig 2:** Left giant hydronephrosis in abdominal cavity seen on a coronal (A) and sagittal (B) reconstruction of an abdominal-pelvic scanner without injection of iodized contrast agent



**Fig 3:** Voluminous hyperdense lithiasis well limited to the pelvic urethra (\*), view of coronal (A) and sagittal (B) reconstruction of an abdominal-pelvic scanner without injection of iodine contrast agent



**Fig 4:** Laminated left renal parenchyma contrasting with the good nephrography of the right kidney (\*) on an axial section (A) and coronal reconstruction (B) of an abdominal-pelvic scanner without injection of iodized contrast material



**Fig 5:** Operative piece of left nephrectomy

### Conclusion

Adult giant hydronephrosis is a rare clinical entity. The clinic is often misleading when faced with a progressive increase in abdominal volume. Abdominal ultrasonography and scan-CT confirms the diagnosis. The treatment is surgical

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