

About 4 Cases Report of Giant Hydronephrosis Inurology Department of the National University Healthcare, CNHU HKM of Cotonou

Dodji Magloire Inès Yevi*, Christian Henry Renaud Hounnasso, Gilles Natchagandé, Dejennin Georges Josué Avakoudjo, Michel Michaël Agounké, Jean Sossa, Fred Hodonou, Prince-Pascal Hounnasso

CNHU-HKM Urology-Andrology University Clinic, Cotonou, Republic of Benin

Email: *dryevi@gmail.com

How to cite this paper: Yevi, D.M.I., Hounnasso, C.H.R., Natchagandé, G., Avakoudjo, D.G.J., Agounké, M.M., Sossa, J., Hodonou, F. and Hounnasso, P.-P. (2018) About 4 Cases Report of Giant Hydronephrosis Inurology Department of the National University Healthcare, CNHU HKM of Cotonou. *Open Journal of Urology*, 8, 118-124.

<https://doi.org/10.4236/oju.2018.84013>

Received: August 7, 2017

Accepted: April 25, 2018

Published: April 28, 2018

Copyright © 2018 by authors and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

The authors report 4 different cases of giant hydronephrosis in the urology department of the national university healthcare, CNHU HKM of Cotonou. The frequency of the items, the etiologies and the different treatments carried out were elucidated. The patients were all females. The hydronephrosis affected the left kidney. The most frequent etiology was pyelouretral junction syndrome seconded by obstructive nephrolithiasis in the upper urinary tract. One of the last etiologies was lower pole vascular plexus. Three nephrectomies and one KÛSS-HEYNES-ANDERSON pyeloplasty were carried out. Conclusion: Giant hydronephrosis is a rare condition. The etiologies were organic-based and malformed. The therapeutic attitude adopted shows the interest of an antenatal diagnosis for early care.

Keywords

Giant Hydronephrosis, PUJ Syndrome, Pyéloplasty, Nephrectomy

1. Introduction

Giant hydronephrosis is a rare condition described for the first time by Sterling in 1939. It is defined as a collection of urine beyond 1.5 liter in the kidney excretory cavities. We hereby report the frequency, the etiologies and the therapeutic attitude about 4 cases in the urology department of the national university healthcare, CNHU HKM of Cotonou.

2. Observations

1) **First case:** Mrs HOUNGBEDJI Nadine, aged 26 years, with no medical history, is admitted as a result of painful left flank mass. The history reveals a beginning dating back to eight years of abdominal and lower left back pain and hyperthermia of 38.5°C - 39°C, suggesting acute pyelonephritis. A treatment using Ceftriaxone 2 g/d, pyroxicam 1 capsule/d, ketoprofen 1 tablet/d was administered for three weeks on the basis of cytobacteriological urine exam, which was tested positive to *E. coli*. The fever and lower left back pain disappeared with the development of the condition. The physical examination revealed a large left flank mass, mobile by bimanual palpation, renal ballottement and divided at the front by left colic tone. The renal function was evaluated only by clotting test and hematologic profile because of lack of radionuclide scan (DTPA, MAG3). The percentage of remaining kidney function should be evaluated to assess separated kidney function. The patient was only able to assess renal ultrasound which showed in the left kidney an echogenic mass with large dilatation of the pelvicalyceal system and thinning of the corticomedullary boundary to 8 mm. The IVU after iodine allergy test reveals grade IV giant bilobed hydronephrosis. The surgery consisted in uncrossing the left lower pole pedicle with the ipsilateral ureter. The furosemide test enabled to identify the stenosis at the ureteropelvic junction. We were able to draw up 1500 cc of clear urine through pyelotomy. Following modeling resection of the pelvis, pyeloplasty was carried out according to KÜSS-HEYNES-ANDERSON technique without pyelostomy intubation. Drainage of the renal cortex was conducted with a silicone drain for 4 days. There were no complaints from the patient after consultation two and four months later. The ultrasound made six months after patient discharge, reveals a normal kidney and cortico-medullary index of 1 centimeter. This return of the kidney to normal status can be surprising because it is not the general rule. We explain it by the ureter liberation from the vascular bridge and its calibration by surgery.

2) **Second case:** Mrs Gandji Catherine, aged 55 years, overweight, is admitted for left flank febrile seizures extending to the root of the thighs, external genitals, without analgesic posture, along with vomiting and hyperthermia of 38.5°C. The condition evolved intermittently for the past five years. Her past history comprised type 2 diabetes and hypertension well taken care for.

The physical examination reveals left flank ovoid mass, bimanual palpation and renal ballottement. We conducted urine sampling for cytobacteriological exam, urine culture and sensitivity test and then a probabilistic antibiotic therapy was carried out. The renal ultrasound imaging reveals a giant hydronephrosis, fully laminated cortico-medullary at 3 mm without ureteral visualization. The Intravenous Urography (IVU) on the abdominal x-ray showed five calyx and pyelic nephrolithiasis. The x-ray after injection shows nonfunctioning kidney from the 10th rib to the left iliac fossa. The blood test reveals no particularity (hemoglobin level was 13.5 g/dL, prothrombinemia 100%, creatinine 11 mg/L, blood glucose 1.70 g/L, and C-reactive protein negative). A nephrectomy

through left lumbotomy revealed a huge distended left kidney from which 500 cc of urine was drained to have a good view of the pedicle for easy removal. The ureterectomy was carried out deep down to the pelvis. The ureteropelvic junction was impermeable. The surgical specimen contained 1200 cc with 2 big nephrolithiasis of 50 mm and 30 mm diameter. The other three were 5 mm in diameter. The renal cortex was drained by externalized silicone drain sloping on the left flank. Post-operative course was characterized by parietal suppuration recovered through wicking.

3) **Third case:** Miss Aifa Ttiana, aged 19, admitted for a large abdominal mass predominant in the left flank, pain and hyperthermia of 39°C. The history revealed a beginning of such condition dating back to childhood, characterized by paroxysmal pain, vomiting and sometimes uncontrolled hyperthermia. Her medical history indicated a white laparotomy suspected to be left ovary cyst. The clinical examination revealed altered general condition, a temperature of 39°C and laparotomy wound. The left lumbar fossa was filled, bimanual palpation and renal ballotement. There was an intractable adductus-flexum and a left femoral reducible tumefaction. The vaginal examination showed painful rounded Douglas pouch. The ultrasound revealed a giant left hydronephrosis. The IVU confirms grade IV ectopic kidney hydronephrosis. The treatment of different complications enabled to carry out a left nephrectomy and Hartmann procedure. Post-operative course was simple.

4) **Fourth case:** Tona Sabine, aged 14 years underwent medical consultation for abdominal pains and increasing volume of the abdomen evolving for 2 years associated with disorders of the transit causing nausea, vomiting and constipation. A year ago, a terminal hematuria, spontaneously resolved was documented.

The physical examination enabled to locate an important abdominal curvature extending from the left hypochondrium to the left iliac fossa, with stony dull percussion, painless and with no collateral venous circulation.

The blood count showed isolated normocytic normochromic anemia of 8 g/dl; the urine was sterile. The abdominal ultrasound showed a mass fluid structure extending from the left hypochondrium to the pelvis and exceeding the median line. The abdomino-pelvic CT scan showed a voluminous left compartmentalized hydronephrosis occupying the whole left abdomino-pelvic cavity causing reflux of the digestive structures to the right. That kidney provoked mass effect on adjacent digestive loops and ureteropelvic junction syndrome was strongly suspected. We observed a mild renal compensatory hypertrophy. A nephrectomy was carried out through midline laparotomy. The content was 4.5 liters of urine. Post-operative course was simple.

3. Discussion

Giant hydronephrosis is a rare urological condition. Despite some controversies, hydronephrosis is termed giant when its content reaches or exceeds 1.5 liters. The volume described is variable. It ranged from 1.5 L to 4.5 L in the cases we

report. In 1749, Glass *et al.* [1] reported the first case. It was a giant hydronephrosis of 15 liters discovered post-mortem. Tombari *et al.* [1] reported a historic case of 52 liters and Tulp *et al.* [2] another case of 32 liters.

Giant hydronephroses are the result of poor knowledge of the ureteropelvic junction anomaly either prenatally (case 3) or due to delay in consultation (case 4). This pathology affects both genders and is more recurrent among men with a sex ratio 3/1. Viville *et al.* [3] reported 2/1 and Mouneer *et al.* [4] 3/1. Our 4 cases relate to women. The mean age was 28.5 years (ex: 14 years and 55 years) vs 21 years (ex: 0 and 56 years), 15 years (1 I - 79 years) for Viville *et al.* [3], and 22 years (30 I - 75 years) for Noda *et al.* [5]. The left flank was dominant among women 4/4 cases vs against a 3/2 in a previous study [6], whereas it is right flank among men (ratio 2/1). These results corroborate the ratio of 34 right flanks and 14 left flanks recorded by Viville *et al.* [3] whereas Bernheim *et al.* [7] in Tel Aviv found no dominant flank.

The most frequent reason for consultation was variable flank pain, ranging from dreadful [8] [9] to paroxysmal. In other cases, the painful syndrome was accompanied by hyperthermia which first suggested acute pyelonephritis (cases 3 and 4) [10]. The triggering factors were often correlated with a long trip in a sitting position, excessive intake of beverages and stasis infection [8] [9] suggesting a lithiasis of the ureteropelvic junction. The clinical examination was poor and often revealed the large kidney through bimanual palpation and renal ballotement. The colonic tone obstructing the renal mass was irregular.

Renal function may be maintained, reduced, or even deteriorated [11]. The obliteration of the parenchyma is often done slowly and discovered at a late age; it could also evolve rapidly without any symptoms [12]. At a more advanced stage, the damaged kidney forms a pouch compartmentalized by walls with dilated calyces containing non concentrated urine. The renal ultrasound reveals severe pyelectasis, measures the fluid volume sequestered, calculates the cortico-medullary index, indicates the status of the pyeloureteral junction and explores the calcifications in the renal projection region. In the absence of contra-indication, the IVU shows delayed secretion and opacification; values the importance of dilation which could extend from the 10th rib to the ipsilateral iliac fossa (cases 2, 3, and 4) late time [13]. The CT urography suggests pyelectasis with no downstream ureteral dilation. The gold standard of the renal function screening is radionuclide scan which assess separated kidney function whether by DTPA or by MAG3. Evaluation of the percentage of remaining kidney function is useful to give accurate surgical decision. But we have none of these tools in our units. The assessment of complications revealed presence of competitive morbidity factors in the case of the second patient namely: old age, high blood pressure and diabetes. In some cases, this co-morbidity can associate variable kidney failure, physical status score and Karnofsky performance scale index meeting the Anglo-Saxon "coexistent disease index". The disease assessment revealed a long period of development and late consultation.

Based on the ultrasound, the cortico medullary index was compatible with

good renal function in one case, whereas it wasn't the case in the other three. In the first observation, the intravenous urography showed an Hourglass sign of the kidney and pelvic cavity. This aspect is suggestive of either a lower pole pedicle or fibrous band [13]. The Doppler echocardiography confirmed the association of a lower pole pedicle with the pyeloureteral junction syndrome. In the second observation, in addition to diabetes known for its metabolic lithogeticrole and infectious risk, the junction syndrome was complicated by lithiasis caused by stasis. Stasis is favorable for infection and lithiasis [12]. This pathophysiology explains the incidence of pyelonephritis observed in this case. Without prejudice to the etiology of urolithiasis or nephrolithiasis, it is obvious that these two etiologies are intertwined. In the third observation, the urography suggests left pelvic ectopic kidney on the basis of pyeloureteral junction syndrome. Once, the surgical indication was the lower pole pedicle uncrossing with the ureter associated with a pyeloplasty. Pre-operative drainage can be done either by nephrotomy or into bated pyelotomy. Such measure was not necessary in this indication. Urography remains a preferred choice in so far as this pathology is concerned, because it helps not only to reveal a dilated kidney exceeding the median line, but also to consider the urine volume and assess the impact of renal function at the injection phase where there is no access to radionuclide scan. Sometimes, as etiology, it reveals the vascular crossing in arterial phase. Urography also detects the associated kidney malformations, complications (nephrolithiasis, urinoma, infection, parenchymal damage) and contributes to pre-operative assessment [13].

Therapeutically, nephrectomy is a common practice, especially when the contralateral kidney is normal by the evaluation of the percentage of remaining kidney function [4]. In this report, three nephrectomies were carried out. However, according to Oka *et al.* [14], when the kidney maintains a parenchymal thickness above 1 cm and a glomerular filtration exceeds 20 ml/min, an etiologic and conservative treatment may be carried out especially if the hydronephrosis occurs bilaterally, or on anatomically solitary kidney or when the contralateral kidney alone cannot sustain a normal kidney function [14].

Minki *et al.* [15] suggest a conservative surgery through pyeloplasty or nephroplication. The associated antibiotic therapy prevents the infectious risk and protects the indication of a percutaneous nephrostomy, pending discussion of a possible nephrectomy or a conservative surgery depending on the renal function recovery. Out of four observations, three nephrectomies were required. In all four cases, the drainage of the renal cortex was systematic and successfully carried out with a laterally perforated silicone drain.

Post-operative course was simple and patients were discharged without any incident. There were no complaints reported by surgical patients during consultation. The first patient ultrasound carried out in the 6th month shows normal renal recovery. The renal function of these four patients is normal and they enjoy good health.

4. Conclusion

Giant hydronephrosis is rare and the most frequent etiology is the pyeloureteral junction syndrome. Enclosed lithiasis of the junction, ureteral tumor, lower pole pedicle and fibrous band are also documented. Sonography prevailed over IVU in the diagnosis. When the contra kidney function is normal, nephrectomy is the gold-standard.

References

- [1] Yates-Bell, A.J. and Packham, D.A. (1972) Giant Hydronephrosis in a Solitary Crossed Ectopic Kidney. *British Journal of Surgery*, **59**, 104-107.
<https://doi.org/10.1002/bjs.1800590209>
- [2] Jardin, A. (1991) Hydronephrosis: Éditions Techniques. *Ency. Med. Chir. (Paris France), Néphrologie-Urologie*, **18 157**, 15.
- [3] Viville, C., Biechler, M. and Cinqualbre, J. (1983) The Traumatic Breaks Closed of Urinary Tract High Normal. *The Journal of Urology*, **89**, 533-539.
- [4] Muneer, A., Harrison, S.C.W. and Browning, A.J. (2004) Atraumatic Retroperitoneal Haemorrhage in a Hydronephrotic Kidney Secondary to Transitional Carcinoma. *International Journal of Clinical Practice*, **58**, 726-727.
<https://doi.org/10.1111/j.1368-5031.2004.00058.x>
- [5] Noda, Y., Tujikawa, K., Takada, S., Sugao, H., Itou, Y. and Osafune, M.R. (2001) Spontaneous Renal Failure Resulting from Ureteral Stone Left Untreated for 6 Years: A Case Report. *Hinyokika Kyo. Acta Urologica Japonica*, **47**, 265-268.
- [6] Hounnasso, P.P., Hodonou, Z.R., Sossou, R. and Akpo, E.C. (2007) Giant Hydro-nephrose about Three Observations at the CHU Hubert K. Maga of Cotonou.
- [7] Bernheim, J., Aronheim, M. and Griffel, B. (1983) Study Clinical and Histologic 25 Cases of Hydronephrosis by Primitive Stenosis of the Ureteropelvic Junction (JPU). *The Journal of Urology*, **89**, 555-559.
- [8] Kaya, C., Sayan, S., Kanberoglu, H. and Karaman, M.I. (2004) A Case of Giant Hydronephrosis of Ureteropelvic Junction Obstruction Presenting as a Abdominal Palpable Mass. *African Journal of Urology*, **10**, 287-288.
- [9] Fukasawa, M., Kobayashi, H., Matsushita, K., Araki, I. and Takeda, M. (2002) Intraperitoneal Rupture of Giant Hydronephrosis due to Ureteral Cancer Accompanied by Renal Cell Carcinoma. *The Journal of Urology*, **167**, 1393-1394.
[https://doi.org/10.1016/S0022-5347\(05\)65313-X](https://doi.org/10.1016/S0022-5347(05)65313-X)
- [10] Mountney, J., Chapple, C.R. and Johnson, A.G. (1998) Giant Hydronephrosis—A Diagnostic Dilemma. *Urologia Internationalis*, **61**, 121-123.
<https://doi.org/10.1159/000030302>
- [11] Mediavilla, E., Ballester, R., Correas, M.A. and Gutierrez, J.L. (2013) About a Case Report of Giant Hydronephrosis. *Case Reports in Urology*, **2013**, Article ID: 257969. <http://dx.doi.org/10.1155/2013/257969>
- [12] Shin, M., Momohara, C., Komori, K., Honda, M. and Fujioka, H. (2003) Traumatic Rupture of Giant Hydronephrosis due to Ureteral Stone: A Case Report. *The Journal of Urology*, **49**, 679-682.
- [13] Lemaitre, T., Claudon, M., Fauquet, I., Delomez, J. and Puech, P. (2004) Imaging of Chronic Obstructions and Intermittent of the Excretory Track Top of the Adult. *Interventional Radiology*, **85**, 197-216.
- [14] Oka, N., Hasegawa, T. and Ando, Y. (1972) Consideration on the Worthful Recov-

ery Renal Function in Hydronephrosis. *The Journal of Urology*, **63**, 83-95. (In Japanese)

- [15] Minki, B., Kwanjin, P. and Hwang, C. (2010) Long-Term Outcomes of Dismembered Pyeloplasty for Midline-Crossing Giant Hydronephrosis Caused by Ureteropelvic Junction Obstruction in Children. *Urology*, **76**, 1463-1467.