Inflammation and infection

Case report: Giant pyonephrosis due to urolithiasis and diabetes

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ABSTRACT

Pyonephrosis is a rare pathology causing destruction of the renal parenchyma. The diagnosis of pyonephrosis was made on the basis of radiological images and cytobacteriological examination of the urine. A patient of 49 years old, followed for 10 years under insulin therapy was admitted for a massive pyonephrosis of the left kidney. The clinical examination found a conscious patient, febrile at 38 °C, an abdominal distension with a tenderness at the level left hypochondrium. The pus was drained by percutaneous nephrostomy that has brought up 5L pus. A left nephrectomy was performed in front of a non-functioning kidney.

Introduction

Pyonephrosis is a rare pathology causing destruction of the renal parenchyma. It can also appear as a complication on certain urological conditions like (urolithiasis, obstructive pyelonephritis). The diagnosis is usually evoked before the clinical context with characteristic CT images and rarely abdominal distension with massive pyonephrosis. Late management may result in death by septic shock. We will report a Case of massive pyonephrosis with an atypical germ accidently discovered in front of an image of sub-occlusive syndrome. We will discuss the causative agents and therapeutic management based on a review of the literature.

Observation

A 49-year-old patient with a history of type 2 diabetes was followed for 10 years on insulin therapy. The patient presented with diffuse abdominal pain with no gas passage for 5 days. Clinical examination revealed a conscious patient, febrile at 38 °C, abdominal distension with tenderness in the left hypochondrium. Laboratory tests, the patient had creatinine 20 mg/L, normal kalemia, hyperleukocytosis 14000/mm3, CRP 25, HbA1c 8%, and cytobacteriological examination of the urine had isolated an albican candida. We ordered a simple abdominal X-ray for transit disorders which was normal, then an abdominal ultrasound which revealed left pyelocalic dilatation laminating the renal cortex with echogenic content, which could be related to purulent retention. The patient also had an emergency CT urogram abdominal CT scan that confirmed massive pyonephrosis and bilateral ureteral lithiasis (Fig. 1, Fig. 2). After restoring the patient’s condition, urinary detour by percutaneous nephrostomy was performed under ultrasound guidance. The evolution was marked by apyrexia, improved white blood cell count and PCR. In addition, a renal scan was performed, showing a normally functioning right kidney and a non-functioning left kidney. Nephrectomy was performed after 3 weeks (Fig. 3).

Discussion

Pyonephrosis is a suppurative upper urinary tract infection that differs from hydronephrosis by the presence of pus. It is usually associated with parenchymal lesions and subsequent loss of renal function. The main anatomical factor in pyonephrosis is ureteral obstruction. Urolithiasis is the most common obstructive cause in at least 70% of patients. The obstruction may be intrinsic (calculus, pyelo-ureteral junction syndrome, blood clots, fungal ball, papillary necrosis, tumors of the upper urinary tract) or extrinsic (e.g prostatic cancer, bladder tumors, retroperitoneal tumors, or lymph nodes). The usual organisms responsible for pyonephrosis are E. coli, Klebsiella Enterococcus, Proteus m and Pseudomonas a. The clinical presentation is most often in the form of flank pain associated with fever or chills, rarely hematuria or abdominal arching. 15% of patients may remain asymptomatic. Infection in the obstructed upper urinary tract can lead to urosepsis especially in immunocompromised patients. Our patient presented with diffuse abdominal pain in a febrile context without hematuria with a sub-occlusive syndrome. The diagnosis of pyo nephrosis was made on the
basis of radiological images and cytobacteriological examination of the urine. The CT urogram is very sensitive for the diagnosis of pyonephrosis as well as the causing agents like urolithiasis and tumor pathology. Fultz and Al. found that computed tomography was a very sensitive radiological diagnosis in their study of 17 pyonephroses. Treatment options for pyonephrosis include percutaneous drainage of pus, retrograde ureteral stenting and nephrectomy. Antibiotic treatment is not effective in pyonephrosis, interventional surgery is usually required.

Fig. 1. Abdominal CT scan showing enlarged left kidney measuring 20*14*8 cm, site of a major pyelocaliceal dilatation laminating the cortex, repressing the digestive structures and coming into contact with the abdominal wall.

Fig. 2. CT with reconstruction shows a pre-meatic distal ureteral lithiasis measuring 12 × 8 mm, 900 hounsfield units and lumbar ureteral calculus measuring 20 × 12 mm, 1200 hounsfield unit.

Fig. 3. A left nephrectomy that shows destruction of the renal parenchyma.

Percutaneous Nephrostomy (PCN) is usually the first-line treatment to drain the retained in the upper urinary tract. It is an effective and minimally invasive method of draining the pyelocaliceal system. The ureteral stent is also an alternative to percutaneous nephrostomy for drainage in selective patients. Nephrectomy is generally indicated in front of a non-functioning dumb kidney in long-term pyonephrosis. Hasigov A et al. recently reported a Case of massive pyonephrosis measuring 23 cm × 30 cm x 27.9 cm upstream of a diabetic-associated urinary urolithiasis that was treated by an open nephrectomy. In our case, the patient underwent percutaneous nephrostomy draining 5 Land 500 ml of pus, and a kidney scan performed showing a non-functioning left kidney an indication of nephrectomy.

Conclusion

Pyonephrosis is a parenchymal destruction of the kidney by a suppurative process due to ureteral obstruction. The clinical presentation and the germ can be unusual in diabetic patients and only a radiological imaging allows an early diagnosis including uroscanning.

It is a serious pathology that can progress to a septic shock and therefore it requires an urgent management in order to avoid the risk of life-threatening complications. Percutaneous nephrostomy remains the treatment of choice and a subsequent renal scintigraphy must be performed to evaluate the percentage of renal function.

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