Medico-surgical treatment in an emphysematous pyelonephritis case caused by urolithiasis in a non-diabetic patient: About one case report in a subsahara university hospital

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ABSTRACT

Authors report an emphysematous pyelonephritis case of bilateral urogenital lithiasis diseases on one hand, and on other, therapeutic approach through 38-year-old patient observation, non-diabetic, treated by percutaneous drainage in first intention, followed by a Nephro-ureterolithotomy and the right double J probe installation. Evolution post-treatment was satisfactory.

1. Introduction

Emphysematous pyelonephritis (EPN) is an acute severe necrotizing infection of the renal parenchyma and its surrounding tissues that results in the presence of gas. The mortality in EPN is primarily due to septic complications.

Escherichia coli is the most common pathogen isolated on urine or pus nearly in 70% of reported cases.

A plain radiograph shows an abnormal gas shadow in the renal areas raising the suspicion whereas an ultrasound scan or computed tomography will confirm the presence of intra-renal gas that supports the EPN diagnosis.1 It occurs preferentially in diabetics.2

In Sub-Saharan Africa, there are not enough publications on this disease.

The paper’s aimed to present a rare case of emphysematous pyelonephritis associated with bilateral stones treated in two stages in a non-diabetic patient.

2. Patient and observation

We report the case of a 39-year-old woman who was followed for secondary infertility within her history, taking NSAIDs.

Kidney function deterioration was progressive with cystic kidney disease background.

Clinical examination, an oliguric and pyuric patient who was heated to 38.6 °C, not very colored, abdominal palpation revealed a mass in the right lumbar fossa which extended to the ipsilateral flank and to periumbilical location.

Cytobacteriological urine exam had isolated E. coli that was susceptible to nitrofurantoin.

Renal function was impaired by urea level at 334.4 mg/dl, creatinine at 17.9 mg/dl, hyperleukocytosis at 17000 Gb/mm3 and creatinine clearance at 4 μ/l.

A renal ultrasound showed grade III right ureterohydronephrosis secondary to obstructive ureteropyelic lithiasis associated with heterogeneous contents of the kidney collecting system with left renal cystic dysplasia and moderate collecting system dilation.

Diagnosis retained: Suspicion of renal colic on high obstructive uropathy, complicated acute pyelonephritis on the background of chronic kidney disease, bilateral kidney stones not excluded.

Medical therapy was done: tazobactam, analgesic and antipyretic, and preoperative hemodialysis sessions.

The Uroscan carried out had mentioned the right emphysematous pyelonephritis on the background of two pyelo-ureteral systems complicating high obstructive uropathy by lithiasis migration locked at the right pyelo-caliciel junction of 34 mm and 12 mm associated with intra-renal lithiasis in the lower caliciel group of 12 mm and 17 mm.

Abbreviations: Pyelonephritis, Emphysema; Calculus, Drainage.

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A 10 mm left lumbar ureteral obstructive lithiasis is responsible for ureterohydronephrosis with cortical atrophy. (Fig. 1).

After a slight improvement in his renal function following four sessions of hemodialysis, the urea level fell from 334.4 mg/dl to 147.57 mg/dl and the creatinine from 17.9 mg/dl to 9.25 mg/dl.

The thermal curve had remained oscillating without lysis.

Percutaneous drainage has been performed, and a malodorous gas escape from the renal compartment followed by a flow of well-bound chocolate pus has been found.

Pyoculture isolated Klebsiella pneumonia, amikacin-sensitive.

Thus, a second intervention had been scheduled six days after which had consisted of a drainage of the partial kidney parenchymal collection by lombotomy, which had brought back approximately 320 ml of pus mixed with the necrotic tissues. A right pyelolithotomy (Fig. 2) and left ureterolithotomy were followed by abundant cleansing with 0.9% physiological saline. Double JJ probe placement (Fig. 3).

The patient had clearly improved in the early and late postoperative period, as evidenced by renal function (Creatinine at 3 mg/dl following an obstacle removal syndrome and codified rehydration) and general condition normalization.

3. Discussion

Emphysematous pyelonephritis is burdened with a high mortality rate ranging from 7 to 75% depending on the series. EP incidence is constantly increasing due to better pathophysiological knowledge of this condition and an increase in predisposing pathologies, including diabetes.3

This disease is common in low-income countries, with access to current tools helping alongside the clinic in diagnosis, particularly computed tomography.

This young no diabetic patient had bilateral lithiasis and the pathology observed concerned the right kidney.

Kidney function failure was multifactorial: bilateral urinary tract obstruction left hydronephrosis with a deteriorated cortex.

The gas production mechanism is intrarenal glucose fermentation. Developing bacteria use glucose as their main source of energy through the Embden-Meyerof of glycolysis pathway.

The formic acid resulting from this fermentation will be responsible for the lowering of pH.

E. Coli converts formic acid into carbon dioxide and hydrogen and the necrosis debris will produce other gases including nitrogen, oxygen, and ammonia.4

Computed tomography remains the reference examination; In this case, showing air density images in the right kidney shadow.5 Gas extension intra or extra kidney had led Huang and Tseng to give a prognostic classification (4).

The basic treatment should be adapted to the situation of each patient, taking into account their comorbidities, their general condition and especially the presence or not of an obstacle on the upper excretory pathway.

Three modalities had been retained: exclusive medical treatment, medical treatment associated with percutaneous drainage and radical treatment, and nephrectomy. Using the above-mentioned radiological classification.

The care conditions depend on the financial possibility of the patient or his family in a low-income country.

A first operation under local anesthesia and the second surgical time by lombotomy that allows calculation and pus residual evacuated. An extensive cleaning after removing the obstructions by right nephrolithotomy...
and the JJ probe placement and left ureterolithotomy.

The following period was characterized by thermal lysis, the return to normal biology and especially renal function, and an improvement in general condition.

Planning a third intervention could be the financially difficult cause of by no subsidy or mutual fund.

Ideally, this patient management requires medical and urological treatment depending on the type of the stone (LEC, ureteroscopy, PCNL, exceptionally open surgery, or environment alkalinization for uric acid stones).

There is a need to obtain medical and biological imaging assessments (kidney scintigraphy, spectrophotometric analyzes, uroscanner, urinary pH, parathormone, calcemia, phosphoremia, uric acid, ECBU, etc.) in order to determine lithiasis etiology and to assess the physiological and organic status in order to follow patient regularly.

4. Conclusion

Emphysematous pyelonephritis is a serious condition whose severity endangers the vital prognosis by the septic shock that it induces. Diagnosis and early treatment can improve patient survival.

This entity should be suspected before any infectious syndrome by obstruction of the upper excretory tract in non-diabetics.

Author statement

The authors state that they treated this patient at university clinics in Kinshasa.

Declaration of competing interest

The authors declare that there is no conflict of interest.

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