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Emphysematous Pyelonephritis Associated With Emphysematous Cystitis: Case Report of Favorable Evolution With Medical Treatment.

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ABSTRACT

The combination of cystitis and emphysematous pyelonephritis is a serious but rare, the prognosis is related to renal damage. CT is the gold standard that allows the diagnosis and establishes a radiological classification with prognostic value. The therapeutic approach is based on The Early antibiotic treatment is systematic. Percutaneous drainage is the first step therapy in most cases, but should not delay a possible rescue nephrectomy. We report a case of emphysematous pyelonephritis associated with emphysematous cystitis in a 26 year old woman. Early diagnosis allowed conservative treatment with appropriate antibiotic therapy and urinary drainage catheter. The outcome was favorable.

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Introduction

Emphysematous pyelonephritis is a necrotic kidney infection characterized by the presence of gas within the renal parenchyma, excretory cavities or peri-renal spaces. It is a rare condition, occurring preferentially in diabetics and related to the development of non-anaerobic gasogenic bacteria. It is also a serious condition, rapidly engaging the vital prognosis. Computed tomography is the reference examination that allows for diagnosis. The association of cystitis and emphysematous pyelonephritis is rare and associated with clinical and para-clinical semiology, which is often patent.

Observation:

Mrs. ZN, 26 years old, with no previous history, was admitted to the emergency department for alteration of the general condition with discovery of an inaugural acidocetosic decompensation.

The interrogation reveled a right lumbar pain with a progressive increase in abdominal volume for seven days.

The examination found a 38.5 fever with the notion of taking antipyretics, a good hemodynamic state. The right lumbar pit was sensitive with a large bladder hard and insensitive.

The intake biological assessment revealed a leukocytosis at 16. 109 / 1, CRP increased to 163 mg / 1, serum urea was 1.5 g / 1 and serum creatinine was 43.1 mg/ 1,blood glucose> 5 g / 1 with 100 meq / 1 serum sodium.

The abdominal X-ray showed a clear lacunar image projecting towards the right renal area as well as the bladder area, leading to the diagnosis of emphysematous pyelonephritis associated with emphysematous cystitis (Figure 1). The abdominal computed tomography had confirmed the diagnosis by showing air bubbles at the pyelocalicious cavities and also at the bladder lumen (Figure 2; 3).



Figure 1. Abdominal X-ray : circumferential gaseous vesical border.



Figure 2. CT showing the presence of gas in the bladder wall and in the right kidney excretory pathway.

Our attitude was conservative and consisted in draining the urine by a urinary catheter which brought back troubled urine, insulin therapy, hydro electrolyte balancing and especially broad-spectrum antibiotherapy including a 3rd

Hicham Ouazize et al./ Elixir Physio. & Anatomy 110C (2017) 48416-48418

cephalosporin generation (ceftriaxone) and a nitro-imidazole (metronidazole) with a treatment duration of 4 weeks. The cytobacteriological examination of the urine (ECBU) isolated a Group D Streptococcus sensitive to several antibiotics.



Figure 3. Abdominal CT showing the presence of gas in the right kidney excretory pathway.

The development was rapidly favorable: apyrexia after 72 hours, normalization of the renal function and regression of the biological signs of the infection on the 7th day of hospitalization. No control imaging was performed. **Discussion:**

Emphysematous pyelonephritis was described for the first time by Kelly and Mac in 1898 [1], since this condition has received various names: renal emphysema; pneumatosis of the kidneys.

It is a necrotic kidney infection characterized by the presence of gas within the renal parenchyma, excretory cavities or peripheral spaces. [2] It is rare and severe with a mortality rate of 12-47% [1] occurring preferentially in the diabetics a fortiori poorly balanced [2,3]. The association with emphysematous cystitis is more rare.

The mean age of the disease is 53 years [4]. In our case, the age of the patient was 26 years. Most studies conclude that women are predominant [2]. Michaeli et al. [5] find a sex ratio of 1 / 1.8 (64% of women and 36% of men); our patient was male.

The starting point of emphysematous pyelonephritis is the infection of the kidney by a variety of gasogenic bacteria which are exceptionally strict anaerobic germs. The majority are Gram negative Enterobacteriaceae bacilli [6]. In our case, the causative organism was group D streptococcus. The second germ in emphysematous pyelonephritis was infection with Klebsiella and Proteus mirabilis.

The aetiological factor most frequently found is diabetes, a fortiori poorly balanced [2]. This is due to chronic hyperglycaemia which favors microangiopathy, anatomical and functional abnormalities of the urinary tract, and abnormalities of antibacterial immunity. In our case, our patient was not known diabetic.

The second etiological factor is obstruction of the excretory pathways (lithiasis, vascular compression, congenital obstacle), noted in 20 to 41% of cases [1, 2].

Validated factors include: ethylism, drug addiction, polycystosis, renal tumor or neurological bladder.

Diagnosis is often delayed 1 to 3 weeks after onset of symptoms [2]. Clinical signs of emphysematous pyelonephritis are not specific; the signs are those of acute pyelonephritis with:

- Infectious syndrome: High fever greater than $38.5 \,^{\circ}$ C, Alteration of the general state, nausea, vomiting, headache, feeling unwell. The disorder of consciousness can be a revealing sign of sepsis, and more particularly of emphysematous pyelonephritis [7].

- Painful syndrome: lumbago, renal colic or abdominal pain. In our case, the patient had lumbar and hypogastric pain.

Rarely, we find the notion of a pneumaturia or of a severe septic state [8]. Most often, clinical signs remain non-specific, and it is only the elements of the history, the terrain and the radiological examination that lead to the diagnosis [9].

The radiological diagnosis is based on the visualization of gaseous light in the light and / or drawing the bladder wall and the renal area on an abdominal shot without preparation. The abdominal computed tomography makes it possible to specify the location and the extension of the different gaseous collections [10]. It was the radiology that made it possible to make the diagnosis in our patient.

The therapeutic attitude is not consensual. Several options are discussed: simple drainage, percutaneous nephrostomy, Drainage of the renal chamber and peri-renal spaces, even a nephrectomy.

the first-line treatment in most cases is probably percutaneous drainage associated with parenteral antibiotic therapy followed by oral consolidation therapy and the rebalancing of diabetes [9], especially in localized forms in a patient with preserved general state or when renal function is threatened by nephrectomy (single kidney, bilateral pyelonephritis):

• If percutaneous drainage is unsuccessful, a rapid intervention decision must be taken: either a secondary nephrectomy or a new percutaneous drainage if a new collection has appeared on the CT scan, but especially not the expectation.

• First, rescue nephrectomy, is probably reserved for extensive forms with several organ dysfunctions.

In view of the evolution of our patient and according to the data of the literature, the prognosis remains good. It depends mainly on the speed of diagnostic and therapeutic management.

Conclusion:

Pyelonephritis and emphysematous cystitis are rare and severe conditions. Early and adequate management based mainly on good antibiotic therapy improves the prognosis and prevents complication.

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