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Case Report

Bilateral Emphysematous Pyelonephritis: Failure of Conservative Management

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Abstract

Urinary tract infection is a very frequent reason for emergency room visits. Emphysematous pyelonephritis is a severe form of the disease and corresponds to a necrotic infection of the kidney and the upper urinary tract. Bilateral involvement is very rare but severe with a high mortality rate.

Keywords: emphysematous; pyelonephritis; bilateral

Introduction

Urinary tract infection is a very frequent reason for emergency room visits. Emphysematous pyelonephritis is a severe form of the disease and corresponds to a necrotic infection of the kidney and the upper urinary tract. Bilateral involvement is very rare but severe with a high mortality rate. The positive diagnosis is easy to make on CT and must be made quickly in order to allow rapid management using different approaches, which must be correlated with the patient's clinical conditions

CLINICAL PRESENTATION

We report the case of a 62-year-old female, admitted to the emergency room following the occurrence of a consciousness disorder. The family revealed a history of type 2 diabetes for more than twenty years, poorly balanced with a notion of poor compliance. The onset of the symptoms was one week ago, with a progressive deterioration of the patient's general condition marked by asthenia. The initial evaluation showed a Glasgow Coma Scale (GCS) of 10/15, a blood pressure of 65/27mmHg which could not be corrected by adequate filling and required the use of vasoactive drugs, a saturation of 90% on room air, a polypnoea of 30 cycles/min, and anuria. The biological work-up revealed a hyperleukocytosis of $31x10^9$ elements/l, a CRP of 365mg/l as well as acute renal failure with a urea of 1.03g/l and a creatinine of 42.6mg/l. In the face of this state of shock, with no obvious infectious focus, a CT scan of the abdomen and pelvis revealed gas in both renal parenchyma, more marked on the right, making the diagnosis of bilateral emphysematous pyelonephritis or stage 4 of Huang and Tseng (figure 1).

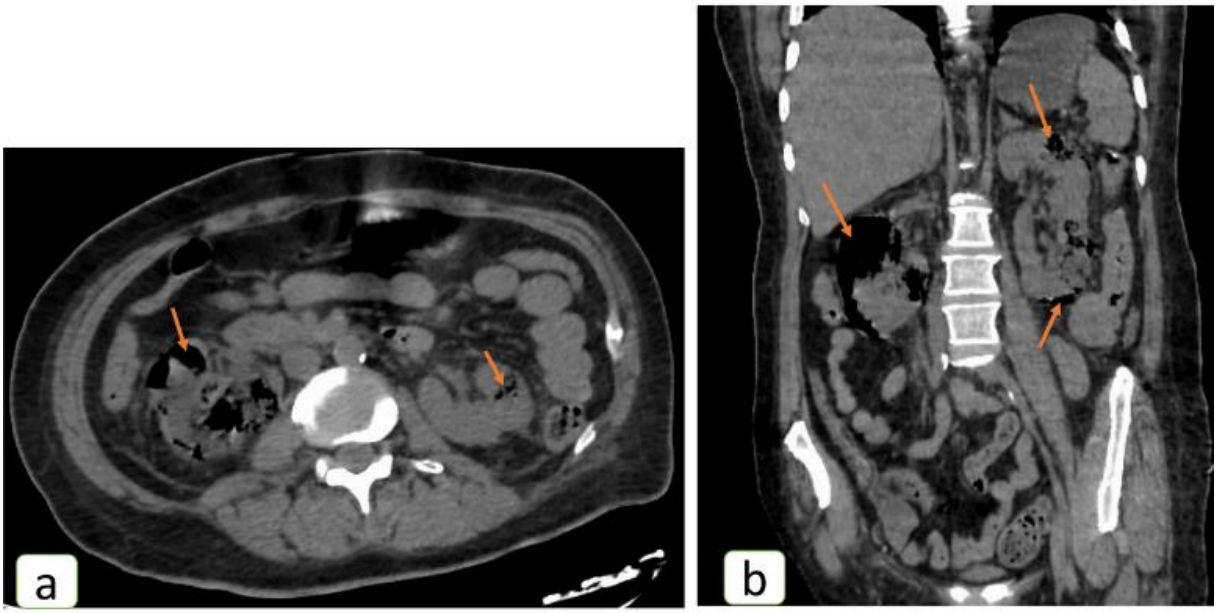

Figure 1: Abdominal and pelvic CT no enhanced scan in axial section (a) and coronal reconstruction (b), in a 62-year-old woman followed for type 2 diabetes, admitted to the emergency room in a state of shock; showing the presence of gas (arrows) in the right and left renal parenchyma posing the diagnosis of emphysematous pyelonephritis of stage 4.

The patient was admitted to an intensive care unit with a therapeutic strategy of resuscitation measures and broad spectrum probabilistic antibiotics. She underwent bilateral percutaneous drainage of kidneys, as well as haemodialysis sessions to correct the hydroelectrolytic disorders. The evolution was marked by a worsening of the infectious state with an increasing need for vasoactive drugs and the occurrence of death after 48 hours as a result of septic shock.

DISCUSSION

Emphysematous pyelonephritis is a necrotic bacterial infection of the upper urinary tract characterised by the presence of gas within the renal parenchyma or excretory tract. The most common bacterium involved is Escherichia Coli, but other bacteria such as Klebsiella, Proteus and Streptococcus may be involved. The main risk factors are unbalanced diabetes and urinary tract obstruction [1]. Clinically, it manifests itself as pyelonephritis, with back pain, fever, and on physical examination, snowy crepitations in the flank. CT is the gold standard for the diagnosis of emphysematous pyelonephritis and for assessing the extent of the lesions. It reveals gaseous deposits within the excretory tract or renal parenchyma that may extend into the surrounding spaces. There are several radiological classifications including that of Huang and Tseng which distinguishes 4 radiological stages [2]:

- ✓ Stage 1: gas in the excretory tract only;
- ✓ Stage 2: gas in the renal parenchyma without extension into the extrarenal space;
- ✓ Stage 3A: gas extension or abscess in the peri-renal space
- ✓ Stage 3B: gas extension or abscess in the para-renal space
- ✓ Stage 4: bilateral emphysematous pyelonephritis or gas in solitary kidney.

Bilateral involvement is rare and severe . In this form, the clinical presentation is dominated by a severe infectious syndrome leading to septic shock with visceral failures that cloud the prognosis. The management of emphysematous pyelonephritis is based on effective resuscitation with the introduction of antibiotic therapy, restoration of blood sugar control and correction of hydroelectrolytic disorders ; associated with either emergency nephrectomy, or conservative treatment: percutaneous or endoscopic drainage, followed or not by partial nephrectomy. The traditional strategy was based on emergency nephrectomy. This concept has come up against a number of constraints, notably the condition of patients who are often unstable enough to withstand a major operation, not to mention the comorbidities associated with nephrotomy, especially in bilateral forms. This has led to the development of a conservative strategy which seems to be effective, especially in the less severe forms [3], thus allowing the preservation of the nephron capital. In our patient with bilateral involvement, an emergency double nephrectomy was not possible because of the risk of mortality during oparation, not to mention the post-operative comorbidities. Conservative treatment was therefore chosen first in the hope of even a minimal improvement in clinical condition, which would have allowed a reassessment of the state of the kidneys. The response to conservative treatment can be assessed clinically by noting a recovery or not of diuresis, but also by monitoring renal function by biology. CT scans can show regression of the initial lesions, but renal scintigraphy remains the reference examination for assessing the vitality of the kidneys. Thus, depending on the vitality of the kidneys, a possible surgical indication would have been more objective and would have made it possible to conserve the maximum of nephrons. These severe forms of emphysematous pyelonephritis are associated with a high mortality rate, up than 30 [4]. It should be noted that there is still no consensus on the management of patients with emphysematous pyelonephritis due to the diversity of clinical presentations; Thus, early treatment at an early stage is desirable to reduce mortality and morbidity.

CONCLUSION

Emphysematous pyelonephritis is a medical and surgical emergency. Rapid diagnosis by CT scan is essential for early initiation of treatment. Conservative treatment should be considered in the first instance, especially in the bilateral form, but in case of non-improvement or extensive destruction of the renal parenchyma, surgery remains the last line of defence to preserve the patient's vital prognosis.

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