CASE REPORT

Multiple bilateral renal abscesses in a previously healthy young patient

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SUMMARY

The incidence of renal abscesses is not common. Patients usually have risk factors like diabetes mellitus or an underlying condition which predisposes to urinary tract infections. We report a case of a previously healthy young girl with multiple bilateral renal abscesses. Ultrasonography revealed multiple renal abscesses with a possible differential diagnosis of polycystic kidney disease with infected cysts. No renal calculi were seen. CT-scan of kidneys confirmed the diagnosis. Blood and urine cultures were repeatedly negative. She was treated with two weeks of intravenous antibiotics followed by another four weeks of oral Ciprofloxacin. No surgical intervention was carried out. Repeated ultrasound at six months showed complete resolution of all the renal abscesses.

KEY WORDS:
Multiple renal abscesses, infected renal cysts, Ciprofloxacin

INTRODUCTION

The incidence of renal abscesses is not common. They usually occur in patients with risk factors such as diabetes mellitus, renal calculi, recurrent urinary tract infections, vesico-ureteric reflux and following genitourinary instrumentation.[1] Symptoms can be non-specific with patients complaining of only fever and back pain. Here we report a case of multiple renal abscesses in both kidneys in a young patient without any predisposing factors.

CASE REPORT

A 16-year-old girl with no previous medical illness was referred to us after one week of intermittent fever and abdominal discomfort. She did not have any vomiting, diarrhoea, dysuria or frequency. She had already seen a general practitioner and was treated as urinary treat infection with five days of oral Cephalexin.

Upon initial assessment, she was febrile at 39°C, blood pressure was 100/68 mm Hg and pulse rate 95 beats per minute. She had facial puffiness and mild lower abdominal tenderness. No masses were palpable per abdomen. Examination of the respiratory, cardiovascular and central nervous system did not reveal any abnormalities.

Urinalysis was positive for protein (2+), leukocytes (3+) and erythrocytes (5+) but negative for nitrite. Full blood count (FBC) was suggestive of an underlying bacterial infection with a markedly elevated total white cell count (WCC) of 33,000/ul (predominantly neutrophil 89.8%). She also had hypochromic, microcytic anemia with a hemoglobin concentration of only 5.6 g/dl. Her platelet counts were normal (379,000/ul). The serum iron was later found to be low (0.69 umol/l, ref: 14-32 umol/l). There was also evidence of renal impairment as her serum urea was 14.1 mmol/l and creatinine 231 umol/l. Her serum albumin was low (21g/l) but transaminases and bilirubin levels were normal. The patient denied being sexually active and her HIV ELISA was negative. She has regular menses and her last menstrual period was four days prior to admission. She was promptly started on intravenous (IV) Ceftriaxone 2 g daily for presumed urosepsis.

An urgent ultrasound of her renal system was done and revealed multiple bilateral renal abscesses with a possible differential diagnosis of polycystic kidney disease with infected renal cysts. No evidence of renal calculi, hydro-nephrosis or hydro-ureter was noted. The patient's family members consented to a screening ultrasound to look for renal cysts but all had normal kidney anatomy. A 4-phase computed tomography (CT) of the kidneys confirmed the diagnosis of multiple renal abscesses, the largest measuring 2.2 cm x 1.1cm (figure 1). An echocardiography was done to rule out infective endocarditis as a possible source of hematogenous bacterial seeding but no vegetation was seen.

The patient improved clinically with normalization of renal function and WCC. However, she remained febrile with temperatures up to 40°C. Her C-reactive protein (CRP) was also markedly elevated (257 mg/l). Repeated blood and urine cultures were negative. Urine for Acid-Fast Bacilli (AFB) direct smear was also negative. She was then switched to IV Ceftazidime 1g tds after receiving six days of Ceftriaxone due to persistent fever.

Despite another nine days of Ceftazidime, she continued to have persistent fever. As she was clinically well, we decided to allow her home with oral Ciprofloxacin and instructions to monitor her temperature on her own. When she came for her appointment in the medical clinic two weeks later, she still had low grade fever (up to 37.6°C) but was well, had a good appetite and was gaining weight. Her renal profile remained normal and cultures, both urine and blood were negative.

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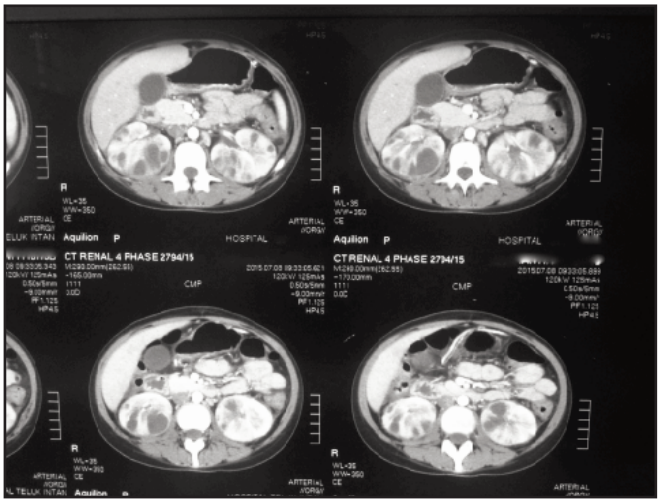

Fig. 1: CT scan of patient's kidneys showing multiple bilateral rim enhancing lesions.

Urinalysis was negative for protein, leukocytes and erythrocytes. She completed one month of oral Ciprofloxacin with fever resolving after the second week on Ciprofloxacin. Ultrasound one month after discharge showed residual resolving renal abscesses while another repeated ultrasound at six months showed complete resolution of the abscesses. Her weight and height increased from 34 kg and 152 cm (BMI 14.7 kg/m2) on admission to 51 kg and 154 cm (BMI 21.5 kg/m2) after one year of follow-up.

DISCUSSION

Renal abscesses can occur as a focal collection affecting only one kidney or as multiple abscesses in both kidneys. Renal abscesses associated with an ascending infection from the urinary tract is usually caused by Escherichia coli, while those that develop as a result of hematogenous spread are commonly due to Staphylococcus aureus.[1]

Infected renal cysts can be mistaken as abscesses in patients with polycystic kidney disease and vice versa. Infected cystic fluid can become turbid making ultrasound difficult to differentiate between pus and cystic fluid. Computed tomography (CT) of the kidneys is the imaging modality of choice. Characteristic CT appearance of renal abscesses consists of round low-attenuation collections with an enhancing rim but no central enhancement and may be surrounded by a 'halo sign' of diminished enhancement during the nephrographic phase.[2] It is also helpful in visualizing peri-nephric involvement.

Treatment of renal abscesses is challenging especially when there are multiple small abscesses affecting both kidneys and surgical drainage is not possible. Available studies have shown that abscesses measuring less than 3 cm in patients who are hemodynamically stable can be treated with antibiotics alone while surgical or percutaneous drainage is indicated in patients with hemodynamic instability, abscesses measuring 3 cm or more and the presence of a peri-nephric collection.[1]

Urinary tract infections in pediatric and adolescent patients can be related to reflux nephropathy. To exclude such a diagnosis, a micturating cystography should be considered. However, as repeated ultrasound examinations did not show any evidence of chronicity nor of hydro-ureter and renal scarring, we decided not to proceed with a micturating cystography.

Choice of antibiotics should be guided by local culture and antibiotic susceptibility patterns. The Malaysian National Antibiotic Guideline 2014 recommends Ampicillin/ Sulbactam or Cefuroxime with or without Gentamicin and Ceftriaxone as an alternative.[3] Treatment should be for a minimum of two weeks but often it has to be continued for another two to four weeks. In our patient, Ceftriaxone was substituted with Ceftazidime after six days due to persistent high-grade fever and to cover for possible pseudomonas infection.

In the setting of infected renal cysts, Ciprofloxacin has been shown to be able to achieve therapeutic concentration levels rapidly within the cysts.[4] As illustrated by our patient, parenteral antibiotics can be substituted with oral antibiotics after clinical improvement and oral Ciprofloxacin is an effective choice. Nevertheless, as Tuberculosis (TB) is prevalent in our population, it is also prudent to thoroughly work-up patients by sending urine TB PCR apart from performing a direct smear for AFB in the urine. Treating Tuberculosis with the correct regime and duration then becomes imperative to ensure complete eradication and prevent resistance.

CONCLUSION

There should be a high index of suspicion for renal abscess in patients with severe urinary tract infection, especially when complicated with acute kidney injury and prolonged fever. Early, empirical antibiotic treatment is crucial. Smaller renal abscesses in a hemodynamically stable patient without any peri-nephric collection can be treated conservatively with antibiotics alone. Serial ultrasonography to look at treatment response and resolution of the abscesses is an inexpensive and effective tool.

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