

Case Report

Acute lobar nephronia in 13-year-old Malay boy with Thalassemia Hb H disease

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Accepted 24 April, 2011

We report the case of a 13-year-old Malay boy, known to have thalassemia Hb H, who presented with right loin pain for 2 weeks, fever off and on, dysuria and tenderness of the right renal angle. Initial imaging by ultrasound and CT scan revealed "a right upper pole renal mass with vascularization; possibilities include Wilm's tumor, metanephric adenoma or cystic partially differentiated nephroblastoma". A repeat ultrasound scan, performed one week later revealed extension of the lesion to the mid-pole and the evolution was "more suggestive of focal lobar nephronia with necrosis and microabscess formation, mimicking a renal mass/tumour". Acute lobar nephronia was diagnosed and IV Ceftriaxone 1.5 Gm OD was administered for 14 days. Repeat ultrasonography revealed that the lesion had resolved in the upper pole and limited to being a much smaller lesion at the midpole of the right kidney. Acute lobar nephronia should be considered in all cases with fever, flank pain and a renal mass-lesion on ultrasonography.

Keywords: Acute Lobar Nephronia, Acute Focal Bacteria Nephritis, children

INTRODUCTION

Acute lobar nephronia (ALN) or acute focal bacteria nephritis (AFBN) is an unusual form of acute localized non-liquefactive bacterial infection of the renal parenchyma. It was first described in adults in 1979 and called lobar nephronia analogous to lobar pneumonia (Rosenfield et al., 1979). The first report of ALN in children was published in 1985 (Lawson et al., 1985). The typical clinical presentations of ALN include fever, flank pain, leukocytosis, pyuria, and bacteriuria, which are similar to those with renal abscess or acute pyelonephritis (APN) (Zaontz et al., 1985). Histopathological examination reveals hyperemia, interstitial edema, and

infiltration of leukocytes, but not necrosis or liquefaction (Montejo et al., 2002). Ultrasound and computed tomography can usually detect these lesions, allow appropriate antibiotic therapy, and avoid unnecessary surgical intervention.

CASE PRESENTATION AND MANAGEMENT

A 13-year-old boy, a known case of alpha-thalassemia (Haemoglobin H disease), diagnosed in 1998 when he was 18 months old, and has been on repeated blood transfusion since then. On 9/11/2010 he was admitted to the medical ward with the chief complaint of right lumbar pain for 2 weeks, of gradual onset, with radiation to back, continuous, worse at night (especially on waking up), and relieved by sitting up. Patient also reported fever off and on, dysuria, and frequent micturition. He reported no diarrhoea or vomiting. On physical examination, the liver was palpable 6 cms below the right costal margin, tender with normal consistency and smooth surface; the spleen was palpable 6 cms below left costal margin, non-tender, smooth and firm. he had persistent tenderness over the

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Abbreviations

APN: Acute Pyelonephritis;
ALN: Acute Lobar Nephronia;
AFBN: Acute Focal Bacteria Nephritis;
KUB: Kidneys, Ureter & Bladder.

right flank. There were no pubic hair or other secondary sex characteristics. The patient denied having any drug or food allergies; he had no recent history of trauma.

The cultures of blood and urine yielded no growth; urine did not reveal leucocyturia or glycosuria; there was a mild neutrophilic leucocytosis. An ultrasound of the abdomen was done on 15/11/2010; it revealed a right renal mass with vascularization. A CT abdomen was on 16/11/2010, which revealed "a right upper pole renal mass with no hydronephrosis. Possibilities include Wilm's tumor, metanephric adenoma or cystic partially differentiated nephroblastoma." Patient was empirically treated for acute pyelonephritis with iv Unasyn (sulbactam-ampicillin) 750 mg tds; however the pain persisted. A repeat ultrasound scan on 23/11/2010 revealed, "There is a heterogenous mass seen in the upper and middle pole region of the right kidney. It has hypoechoic areas seen within, suggestive of necrosis or small abscesses formation. On color doppler study, there is increased in vascularity noted. The vessels are seen traversing through the "mass" rather than displaced by the mass. It is also smaller in size as compared to previous examination. It measures 3.3 cm × 2.8 cm (previously 4.1 cm × 5.3 cm). Impression " Comparing current ultrasound findings with previous CT/ultrasound appearance and correlating with clinical history, finding are more suggestive of focal lobar nephronia with microabscess formation, necrosis present, mimicking a renal mass/tumour. Suggest another course of antibiotics, and follow up ultrasound examination 2 weeks later".

Then iv Ceftriaxone 1.5 Gm OD for 14 days was administered (50 mg/kg/day) up to 06-12-2010 and he was reviewed with a repeat ultrasound scan. This time it revealed "the previously seen heterogenous mass in the upper and middle pole region of the right kidney has reduced in size (currently only seen at midpole). It measures 1.3 cm × 1.9 cm (previously measured 3.3 cm × 2.8 cm). Impression was "resolving right kidney focal lobar nephronia with microabscess and mild hydronephrosis of right kidney". The patient was discharged with treatment on per oral cefuroxime 250mg for 2 weeks., follow up ultrasound KUB on 05/01/2011.

DISCUSSION

Acute lobar nephronia, also known as acute focal bacterial nephritis, is an unusual form of bacterial interstitial nephritis.

It is a severe non-liquifactive infection involving one or more renal lobules. This uncommon form of parenchymal-nephritis can be seen in both adults and children (Ameur et al., 2002). In our study, 13-year-old boy with Thalassemia Hb H disease had acute lobar nephronia affecting the right upper and midpole of the kidney.

Sonographically, ALN generally presents as severe nephromegaly or as a poorly defined, irregularly margined focal mass with hyper-, iso-, or hypoechogenicity, depending on the temporal sequence of the lesions and the resolution of the disease (Boam and Miser, 1995). In the present case, the heterogenous vascular mass which was initially seen, evolved to reveal hypoechoic areas within the mass after one week of antibiotic treatment.

According to the previous reports, the most common pathogen is *E. coli* (40%), followed by *E. faecalis*, *P. aeruginosa*, and *P. Mirabilis* (Cheng et al., 2006). Negative urine and blood cultures and leucocyturia without bacteriuria in ALN have been reported previously (Shimizu et al., 2005). Here in this study, the blood and urine cultures were sterile, neither leucocyturia nor glycosuria was noted; the patient however had a mild neutrophilic leucocytosis.

Treatment of ALN is non-surgical, and the antibiotic should be active against Gram-negative uropathogens and *Staphylococcus aureus* that cause renal cortical abscesses. Antibiotic should be given for 2-3 weeks and serial sonograms can be used to monitor response to antibiotic therapy (Demby and Andriole, 1997; Cheng et al., 2006). In this case, the patient received IV Unasyn (sulbactam-ampicillin) 750 mg tds for 1 week, followed by iv ceftriaxone 1.5 Gm OD for 14 days after which the symptoms subsided. Post-treatment ultrasonography showed resolution of the renal mass-lesion from 4.1 × 5.3 cm (before antibiotics) to 3.3 × 2.8 cm (after iv unasyn for a week), and lastly 1.3 × 1.9 cm (after 2 weeks of iv ceftriaxone). It is found that appropriate intravenous antibiotics need to be given 2-3 weeks and serial sonography is very effective to monitor the resolution of renal lesion due to ALN.

Further radiological examination is mandatory for detection of any urinary tract anomalies, known to be the main predisposing factors for AFBN in children (Uehling et al., 2000). Due to the low incidence of acute lobar nephronia, we need to do a prospective multicenter studies to answer the questions of risk factors, pathogenesis and long-term outcome of ALN in children and in adults.

CONCLUSION

Acute lobar nephronia (acute focal bacterial nephritis) should be suspected when a child presents with fever, pain on the affected side of the abdomen and dysuria and ultrasonography and/or CT –scan of the abdomen suggest evidence of renal parenchymal space-occupying lesion. Retrospective confirmation of the diagnosis can be made if, following appropriate antibiotic therapy, the clinical symptoms disappear with resolution of the renal mass-lesion.

ACKNOWLEDGEMENT

First of all, we wish to thank the Parents for giving written consent for publication of this case report in the Journal. We have to continue by expressing our thanks to Professor Dr. Sethuraman, Dean, Faculty of Medicine, AIMST University for giving his expert comments after editing the manuscript. Also our thanks extend to Additional Professor Dr. Nandakumar for sharing his expert comments. Furthermore, our special thanks to Dr Kwah Yew Gee and Dr Asmah, radiologists, Hospital Sultana Abdul Halim, Sungai Petani for their expert comments and impressions.

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