

Acute pyogenic psoas abscess in a child with nephrotic syndrome

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Introduction

Nephrotic syndrome (NS) is a common kidney disease in children. Children with NS are immunocompromised, more susceptible to bacterial infections and primary peritonitis is a well-described complication^{1,2}. Infections are the important cause of morbidity and mortality in nephrotic children¹. The unique defence mechanisms of the peritoneal cavity promote localization resulting in the formation of abscesses³. Even though peritonitis is a well described entity in NS, intra-abdominal abscesses are very rare⁴. A literature search did not reveal psoas abscess as a complication in NS. In children who present with a limp or lower abdominal pain, psoas abscess does not head the list in the differential diagnosis⁵. We report a psoas abscess in a child with NS who presented with lower abdominal pain and limping of the right leg.

Case report

A 6 year old girl with NS presented with lower abdominal pain, vomiting and limping of the right leg since one week. There was no history of fever or trauma. She was on alternate day treatment with prednisolone 1.5mg/kg since the last 3 months. On examination, she was afebrile with a respiratory rate of 28/minute, pulse rate of 120/minute and blood pressure of 120/72 mm Hg. Her abdominal examination revealed a distended abdomen with severe tenderness in the right iliac fossa and right lumbar region associated with guarding on the right side of the abdomen. Hip joint movements were painful and restricted. Other systems examination was unremarkable. In view of the severe tenderness of the right side of the abdomen with painful and

restricted hip joint movements in an immunocompromised child probable diagnoses of peritonitis, acute appendicitis or septic arthritis of the right hip joint were entertained.

The haemoglobin was 11.6g/dl, total leucocyte count 31,730/ cu mm (N 91%, L7%) and the platelet count 406,000/ cu mm. Kidney function tests were normal. Liver function tests were normal except for a total protein of 4.1g/L and a serum albumin of 1.4g/L. Her urine showed 3-plus albumin and blood culture was sterile. Her chest x-ray, pelvis x-ray and lumbar spine x-ray were normal. Her Mantoux test, Anti Human Immunodeficiency Virus antibodies and Hepatitis B surface antigen were negative.

Sonography revealed a large loculated collection with septae in right iliac fossae extending up to right lumbar region measuring 6 x 7 cm with mild ascites (Figure 1).



Figure 1: Sonography showing a large loculated collection

Sonography of the right hip joint was normal. She was started on injection ceftriaxone, linezolid and metronidazole. Abdominal laparotomy was done and 200 ml of pus was drained from right psoas abscess which was extending up to pelvic cavity. Pus culture grew *staphylococcus capitis*, sensitive

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to ciprofloxacin, ofloxacin, clindamycin, linezolid, vancomycin and trimethoprim-sulfamethoxazole. Within 24 hours of starting intravenous antibiotics, her pain subsided and she was discharged after 14 days of therapy.

Discussion

Children with NS are immuno-compromised and therefore are exposed to a variety of infections resulting in morbidity and mortality¹. Primary peritonitis is a well-described, alarming infectious complication and has a reported incidence of 1.5–16% in NS². Children with NS are immuno-compromised due to hypoproteinaemia particularly hypogammaglobulinaemia, decreased complement factors B (C3 proactivator) and D. There is also evidence of abnormal T-lymphocyte function, hypovolaemia resulting in hypoperfusion of spleen and intestinal mucosa often leading to hypercoagulation and micro-infarcts with oedematous tissue behaving as a culture medium for bacterial growth. Immunosuppressive effects of steroids may also contribute to this². Intra-abdominal abscesses form one extreme in the spectrum of bacterial peritonitis³. Even though peritonitis is a well described entity in NS, intra-abdominal abscesses are very rare. To the best of our knowledge only a single case of primary retroperitoneal abscess has been reported so far in NS⁴.

Psoas abscess is a collection of pus in the iliopsoas compartment and is caused by the contiguous spread from infected organs or by haematogenous spread from sites of occult infection aided by the rich vascular supply of muscle⁶. Psoas abscesses in children are rare and may be classified as primary or secondary⁷. Primary psoas abscess is one without obvious focus of infection and secondary psoas abscess often occurs as a direct spread from contiguous structures⁸. In children it is usually primary as it was in our child⁷. The clinical presentation of iliopsoas abscess is often variable and non-specific⁶. Because of its relative infrequency and non specific presentation there will be a delay in diagnosis and treatment^{6,9}. It is often an overlooked clinical entity and psoas abscess does not head the list in the differential diagnosis of the child who presents with a limp or lower abdominal pain^{5,8}. The classical clinical triad of psoas abscess includes fever, back pain, and limp⁶. Our child presented with lower abdominal pain and limp but without fever, probably due to long term steroids. A common clinical sign is a positive psoas sign (pain when the hip is passively extended or actively flexed against resistance), which is attributed to inflammation leading to spasm of the psoas muscle. This was present in our child and was mistakenly attributed to right hip joint septic arthritis⁷. The original admitting diagnosis in all 7 cases of psoas abscesses in children was septic

arthritis of the hip in a study by Schwaitzberg et al⁵. In a study of 24 children with psoas abscesses, the main initial complaints were a painful hip and difficulty in walking¹⁰.

Staphylococcus aureus is the most frequently cultured organism in over 88% of patients with primary iliopsoas abscess^{6,7,8}. However, in our child, pus from the psoas abscess grew *Staphylococcus capitis* i.e. coagulase negative staphylococci. *Staphylococcus aureus* was isolated in 20 out of 24 children with psoas abscess¹⁰.

Psoas abscess is easily diagnosed by ultrasonography^{8,9}. Sonography is accurate, inexpensive and is easy to perform without radiation effects⁸. In a study by Kadambari et al, ultrasound confirmed the diagnosis in all 36 cases of psoas abscess and CT was not done in any of the them⁸. Ultrasonography was used as a screening method to confirm the clinical diagnosis in 19 children with psoas abscess¹⁰. CT is considered the gold standard for diagnosis as the retroperitoneal space may be difficult to visualise ultrasonographically and can also be obscured by bowel gas⁶. Early surgical drainage with appropriate antibiotics has been the standard method of treatment and our child responded well following the drainage procedure^{7,8}.

A high index of suspicion of psoas abscess is mandatory when dealing with intra-abdominal complications in children with NS, especially when they present with fever, limping and lower abdominal pain and sonography should always be done as it is a valuable diagnostic tool.

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