Bilateral iliopsoas abscess associated with right hip septic arthritis in a neonate

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ABSTRACT

يعتبر خراج العضلة القطنية مرض نادر الحدوث في الأطفال حديثي الولادة، أما خراج العضلة القطنية ثنائي الجانب المترافق مع إنتان المفصل الوركي فلم يتم نشر أي حالة عنه في محرك البحث حتى الآن. ننشر تقريراً عن حالة طفل حديث الولادة عمره 28 يوم، عانى من خراج العضلة القطنية ثنائي الجانب مترافق مع انتان وخلع المفصل الوركي الأيمن والعامل المرضي المسبب كان العنقوديات الذهبية المقاومة للميثيسيلين. تمت مشاهدته بسبب تورم منتشر ثنائي الجانب في المنطقة الأربية والقسم العلوي للفخذ، وتشخيصه بالأمواج الصوتية والأشعة المقطعية. تمت معالجته بنجاح وذلك بالبزل ووضع مفجر بتوجيه الأمواج فوق الصوتية مع مشاركة المضادات الحيوية. حيث حصل تحسن سريري ملحوظ خلال 48-24 ساعة من وضع المفجر.

Iliopsoas abscess is a very rare pathology in the neonatal period. There is a lack of reports in the literature on bilateral psoas abscess with hip joint arthritis. We report a case of bilateral iliopsoas abscess with concomitant right hip septic arthritis, caused by methicillin-resistant *Staphylococcus aureus* in a 28-day-old male infant. The baby presented with bilateral diffuse swelling of the groins and upper thighs. He was treated successfully by ultrasound-guided percutaneous drainage along with systemic antibiotic therapy. Clinical improvement was observed within 24-48 hours of drainage.

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Iliopsoas abscess (IPA) is a rare condition in children, and it is extremely uncommon in neonates.[1] Psoas abscess associated with septic arthritis of the hip is an exceptional pathology in the neonatal period.[2] Double-sided psoas abscess was reported once in a few-week-old infant.[3] In this case report, we describe a case of neonatal bilateral iliopsoas abscess associated with right hip septic arthritis. A PubMed literature review was unable to source any previous reports of this condition. Our objective in presenting this particular case is to highlight the unique association of these 2 pathologies, bilateral iliopsoas abscess, and the septic hip arthritis in a neonate infant.

Case Report. A 28-day-old male neonate was referred to our hospital with right-sided groin and scrotal swelling. There was no associated complaint of increase in temperature or any history of local trauma. The mother also noticed the painful and limited movements of his right lower limb and excessive crying on passive movement. He was a term neonate, born by normal vaginal delivery and with a birth weight of 2.9 kg. After birth, he was admitted to the nursery as an infant of a diabetic mother with electrolyte disturbances; namely, hypoglycemia, hyperkalemia, and hyponatremia. These electrolyte disturbances resolved within 3 days of admission. Routine abdominal ultrasound carried out during the hospital stay was normal, and he was discharged home at the age of 4 days. Later on he was reviewed in the clinic for follow-up at 3 weeks of age, and the electrolyte levels were within normal range, but mild hydrocele was noted. At the time of the current presentation, the baby was afebrile but irritable. Local examination revealed a firm, ill-defined and tender swelling involving the right groin, upper thigh, and extending to the posterior aspect of the thigh and buttock. A similar finding was also noticed on the left side of the groin and adjoining left upper thigh along with an edematous scrotum (**Figure 1**). Limitation of left hip joint movement was observed, and manipulation of the joint resulted in excessive crying and irritability. Laboratory investigations revealed a

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white cell count of 34.1 × 10^3/uL, platelets 81 × 10^3/uL, C-reactive protein 3.2mg/dl, hemoglobin of 7.55g/dl, erythrocyte sedimentation rate (ESR) of 117mm/h, immunoglobulin (Ig) A=61mg/dl, IgG=1290mg/dl, IgM=189mg/dl, and IgE<17.1IU/ml. Ultrasonography showed an intra-pelvic, paravesical cystic mass, which extended bilaterally to the groins. An abdomino-pelvic CT scan revealed bilateral retroperitoneal huge multi-locular cystic masses, displacing the bowel loops anteriorly and showing marginal enhancement with internal septations and extending to both groins, both thighs, right gluteal region, and scrotal sac (**Figure 2**). The fluid content displayed high density, and another significant finding was that the right hip joint was markedly dislocated with intra and extra-capsular joint effusion (**Figure 3**).

Ultrasound-guided needle aspiration was performed through the upper right groin swelling and revealed thick greenish yellow pus. Aspiration of more than 200ml of pus was carried out, and a drain was fixed. A similar drain was inserted in the left groin, which drained around 100ml of pus of the same color. Antibiotic therapy was initiated empirically using vancomycin and meropenem, as the picture was suggestive of severe sepsis based on the significant amount of evacuated pus along with the leukocytosis and thrombocytopenia. Pus culture was reported later as positive for methicillin-resistant *staphylococcus aureus* (MRSA). Thereafter, the general condition of the patient improved and the swelling markedly subsided within 48 hours of the management. After 48 hours, an arthrotomy was performed by the orthopedic surgeon and cleaning of the hip joint was undertaken by removal of slough and necrotic tissue and an intra-articular drain was inserted. Once the general condition of the baby improved and the swelling decreased in size, an abdominal CT scan was repeated (**Figure 4**) and demonstrated a marked improvement. Systemic antibiotic therapy, vancomycin and meropenem, was continued for 3 weeks and plaster was applied to hold the head of the femur in a reduction position in the acetabulum.

The baby was followed up in the clinic after 6 weeks and he was symptom-free and thriving well. A repeated pelvic ultrasonographic study at that time was normal. The total length of follow-up in the clinic was 13 months, and no limb deformity was detected. However, he requires further follow-up to assess the function of the hip joint.

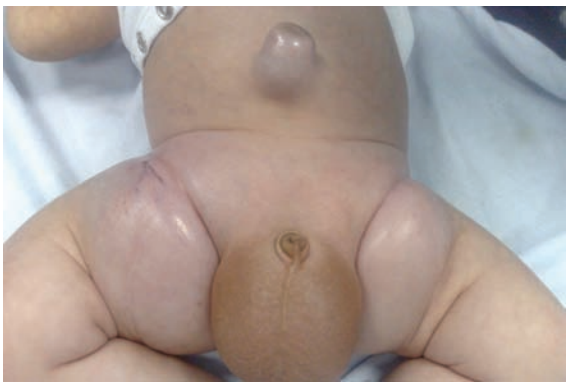

Figure 1 - Swelling involving both groins, upper thighs, with edematous scrotum.

Discussion. Mynter[4] was the first to describe IPA in 1881 and named it psoitis. The IPA may be classified as primary or secondary depending on the presence

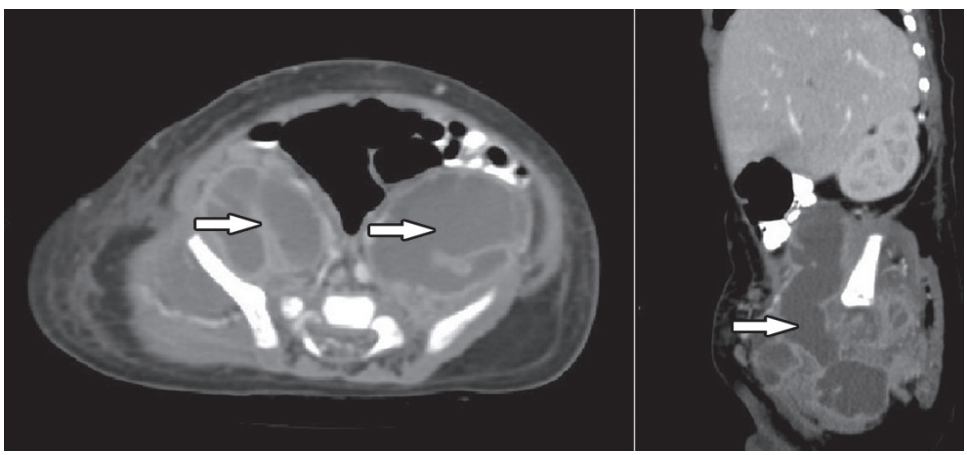

Figure 2 - Abdomino-pelvic CT scan shows huge bilateral psoas collection (white arrows.).

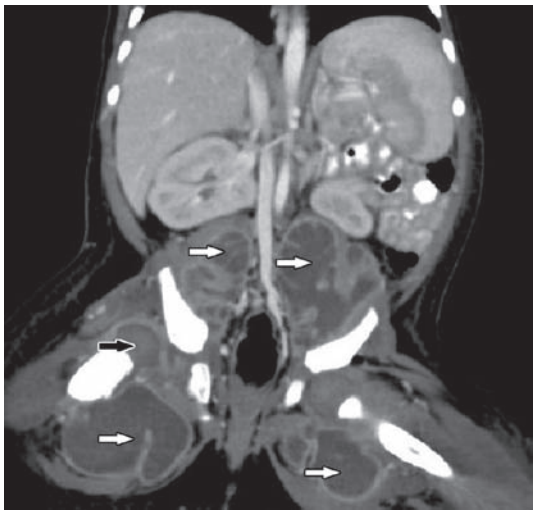

Figure 3 - Abdominal CT scan coronal view demonstrates the right hip is markedly dislocated (black arrow) with intra and extra joint collection (white arrows).

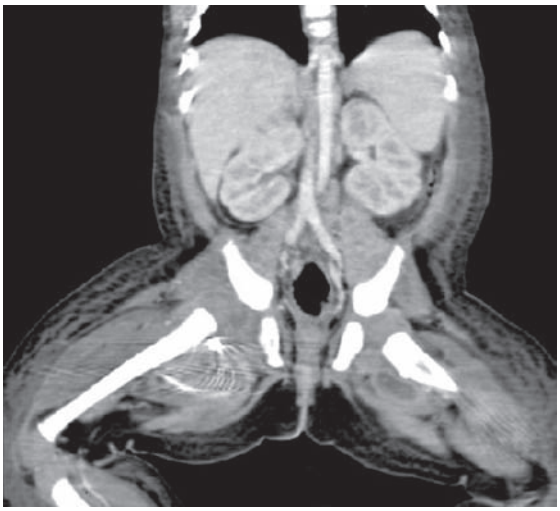

Figure 4 - Repeated abdominal CT scan 7 days post drainage demonstrates disappearance of iliopsoas collection.

or absence of underlying disease. Primary IPA occurs probably as a result of hematogenous spread from another source of infection in the body. The secondary IPA occurs as a result of direct extension from a local spread of infection to the iliopsoas muscle.[5] In children, extension from the adjacent structures is extremely rare, and primary psoas abscesses accounts for the vast majority of the cases.[3] In neonates, 12 cases of primary IPA have been reported.[6]

Hip arthritis is commonly seen in neonates and infants. However, IPA is rare in children, and extremely uncommon in neonates.[7] Co-existence of these 2 conditions is even rarer. Wang et al[2] reported the first known cases of concurrent IPA and septic hip arthritis in 2 infants, 3- and 7-month-old. Schut et al[3] reported a unique case of double-sided IPA in a few-week-old infant, with no other pathological source of infection. Our present case with bilateral IPA was secondary to a neglected untreated case of septic arthritis of the right hip, suggested by the history and confirmed by the CT scan findings.

In a review by Yano et al[7] on psoas abscesses in neonates, *Staphylococcus aureus* was the most frequently identified pathogen due to hematogenous seeding. Okan[8] has also reported a case of psoas abscess in a newborn caused by methicillin-sensitive *Staphylococcus aureus*. The isolated organism in our case was MRSA, which is extremely rare. A similar case of IPA caused by MRSA has been reported by Okada et al,[9] which presented with toxic shock syndrome. Though the usual treatment of IPA in neonates is surgical drainage in combination with proper antibiotic therapy, there are numerous case reports of successful US-guided percutaneous drainage of IPA as a supplement to antibiotic therapy.[10,11] Likewise in our case, clinical improvement was observed within 24-48 hours of US-guided percutaneous drainage, and subsequent imaging demonstrated resolution of the abscess cavity. The presence of infection in the hip joint in our case required an additional arthrotomy. Although Auerbach et al[12] are of the opinion that resection arthroplasty often cannot be avoided, arthrotomy was curative in our case. The 2 cases reported by Wang et al[2] of IPA with concomitant septic hip arthritis, had residual hip deformity at follow-up. Our case will need further follow-up to assess any anatomical deformity of the hip joint, and therefore, the future functional outcome.

In conclusion, we presented an exceptional case of bilateral IPA associated with right hip septic arthritis in the neonatal period, caused by MRSA. The CT scan proved to be a useful diagnostic modality and successful treatment was achieved by US-guided drainage along with antibiotic therapy and an additional surgical maneuver; arthrotomy. However, further follow-up is mandatory to assess the future functional outcome of the hip joint.

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Ethical Consent

All manuscripts reporting the results of experimental investigations involving human subjects should include a statement confirming that informed consent was obtained from each subject or subject's guardian, after receiving approval of the experimental protocol by a local human ethics committee, or institutional review board. When reporting experiments on animals, authors should indicate whether the institutional and national guide for the care and use of laboratory animals was followed.