Institute for Child and Youth Health Care of Vojvodina, Novi Sad[1]
University of Novi Sad, Faculty of Medicine Novi Sad[2]
Clinical Center of Vojvodina, Radiology Center, Novi Sad[3]

Case report
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ILIOPSOAS ABSCESS IN INFANTS – A CASE REPORT

APSCES ILIOPSOASA KOD ODOJČADI – PRIKAZ SLUČAJA

Jelena GRGUR[1], Đurđa CVJETKOVIĆ NIKOLETIĆ[2], Dragana SIMIĆ[1], Nikola EIĆ[1], Sonja LUKAČ[3] and Radoica JOKIĆ[1, 2]

Summary

Introduction. Iliopsoas abscess is a rare condition, which may be categorized as primary or secondary. Primary iliopsoas abscess is caused by lymphohematogenous spread of infectious agents from a distant site, unlike secondary iliopsoas abscess that is a result of direct spread of a nearby infectious or inflammatory process. The diagnosis and treatment of primary iliopsoas abscess are often prolonged, due to the rarity of the disease and the nonspecific signs and symptoms. **Case Report.** This study presents a case of a one-month old infant with a left-sided iliopsoas abscess. The physical examination revealed a swelling with a pronounced vascular pattern in the area of the left groin. Laboratory findings showed leukocytosis and increased inflammatory markers. An abscess within the left hemiabdomen and inguinofemoral region was diagnosed by ultrasonography and computerized tomography. The main therapeutic approach included antibiotic therapy, as well as surgical drainage of the abscess. Staphylococcus aureus was isolated from a 100 ml sample of the drained abscess. The treatment outcome was good. **Conclusion.** Given the frequency of iliopsoas abscess in infants, which is far less common than other primary diseases, greater attention must be paid to symptoms and signs during clinical examination, along with the appropriate choice of diagnostic procedures. Timely diagnosis, as well as adequate treatment of iliopsoas muscle abscess, is imperative in order to prevent the development of complications, such as systemic inflammation and sepsis.

Key words: Psoas Abscess; Infant; Groin; Tomography, X-Ray Computed; Ultrasonography; Drainage; Diagnosis; Signs and Symptoms; Treatment Outcome

Sažetak

Uvod. Apsces iliopsoasa je retko oboljenje koje može biti primarno i sekundarno. Primarni apsces iliopsoasa je uzrokovan limfohematogenim širenjem infektivnih agensa sa udaljenog mesta, za razliku od sekundarnog apscesa koji se formira direktnim širenjem susednog infektivnog ili inflamatornog oboljenja. **Prikaz slučaja.** Prikazujemo slučaj odojčeta starog mesec dana sa razvijenim levostranim iliopsoasnim apscesom. U fizikalnom pregledu je uočen otok i naglašena vaskularna šara u predelu leve prepone. U laboratorijskim nalazima registovana je leukocitoza, kao i povećanje inflamatornih markera. Apscesna kolekcija u levom hemiabdomenu i ingvinofemoralnoj regiji dijagnostikovana je ultrasonografijom i kompjuterizovanom tomografijom. Glavni terapijski pristup obuhvatio je antibiotsku terapiju, kao i hiruršku drenažu apscesa. Iz 100 ml uzorka drenirane apscesne kolekcije izolovan je *Staphylococcus aureus*. Ishod lečenja je bio dobar. **Zaključak.** S obzirom na učestalost ovakve vrste patologije kod odojčeta, koja je ređa u odnosu na ostale primarne bolesti, mora se obratiti veća pažnja na simptome i znakove pri kliničkom pregledu, kao i na odgovarajući izbor dijagnostičke procedure. Pravovremeno postavljanje dijagnoze, kao i adekvatno lečenje apscesa mišića iliopsoasa neophodno je kako bi se sprečio razvoj komplikacija, poput sistemske inflamacije i sepse.

Ključne reči: iliopsoasni apsces; odojče; prepone; CT; ultrasonografija; drenaža; dijagnoza; znaci i simptomi; ishod lečenja

Introduction

An abscess is a localized purulent process, which can have an acute or chronic course. A chronic abscess, unlike an acute one, is surrounded by a pseudocapsule made of inflammatory cells. Chronic localized purulent infections most often affect organs from which drainage of pus is difficult, such as bone marrow or brain [1, 2]. Acute abscesses may occur in muscle tissue, in which case they most commonly affect the muscles around the hip, including the iliopsoas, piriformis, obturators, adductors, gluteus, and quadriceps [3, 4].

Iliopsoas abscess (IPA) is a rare condition with an unknown incidence. Depending on the etiology, it is classified as primary or secondary. Primary IPA is caused by lymphohematogenous spread of infectious agents, which is facilitated by a rich iliopsoas muscle vascularity. The main sources of pathogens are the respiratory system, gastrointestinal tract, as well as the urinary tract. The predisposing factor is a not fully developed immune system [5]. Secondary IPA is caused by direct spread of an adjacent infectious or inflammatory condition and it can be associated with trauma and instrumentation in the lumbar spine, inguinal region or hip region [6]. The diagnosis of primary IPA is usually

Corresponding Author: Dr Jelena Grgur, Institut za zdravstvenu zaštitu dece i omladine Vojvodine, 21000 Novi Sad, Hajduk Veljkova 10, E-mail: grgurjelena94@gmail.com, radoica.jokic@mf.uns.ac.rs

Abbreviations

IPA – iliopsoas abscess
US – ultrasonography
LL – laterolateral
AP – anteroposterior
CC – craniocaudal
CT – computed tomography
MRI – magnetic resonance imaging

prolonged, and the treatment is often delayed due to the rarity of the disease and the lack of specific clinical signs [3–6]. This study presents a case of a one-month-old infant with a left-sided IPA.

Case Report

A 30-day-old infant was admitted to the Department of Neonatal Surgery of a regional hospital with a swelling and erythema of the left groin and thigh noticed by the parents the night before. The infant was conscious, eupneic, normocardial, afebrile, well-nourished, with normal tonicity and musculature. The physical examination revealed swelling and a pronounced vascular pattern in the area of the left groin. The infant's mother claimed that the child was moving his left leg less than the right since birth. Laboratory tests showed increased inflammatory factors (white blood cells - 26.73 x 10^9/L, C-reactive protein - 111.50 mg/L). The first Doppler ultrasonography (US) was performed after admission and showed a clearly limited paravesical lesion in the left hemiabdomen, 36 x 33 x 70 mm (laterolateral (LL) x anteroposterior (AP) x craniocaudal (CC)) in size, filled with dense fluid, with signs of marginal hyperemia on color Doppler. The described lesion cranially reached the lower half of the left kidney, and caudally it followed through the inguinal canal into the anterior femoral region. Differential diagnosis pointed to an abscess and/or hematoma. Empiric parenteral antibiotic therapy was immediately initiated with vancomycin and meropenem. The patient was referred for computed tomography (CT), with and without intravenous contrast. The CT examination revealed that the left iliopsoas muscle from the lower half of the left kidney was extremely voluminous, with disturbed architectonics, postcontrast with evident irregular, dense multiseptated fluid collection, with approximate dimensions 33 x 32 x 74 mm (AP x LL x CC) **(Figures 1 and 2)**. The lesion showed postcontrast intensive marginal staining and an increase in the density of retroperitoneal fat along the inferior pole of the left kidney. The described lesion extended through the inguinal canal into the femoral region, where an anterior and medial increase in the density of subcutaneous adipose tissue and reactively altered lymph nodes were observed. The lesion was in close contact with the iliac blood vessels, and rested directly on the inner surface of the iliac bone, without affecting the bone tissue itself. The CT scan of the abdomen did not show any additional changes. The lesion corresponded to IPA.

Based on the patient history, as well as clinical, US and CT findings, an abscess collection in the left hemiabdomen and inguinofemoral region was diagnosed. On the fifth day of hospitalization, under ultrasonography control, an incision was made in the lower left quadrant of the abdomen, and the ab-

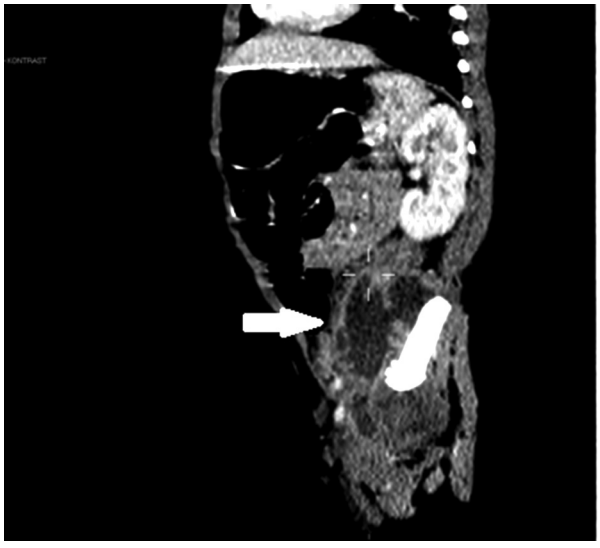

Figure 1. Contrast-enhanced CT of the abdomen and pelvis (sagittal section): irregular hyperdense fluid collection extending to inguinum, with marginal staining of the left iliopsoas muscle

Slika 1. *Kompjuterizovana tomografija abdomena i male karlice (sagitalni presek): postkontrastna slika pokazuje nepravilnu hiperdenznu tečnu kolekciju koja se proteže do ingvinuma i rubno se boji u levom iliopsoasnom mišiću*

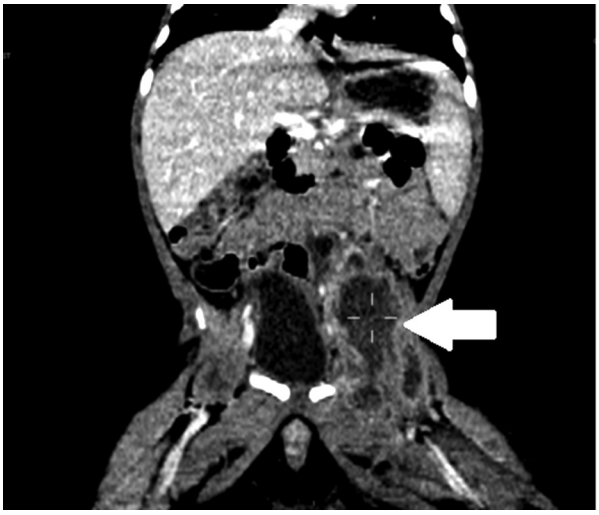

Figure 2. Contrast-enhanced CT of the abdomen and pelvis (coronal section): irregular multilocular lesion in the left iliopsoas muscle and inguinum

Slika 2. *Kompjuterizovana tomografija abdomena i male karlice (koronalni presek): postkontrastna slika pokazuje nepravilnu multilokuliranu promenu u levom iliopsoasnom mišiću i ingvinumu*

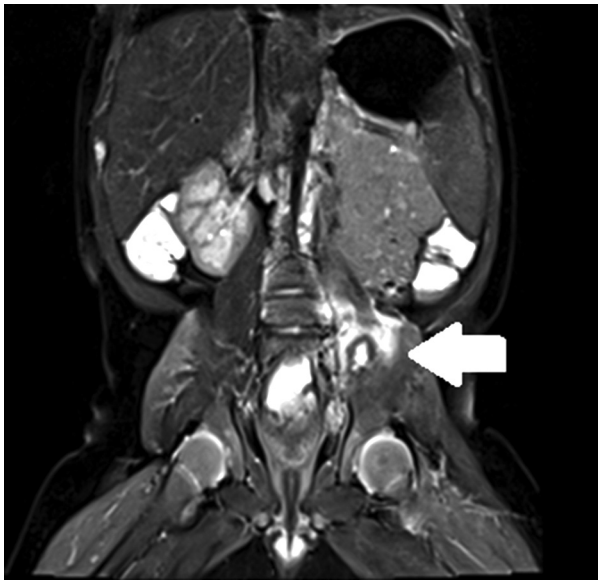

Figure 3. Magnetic resonance imaging of the abdomen and pelvis: T2W TSE FS COR native image showing encapsulated fluid collection located in the left iliopsoas muscle, hypointense capsule and perilesional edema
Slika 3. *Magnetna rezonancija abdomena i karlice: T2W TSE FS COR nativni snimak pokazuje inkapsuliranu tečnu kolekciju u levom iliopsoasnom mišiću, hipointenznu kapsulu i perilezioni edem*

scess collection was approached by a pneumocath, and about 100 ml of purulent contents was evacuated, and the sample was sent for microbiological examination. In the immediate postoperative period, a fall of red blood cells was observed, and the child received a blood transfusion. The postoperative course continued favorably. Subsequent stabilization of the patient's general condition, improvement of local clinical findings, and decrease of inflammatory parameters continued from the seventh postintervention day. Parenteral antibiotic therapy was carried out for 17 days, after which oral antibiotics were introduced (amoxicillin/clavulanic acid and moxifloxacin). After the intervention, magnetic resonance imaging (MRI) of the abdomen was performed and compared with the previous CT findings **(Figures 3 and 4).** Volume reduction was predominantly at the expense of fluid/detrital component of the formation. The lesion showed a discrete restricted diffusion, and in postcontrast sequences there was a high signal intensity of the solid component, which mainly consisted of muscle fibers of disturbed structure. Between the muscle fibers, a larger complex/detrital collection was detected, partly limited by a 3 mm thick wall and partly in bands with impregnated intermediary fibers. More cranially, there was a smaller round collection with a centrally positioned fluid/detrital component 13 mm in diameter, and a 3 mm thick wall. The MRI showed significant reduction in dimensions of the left iliopsoas muscle, predominantly due to the partial regression of the fluid/detrital component, with persistence of gross

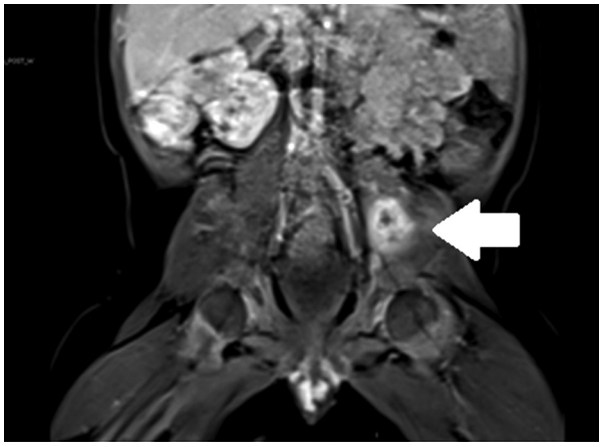

Figure 4. Magnetic resonance imaging of the abdomen and pelvis (coronal section): T1 Dixon-VIBE postcontrast image showing hyperintense round lesion in the left iliopsoas muscle (a wide peripheral postcontrast enhancement of the encapsulated fluid collection)
Slika 4. *Magnetna rezonancija abdomena i karlice (koronalni presek): T1 Dixon-VIBE postkontrastni snimak pokazuje hiperintenznu okruglastu leziju u levom iliopsoasnom mišiću (uočava se široko rubno prebojavanje inkapsulirane tečne kolekcije)*

disturbance of muscle fibers. In the further course of hospitalization, the infant was afebrile, in good general condition, with normal vital parameters and satisfactory clinical findings. The follow-up laboratory report showed that the inflammatory parameters were within the reference range. A follow up US was performed before discharge and it showed almost complete regression in comparison to the initial US. The muscle was significantly less distended, with just a small fluid component. The infant was discharged on the 28th day from admission in good general physical condition for further home treatment.

Discussion

Primary muscle abscess is more common in the younger population than in adults, although it is most common in infants. It is mostly seen in tropical areas [7]. Staphylococcus aureus is the most common cause of the primary, while Escherichia coli is the main cause of the secondary IPA [6]. Predisposing factors for the development of abscesses of this type are immunodeficiency and diabetes mellitus [8]. In neonates, the crucial thing is to make an accurate and timely diagnosis, since the diagnosis of muscle abscess in the hip region may have symptoms similar to other diseases, such as septic arthritis of the hip joint, due to a very similar clinical presentation [7, 9]. The clinical picture is dominated by fever, loss of appetite, anxiety of the child, as well as leg or groin swelling, cellulitis, limitation of leg motion, and pain [8–10]. The IPA cases in infants are sporadic in the literature [6–11]. What these cases have in common with ours is that the clinical

picture describes the swelling of the region where the abscess is located and the impossibility of extension, internal rotation, and abduction as of the upper leg on the side where the lesion is present, as well as leukocytosis and increase of inflammatory parameters in laboratory test results. In addition, in all cases the children were born without any musculoskeletal anomaly, and were normally gaining weight and height. The initial diagnostic method was US, whose advantages are easy availability, lack of radiation, as well as no need for intravenous contrast medium. However, US can be nonspecific, and therefore other diagnostic procedures should be considered [10]. Further diagnostic methods include CT and MRI, providing a definitive diagnosis. The treatment of IPA depends on its size, as well as on clinical parameters of patients. The most common treatment is conservative, and it includes appropriate antibiotic therapy covering Staphylococcus aureus and also any other possible source of the abscess, or percutaneous puncture under ultrasound control followed by a full course of appropriate antibiotic therapy [9–11]. In these cases, initial empirical antibiotic therapy was later changed according to antibiogram reports if required. Fatal outcome has been described in the literature as a consequence of sepsis due to delayed diagnosis because of nonspecific nature of the illness [7].

Conclusion

Iliopsoas muscle abscess is a very rare pathological entity in infants. Therefore, attention must be paid to the symptoms and signs during clinical examination, along with the appropriate choice of diagnostic procedures. Timely diagnosis, as well as adequate treatment is imperative in order to prevent the development of complications, such as systemic inflammation and sepsis.

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