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Case Report

Report on two neonatal cases with iliopsoas abscess, diagnostic and microbiological challenges during ongoing sepsis therapy: A Case Report

Iliopsoas abscess & neonate & sepsis

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Abstract

Introduction: Iliopsoas abscess (IPA) is a deep-seated infection that is rarely reported in neonates. The underlying condition in most cases remains unknown; a history of prior systemic infection has been identified in only a few cases. The insidious onset and non-specific initial symptoms often lead to delayed diagnosis and an increased demand for surgical intervention.

Case Presentation: Here, we present two neonatal cases of IPA with the symptoms of ipsilateral lower limb pain that developed during the treatment of sepsis. In one of the cases, the pathogens responsible for sepsis and IPA were different.

Conclusion: IPA can develop concurrently with neonatal sepsis, whether caused by the same or different pathogens. Therefore, in neonates undergoing sepsis treatment who develop lower limb pain and swelling, IPA should also be considered.

Keywords

iliopsoas abscess, neonate, sepsis, diagnosis, therapy

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Introduction

Iliopsoas abscess (IPA) has been rarely reported in neonates, and its clinical presentation is often insidious, frequently mimicking septic arthritis or osteomyelitis.[1,2] In previously described neonatal cases, IPA has usually presented as an isolated condition and has rarely been reported as part of a systemic infectious process.[1,3,4] Here, we present two neonatal cases of IPA diagnosed based on lower limb findings emerging during ongoing sepsis treatment.

Case Presentation

Case 1

A female infant weighing 2170 g was born as a twin by cesarean section at 34 weeks' gestation to a 25-year-old primigravida. She was referred to our hospital due to prematurity and respiratory distress. Antenatal history was uneventful, with no premature rupture of membranes. On admission, physical examination was unremarkable except for respiratory distress, which improved with non-invasive support over five days. In the absence of perinatal risk factors and with normal laboratory results, including blood culture, empirical antibiotics were not initiated. On day 13, she developed a fever and irritability. Evaluation revealed no clear infection focus, except for elevated C-reactive protein (CRP, 156 mg/dl). Empirical meropenem and amikacin were started, and vancomycin was added after the blood culture grew methicillin-resistant Staphylococcus aureus (MRSA). Meanwhile, decreased movement of the right leg and pain on manipulation were observed. Initial ultrasonography (US) showed no fracture or septic arthritis. Although CRP decreased after two days, mild swelling of the right medial thigh appeared. Repeat US (ultrasonography) detected fluid collection in the right psoas muscle, and magnetic resonance imaging (MRI) confirmed a 26 × 13 mm cystic collection in the right iliopsoas muscle (Figure 1). US-guided aspiration yielded 1 cc of purulent fluid, which cultured MRSA. A second aspiration was deferred, and antibiotic therapy was continued. Intravenous antibiotics were administered for 28 days, resulting in complete clinical and radiological resolution.

Case 2

A male infant weighing 2100 g was born via cesarean section at 38 weeks of gestation, from the second pregnancy of a 26-year-old mother. He was referred to our hospital due to small-for-gestational-age, respiratory distress, and hypoglycemia. Apart from intrauterine growth restriction, the antenatal history was unremarkable, with no premature rupture of membranes or maternal glucose metabolism disorders. However, it was later informed that the mother had developed a surgical wound infection. The infant was started on supplemental oxygen and intravenous glucose infusion, with strict monitoring of blood glucose levels. Empiric antibiotic therapy was not initiated at admission; upon being informed of the maternal infectious status, serial evaluation for neonatal infection was initiated. The respiratory distress and hypoglycemia were resolved by the fifth day and the second week of life, respectively. On the 12th day of hospitalization, the infant's condition acutely deteriorated due to sepsis caused by Klebsiella pneumoniae, which was sensitive to commonly used antibiotics. Intravenous fluids, catecholamine support, platelet transfusion, and wide-spectrum antibiotics (meropenem and amikacin) were administered. Clinical improvement was observed, with a decrease in CRP levels (from 238 mg/dl to 83 mg/dl), and generalized edema began to resolve. However, on the 10th day of the treatment, asymmetrical swelling of the whole left leg was noticed, with mild limitation of hip mobility. The thigh circumference difference between the legs was 2.8 cm, and the values of CRP rose again to 91 mg/dl. Doppler US showed normal arterial and venous blood flow of the left lower extremity, and the hip joint appeared normal on US. Based on the experience from the previous case, targeted US of the iliopsoas muscle was performed, revealing an abscess formation in the left iliopsoas muscle, along with several small reactive lymph nodes on the left inguinal and femoral region (Figure 2). The abscess was aspirated percutaneously under US guidance, and MRSA was isolated from the purulent fluid. Vancomycin was added to the ongoing treatment and continued for at least 14 days until complete clinical, biochemical, and radiological resolution was

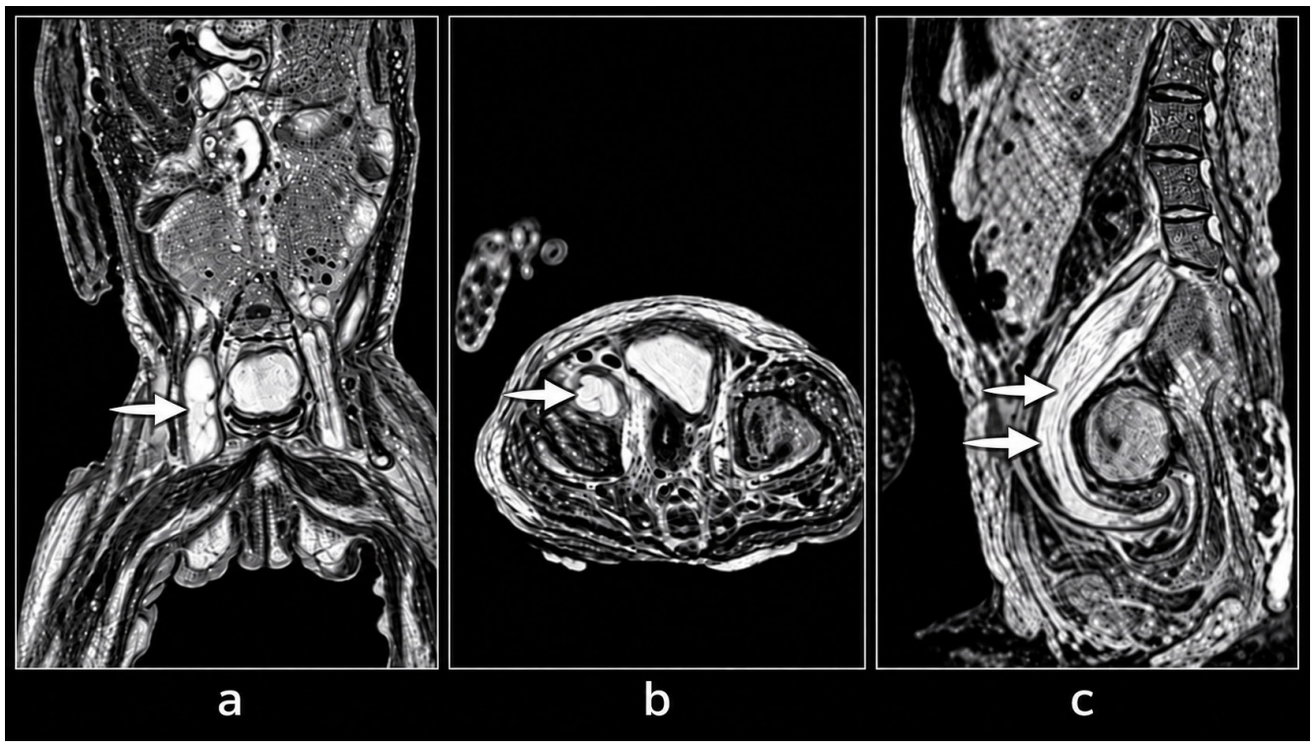
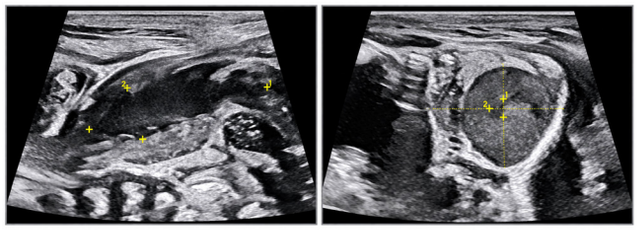


Figure 1. *Coronal (A), Axial (B), and Sagittal (C) T2-Weighted MRI Images Demonstrating a Hyper-Intense Cystic Collection Within the Right Iliopsoas Muscle, Extending Caudally to the Level of the Right Hip Joint*



a b

Figure 2. *a. The Ultrasound Image of the Left Iliac Fossa Showing a Heterogeneous, Mildly Dense Collection Measuring Approximately 42 × 12 mm Within the Left Iliopsoas Muscle,*

b. The Appearance of the Abscess After One Week of Drainage and Antibiotic Therapy

Discussion

IPA is rare in infants and young children, and even more uncommon in neonates.[1] It may occur either as a primary or secondary infection. Primary IPA typically results from hematogenous or lymphatic spread of a causative pathogen from a distant site, while secondary IPA arises from direct extension of a nearby inflammatory or infectious process into the muscle compartment.[1,3] Primary IPA is more commonly reported in neonates, whereas secondary IPA constitutes the majority of cases in adults.[1] Although the predisposing factors leading to abscess formation in the iliopsoas in neonates have not been fully understood, it has been speculated that a hemorrhage within the psoas muscle during birth and a bacteremic episode in the perinatal period may serve as initiating events.[1,3] Intramuscular injections or repeated skin punctures can provide a portal of entry for skin or hospital flora. Two cases presented here had undergone frequent skin punctures, particularly in the lower extremities, for capillary blood gas analysis and blood glucose monitoring. Since S. aureus is a common component of the skin's resident flora, the disruption of skin integrity may facilitate its spread via hematogenous or lymphatic routes, potentially settling into the previously affected iliopsoas muscles and leading to abscess formation. Interestingly, the most reported cases of neonatal IPA usually present with symptoms between two and three weeks after birth, an interval sufficient for the formation of a clinically significant abscess.[3]

The clinical presentation of IPA may initially be non-specific, and fever may not be a prominent symptom. As the abscess enlarges, localized signs such as pain, decreased leg movement, and swelling in the groin or the lower limb develop gradually, shifting medical attention to a more specific area.[3-5] The insidious onset and non-specific early symptoms often contribute to delayed diagnosis and an increased demand for surgical intervention.[6] In the cases presented here, sepsis was the initial manifestation, with fever as the most prominent symptom, which disappeared in the subsequent days. During ongoing sepsis treatment, the diagnosis of IPA was made based on the emergence of lower limb symptoms. At this stage, the differential diagnosis includes septic arthritis, osteomyelitis, inguinal hernia, thrombotic events, and superficial skin and soft tissue infections. In the literature, septic arthritis is the most common initial diagnosis.[1,2] Therefore, the initial imaging modalities may fail to definitively diagnose IPA, and a high index of clinical suspicion is required to prompt appropriate imaging studies aimed at detecting occult sites of infection, particularly in the iliac fossa. In addition to point-of-care US, computed tomography or MRI are highly sensitive for confirming the diagnosis of a deep-seated abscess, such as IPA.[1,5] In the second case, the edema of the entire left leg was likely a result of the compression of the vascular structures in the iliac fossa by the abscess.

Unlike the two cases presented here, in which sepsis preceded the development of IPA, most cases of isolated IPA show only mild increases in acute phase reactants and white blood cell count, which are non-specific for the diagnosis.[1,7] In addition to the delayed onset and non-specific early symptoms, the high tendency to start empirical antibiotics in sick neonates and the treatment of underlying infections without a definitive diagnosis may contribute to the underdiagnosis and underreporting of IPA. As seen in the present cases, if the decrease of CRP levels is slighter than expected or shows a pause despite appropriate sepsis treatment, a localized infectious focus should be suspected. S. aureus is the most commonly isolated pathogen from pus cultures, while the isolation of the causative pathogen from blood cultures has been reported only in a few cases.[1,5] In the first case, the pathogen was isolated from both blood and pus cultures, whereas in the second case, the different pathogens were identified. This finding emphasizes the importance of diagnostic aspiration under US guidance when an abscess is detected, even if the patient is already being treated for sepsis caused by a previously isolated pathogen.

The management of IPA involves systemic antibiotic therapy combined with the drainage of the abscess, either percutaneously under US guidance or, if necessary, via open surgical drainage.[1,5] The drainage of the abscess is of critical importance both for identification of the causative pathogen and for minimizing the duration of antibiotic therapy, as demonstrated in the present cases. With early diagnosis and effective drainage, the prognosis is quite good, without disability or recurrence.[1] However, a delay in the diagnosis may be fatal.[8]

Limitations

In the first case, MRI was able to demonstrate sensitivity sufficient to confirm the diagnosis of IPA; however, the relatively low image quality and limited spatial resolution may potentially compromise the illustrative value of the case.

Conclusion

This report highlights that IPA can develop concurrently with neonatal sepsis, whether caused by the same or different pathogens. Therefore, in neonates undergoing sepsis treatment who develop lower limb pain and swelling, IPA should also be considered in the differential diagnosis, along with septic arthritis or osteomyelitis. Point-of-care US and aspiration of the abscess with pus culture are essential for the diagnosis and optimal treatment.

Declarations

Animal and Human Rights Statement

All procedures involving the patient were conducted in accordance with the Declaration of Helsinki and its later amendments or comparable ethical standards.

Informed Consent

Written informed consent was obtained from the parents or legal guardians of the patients for publication of this case report and any accompanying images.

Data Availability

The datasets used and/or analyzed during the current study are not publicly available due to patient privacy reasons, but are available from the corresponding author on reasonable request.

Conflict of Interest

The authors declare no conflict of interest.

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Author Contributions (CRediT Taxonomy)

Conceptualization: M.Ş.İ.
Methodology: M.Ş.İ.
Software: M.Ş.İ.
Validation: M.Ş.İ.
Investigation: M.Ş.İ.
Resources: M.Ş.İ., N.T.
Data curation: M.Ş.İ.
Writing – original draft: M.Ş.İ., N.T.
Writing – review & editing: M.Ş.İ., N.T.
Visualization: M.Ş.İ., N.T.
Supervision: M.Ş.İ.
Project administration: M.Ş.İ.

AI Usage Disclosure

The authors declare that no AI-assisted technologies were used.

Abbreviations

CARE: Case report guidelines
CRP: C-reactive protein
IPA: Iliopsoas abscess
MRI: Magnetic resonance imaging
MRSA: Methicillin-resistant staphylococcus aureus
US: Ultrasonography

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