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Management of primary iliopsoas abscess in an immunocompetent patient followed by streptococcal toxic shock syndrome: A case report

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Abstract

Objectives: Clinical diagnosis of iliopsoas abscess can be challenging, as this pathology often presents without obvious focal findings. Iliopsoas abscess should thus be a differential diagnosis for patients presenting with fever of unknown origin.

Patient and methods: A 62-year-old healthy Japanese man showed primary iliopsoas abscess of *Klebsiella pneumoniae* complicated by shock after a complete course of treatment for streptococcal toxic shock syndrome. Successful treatment was achieved with culture-driven antibiotic selection and delayed drainage.

Results: This case demonstrates the importance of identifying the causative microorganisms in iliopsoas abscess to guide therapy. The standard treatments for iliopsoas abscess are antibiotics and drainage of the abscess. Management of this case included successful antibiotic use along with delayed drainage.

Conclusion: This case report advances the knowledge on the etiology of iliopsoas abscess and sheds light on the need for scientific development of a treatment strategy.

Keywords

Abscess drainage, causative microorganisms, iliopsoas abscess, streptococcal toxic shock syndrome

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Introduction

Iliopsoas abscess (IPA) is a relatively rare but potentially life-threatening disease.[1,2] It is well documented that IPA can be difficult to diagnose because of the variable and non-specific symptoms.[3–5] IPA can be classified as primary or secondary.[6] Primary IPA has no definite etiology, while secondary IPA occurs as a consequence of direct spread from adjacent infected structures. Although several case reports have described the treatment of IPA using antibiotics alone,[7–9] the standard treatment involves drainage of the abscess. Drainage can be performed either with computed tomography (CT)–guided percutaneous drainage (PCD) or surgery, but no consensus exists on when to use either approach.

This case report illustrates an extremely uncommon presentation of primary IPA followed by streptococcal toxic shock syndrome (STSS) for which we provided treatment with antibiotics and delayed drainage. *Klebsiella pneumoniae* is considered the causative microorganism for IPA, but it is common in immunosuppressed patients. This etiologically uncommon case also provides important lessons on the management of IPA, including timing of drainage.

Case

Written informed consent for publication of this case report and accompanying images was obtained from the patient. The National Defense Medical College Ethics Committee approved this article, and we obtained written consent from the committee (ID: 2113).

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A 62-year-old healthy Japanese man was admitted through a local hospital to our university hospital with fever and hypotension. He had a 2-day history of high-grade fever, arthralgia, and generalized malaise prior to presenting to the local hospital, where shock was identified based on a systolic blood pressure (BP) of 72 mmHg and a heart rate (HR) of 110 beats per minute. He also complained of pain in the lateral aspect of the right elbow. The patient was immediately transferred to our hospital for diagnostic work-up and treatment.

On arrival at our hospital, he was tachypneic but not in shock (a BP of 102/66 mmHg, a HR of 114 beats per minute, and a respiratory rate of 28 breaths per minute). He was febrile (38.5°C) and required oxygen (oxygen saturation, 94% on 3 L/min cannula). Chest and abdominal examinations did not show any abnormalities. The lateral aspect of the right elbow was erythematous and visibly swollen with tenderness on palpation. Soon after admission, he entered a state of shock and developed disseminated intravascular coagulation (DIC) and multiple organ failure (MOF). Treatment of the patient required intensive care. The results of laboratory are shown in Table 1. Two sets of blood cultures were obtained and yielded *Streptococcus pyogenes*.

The right arm was evaluated with CT and examined by a surgeon who immediately performed fasciotomy and debridement for necrotizing fasciitis. STSS was diagnosed according to the Centers for Disease Control and Prevention (CDC) clinical case definition[10] (shock, two or more of organ-system failure, and skin change) which was confirmed by blood culture. Initial contrast-enhanced abdominal CT did not show IPA.

The patient required intubation prior to the emergency surgery for the right arm due to hemodynamic instability. He responded slowly to intensive treatment including vasopressors, antibiotics, fluid management, and ventilation support postoperatively and became afebrile on day 15. He subsequently developed high-grade fever, hypotension, and tachycardia on day 34. At that time, laboratory results showed leukocytosis and evidence of MOF (Table 1). He was again placed on vasopressors to maintain hemodynamic stability. Evaluation with abdominal CT demonstrated a left IPA (Figure 1) without any other pathological findings in the right arm, chest, or abdomen. Other sources of infection were ruled out, and two sets of blood cultures grew *Klebsiella pneumoniae*. Because he was critically ill, we could not perform drainage of the primary IPA at the time of the diagnosis. He was treated based on culture sensitivity results with intravenous antibiotics against *Klebsiella pneumoniae* and gradually responded to the antibiotic treatment. The MOF also improved without drainage of the abscess. CT-guided drainage of the abscess was performed on day 53, once the clinical condition of the patient stabilized (Figure 2). The patient tolerated this procedure without complications. Culture of the drainage specimen did not grow any bacteria.

After drainage, the condition of the patient continued to improve. The drainage tube was removed 2 weeks after the procedure when follow-up abdominal CT confirmed significant shrinkage of the IPA (Figure 3). He subsequently began rehabilitation and was discharged on foot. Ongoing follow-up of the patient has been continued for more than 2 years, and he has shown excellent results in activities of daily living.

Discussion

We have reported an uncommon case of primary IPA complicated with STSS and treated successfully with antibiotics and delayed drainage. The causative microorganism of IPA was *Klebsiella pneumoniae*.

Symptoms of IPA are non-specific features that may suggest other diagnoses or cause misinterpretation, leading to delayed diagnosis. In this case, primary IPA was diagnosed through the investigation for sources of infection due to recurring sepsis. Several studies have reported shock as the initial presentation of IPA.[8,11,12] Although rare, IPA can be present with shock as seen in this case. The differential diagnosis should therefore include IPA when physicians encounter patients who have septic shock without an obvious source of infection. Diagnosis of IPA is imperative so that it can be treated appropriately.

As discussed earlier, the causative microorganism in our case was *Klebsiella* sp. Results for *Klebsiella* sp. were positive in the two sets of blood culture when diagnosing the primary IPA. As far as causative microorganisms, most cases of primary IPA described in the literature have been caused by *Staphylococcus aureus* (88.4%).[6] Other causative microorganisms include non-Group A *Streptococcus* (4.9%) and *Escherichia coli* (2.8%).[6] *Klebsiella* sp. could be encountered more often as a causative microorganism for primary IPA in immunosuppressed patients. Chang et al.[11] analyzed IPA cases in Taiwan and concluded that *Klebsiella pneumoniae* should be considered as an important pathogen for IPA in diabetic patients. Primary IPA has been reported to occur due to hematogenous spread. STSS may have altered the immune capability in the patient, allowing metastatic infection by *Klebsiella* sp. While our patient did not demonstrate any evidence of immunocompromised state previously, this case illustrates the importance of investigating causative microorganisms to guide appropriate treatment.

Treatment of IPA involves appropriate antibiotic treatment with drainage, using either CT-guided PCD or surgery.[6,13] We tried to perform CT-guided PCD at the time of diagnosing IPA, but hemodynamic instability of the patient delayed the intervention, and we finally pursued PCD after these acute issues stabilized. No consensus has yet been reached on the timing of drainage for IPA.[14] Several reports have described successful antibiotic treatment for IPA without drainage.[7–9] Tabrizian et al.[15] reported that patients with bacteremia and small abscesses (<3.5 cm) responded well to antibiotics alone. Hamano et al.,[8] however, reported that all cases with septic shock underwent either PCD or surgical drainage along with antibiotic treatment. They also reported

Table 1. Laboratory findings.

	Admission[a]	IPA diagnosis [b]	Normal range
CBC			
WBCs (×10³/μL)	13.7	14.1	4.0–8.0
Neutrophil (%)	97.3	86.5	44.0–74.0
Lymphocyte (%)	1.7	8.2	22.0–50.0
Others (%)	1.0	5.3	0–20.0
RBCs (×10⁶/μL)	4.41	2.32	4.20–5.00
Hemoglobin (g/dL)	14.4	7.1	13.0–17.0
Hematocrit (%)	41.1	21.0	40.0–50.0
Platelet (×10⁴/μL)	8.1	23.9	15.0–40.0
Chemistry			
Total bilirubin (mg/dL)	4.6	6.4	0.2–1.2
Direct bilirubin (mg/dL)	2.6	4.7	0.1–0.4
AST (IU/L)	61	168	8–30
ALT (IU/L)	58	168	5–35
LDH (IU/L)	328	387	100–225
Protein (g/dL)	5.3	7.7	6.5–8.2
Albumin (g/dL)	3.0	2.6	3.8–5.2
Glucose (mg/dL)	130	175	65–110
Urea nitrogen (mg/dL)	52	100	8–20
Creatinine (mg/dL)	3.9	5.0	0.6–1.2
Na (mEq/L)	135	160	135–147
K (mEq/L)	3.8	3.7	3.5–5.0
Cl (mEq/L)	98	132	98–108
CRP (mg/dL)	28.0	15.2	<0.3
Coagulation			
INR	1.35	1.1	0.9–1.1
APTT (s)	47.4	24.1	24.0–34.0
FDP (μg/mL)	254	26	<5
D-dimer (μg/mL)	85.6	26.9	<1.0
Urinalysis			
Gravity	1.013	1.014	1.010–1.030
PH	5.5	5.0	5.0–8.0
Protein	2+	1+	–
Glucose	–	–	–
Ketone	–	–	–
Bilirubin	–	1+	–
Urobilinogen	–	–	–
RBCs	3+	3+	–
WBCs	1+	–	–
Nitrate	–	–	–

PA: psoas abscess; CBC: complete blood count; WBC: white blood cell; RBC: red blood cells; AST: aspartate aminotransferase; ALT: alanine aminotransferase; LDH: lactate dehydrogenase; CRP: C-reactive protein; INR: international normalized ratio; APTT: activated partial thromboplastin time; FDP: fibrin degradation product.

[a]Laboratory data on admission.

[b]Laboratory data at the time of diagnosing PA.

a high mortality rate after surgical drainage of IPA. When a patient is in shock or critically ill, surgical drainage may not be the best choice.[8] Delayed drainage was successfully performed after stabilizing the underlying shock, DIC, and MOF in the present case with a relatively large IPA. Appropriate antibiotics probably helped in stabilizing the condition. At present, appropriate timing of drainage is still unclear and likely needs to be individualized. Hopefully, future studies will systematically investigate prognosis related to the timing of drainage for IPA as a treatment strategy.

Conclusion

Shock can be a presenting sign of IPA. Causative microorganisms for primary IPA vary, and investigation is important

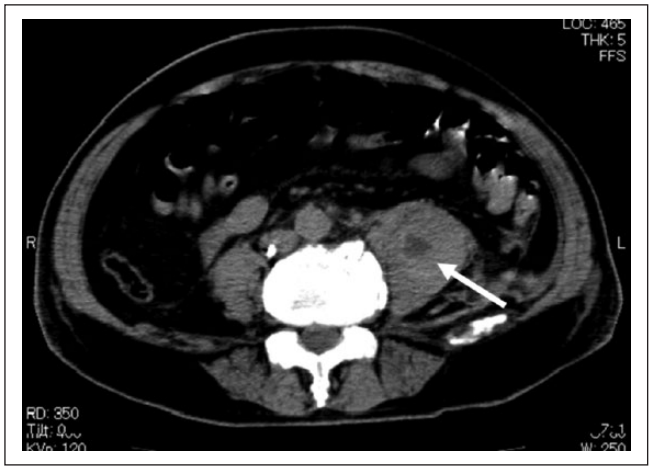

Figure 1. CT image of abdomen shows hypodense area (arrow) in the left iliopsoas muscle.

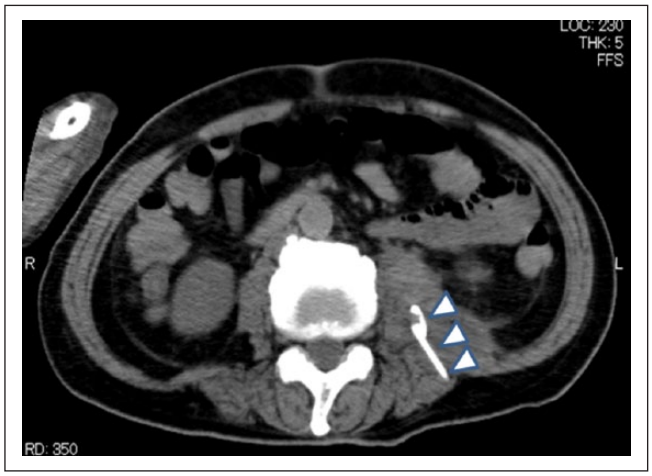

Figure 2. CT image shows a 12-F pig tail drainage catheter (arrowhead) inserted into the left iliopsoas abscess.

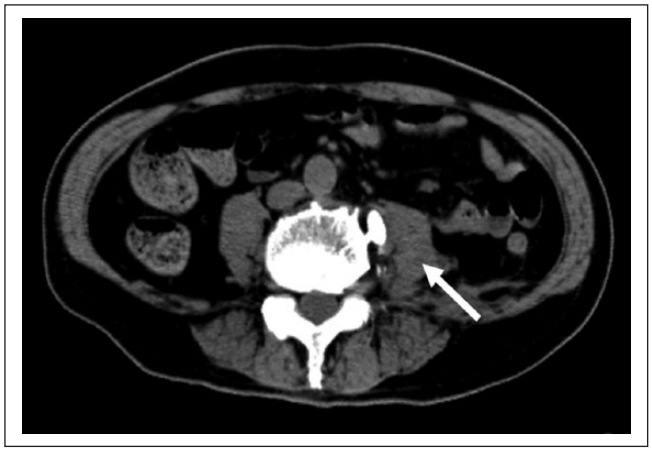

Figure 3. CT image shows no iliopsoas abscess in the left iliopsoas muscle (arrow).

for therapeutic purposes. Although drainage and systemic use of antibiotics are the standard treatment of IPA, timing of drainage by either CT-guided PCD or surgery may be individualized as a treatment strategy.

Declaration of conflicting interests

The authors declare that there are no conflicts of interest.

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References

1. Grunewald I, Abrahamson J and Cohen O. Psoas abscess: case report and review of the literature. *J Urol* 1992; 147: 1624–1626.
2. Crepps JT, Welch JP and Orlando R. Management and outcome of retroperitoneal abscesses. *Ann Surg* 1987; 205: 276–281.
3. Chern CH, Hu SC, Kao WF, et al. Psoas abscess: making an early diagnosis in the ED. *Am J Emerg Med* 1997; 15: 83–88.
4. Agrawal SN, Dwivedi AJ and Khan M. Primary psoas abscess. *Digest Dis Sci* 2002; 47: 2103–2105.
5. Mallick IH, Thoufeeq MH and Rajendran TP. Iliopsoas abscesses. *Postgrad Med J* 2004; 80: 459–462.
6. Ricci MA, Rose FB and Meyer KK. Pyogenic psoas abscess: worldwide variations in etiology. *World J Surg* 1986; 10: 834–842.
7. Navarro López V, Ramos JM, Meseguer V, et al. Microbiology and outcome of iliopsoas abscess in 124 patients. *Medicine* 2009; 88: 120–130.
8. Hamano S, Kiyoshima K, Nakatsu H, et al. Pyogenic psoas abscess: difficulty in early diagnosis. *Urol Int* 2003; 71: 178–183.
9. Garner JP, Meiring PD, Ravi K, et al. Psoas abscess—not as rare as we think? *Colorectal Dis* 2007; 9: 269–274.
10. Centers for Disease Control and Prevention. *National Notifiable Diseases Surveillance System*. Division of Notifiable Diseases and Healthcare Information Centers for Disease Control and Prevention, http://wwwn.cdc.gov/nndss/script/casedef.aspx?CondYrID=858&DatePub=1/1/2010%2012:00:00%20AM (2010, assessed 10 August 2014).
11. Chang CM, Ko WC, Lee HC, et al. *Klebsiella pneumoniae* psoas abscess: predominance in diabetic patients and grave prognosis in gas-forming cases. *J Microbiol Immunol Infect* 2001; 34: 201–206.
12. Huang JJ, Ruaan MK, Lan RR, et al. Acute pyogenic iliopsoas abscess in Taiwan: clinical features, diagnosis, treatments and outcome. *J Infect* 2000; 40: 248–255.
13. Dinç H, Ahmetoglu A, Baykal S, et al. Image-guided percutaneous drainage of tuberculous iliopsoas and spondylodiskitic abscesses: midterm results. *Radiology* 2002; 225: 353–358.
14. Hsieh M, Huang S, Loh E, et al. Features and treatment modality of iliopsoas abscess and its outcome: a 6-year hospital-based study. *BMC Infect Dis* 2013; 13: 578.
15. Tabrizian P, Nguyen S, Greenstein A, et al. Management and treatment of iliopsoas abscess. *Arch Surg* 2009; 144: 946–949.