

Clinical presentation, etiology, management, and outcomes of iliopsoas abscess from a tertiary care center in South India

Joanne Rodrigues¹, Ramya Iyyadurai², Sowmya Sathyendra²,
Manjeera Jagannati², Kundavaram Paul Prabhakar Abhilash²,
Sudha Jasmine Rajan²

Departments of ¹Anaesthesia and ²Medicine, Christian Medical College, Vellore, Tamil Nadu, India

ABSTRACT

Introduction: Iliopsoas abscess (IPA) is the collection of pus in the iliopsoas compartment. The etiology of IPA is variable and depends on the geographical area and the antibiotic usage prevalence in that area. This study attempts to evaluate the etiology, clinical features, risk factors, management modalities, and outcomes in patients with IPA from a tertiary care center in South India. **Materials and Methods:** This was a retrospective study done in a tertiary care center in South India. Patient details were obtained from electronic medical records. **Results:** A total of 43 patients were enrolled in the study, the causative organism could be identified in 20 (46.5%) patients. The most common etiology was tuberculosis (TB). Most (23 [56.5%]) patients were treated conservatively, 20 (46.5%) patients were treated with percutaneous drainage (PCD), and 2 (4%) patients required surgery. **Conclusion:** The most common cause of IPA is TB. PCD was successful in 95% of the patients with complete resolution of symptoms.

Keywords: Etiology, management, psoas abscess

Introduction

The iliopsoas compartment is an extraperitoneal compartment and it contains the iliacus and the iliopsoas muscle. The psoas muscle arises from the lateral borders of the vertebral bodies T12–L5, and the iliacus and the psoas muscle insert with a common tendon into the lesser trochanter of the femur. The psoas muscle is the primary flexor of the hip.^[1]

The psoas muscle lies in proximity with many of the intra-abdominal organs such as the sigmoid colon, appendix, jejunum, ureters, abdominal aorta, kidneys, pancreas, spine, and iliac lymph nodes; hence, infection in any of these organs

can spread to the iliopsoas muscle. The iliopsoas muscle has a complex and rich blood supply which is derived from the lumbar, ilio-lumbar, obturator, external iliac, and common femoral arteries. This rich blood supply predisposes the iliopsoas to hematogenous spread of infection.^[2]

Various nerves of lumbar plexus also pass through the psoas muscle and therefore involvement of the iliopsoas compartment is known to cause muscle weakness and sensory deficits.^[1]

Materials and Methods

In this retrospective observational study, we reviewed the medical records of all patients admitted in the medical wards

Address for correspondence: Dr. Ramya Iyyadurai,
207 Department of Medicine 5, Christian Medical College,
Vellore - 632 004, Tamil Nadu, India.
E-mail: iramya@cmcvellore.ac.in

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from January 2010 to December 2013. All the patients who were diagnosed to have an iliopsoas abscess (IPA) based on imaging studies were included in this study. The study was approved by the institutional review board.

Case definition

A patient was diagnosed to have psoas abscess based on imaging techniques.

Results

A total of 43 patients were included in this study. The average age was 47.2 years (range: 20–72 years); a majority were in the age group of 41–50 years, men outnumbered women with a ratio of 2.6:1. A majority of patients came from East India – West Bengal, Bihar, and Jharkhand (55.8%) [Table 1].

Imaging modality used for diagnosis of 19 (44.1%) of patients was ultrasonogram, among this group 5 patients required further magnetic resonance imaging (MRI) to characterize the psoas abscess. Computed tomography (CT) and MRI was used for diagnosis in 24 patients and none of patients in this group required a second imaging for characterisation of the abscess. None of the patients who were diagnosed with CT or MRI had second imaging to confirm the diagnosis.

The causative organism was isolated in 20 (46.5%) patients, of which 11 (47.8%) showed tuberculosis (TB), 21.7% showed staphylococci, and 8.7% showed *Escherichia coli*. Other organisms isolated were *Klebsiella*, *Histoplasmosis*, *Pseudomonas pseudomallei*, nonfermenting Gram-negative bacteria, and *Streptococcus* species. Among the bacterial isolates, eight (18%) organisms isolated were multidrug resistant (MDR), two patients had extended spectrum beta-lactamases (ESBL) *E. coli*, one patient had ESBL *Klebsiella*, four patients had methicillin-resistant *Staphylococcus aureus*, and one had MDR-TB. The remaining patients did not have any isolates grown in culture [Table 2].

Anti-TB therapy (ATT) was prescribed for 29 (67.4) patients out of whom 18 (41.9%) were started on empirical basis, one patient was found to have MDR-TB based on culture and started on 2nd line therapy for ATT, and one patient with TB pericarditis and another with TB meningitis were given additional steroids.

Among the patients who presented with paraparesis ($n = 11$), eight patients had TB, two patients in whom the etiological agent could not be identified were treated for tuberculous psoas abscess with ATT, and one patient had Crohn's disease. There was complete resolution of symptoms in patients who were treated with ATT.

The patients who did not have any organism isolated in culture (23 [53.4%]) were started on empirical ATT based on the clinical judgment of the treating physician. There was resolution of symptoms in all these patients with ATT.

Table 1: Results

Baseline characteristics	n (%)
Age (range)	47.2 years (20-72)
Gender	
Male	31 (72)
Female	12 (28)
Epidemiology	
Clinical features	
Fever	30 (70)
Flank pain/localized pain	37 (86)
Paraparesis	11 (25.5)
Psoas abscess site	
Right	16 (34.6)
Left	14 (32.6)
Bilateral	32.6
Associated comorbidities	
Diabetes	11 (25.6)
Hypertension	8 (18.6)
AIDS	6 (13.95)
Chronic kidney disease	2 (4.65)

Table 2: Causative organism

Organism	n (%)
Tuberculosis	11 (25.8)
<i>Staphylococcus aureus</i> (MRSA)	4 (11.2)
<i>Escherichia coli</i>	2 (4.6)
<i>Klebsiella pneumoniae</i>	1 (2.3)
<i>Burkholderia pseudomallei</i>	1 (2.3)
<i>Streptococcus</i>	1 (2.3)
Organism not identified	23 (53.5)
Unusual causes	
Spindle cell tumor	1 (2.3)
Histoplasmosis	1 (2.3)
Squamous cell carcinoma	1 (2.3)
Crohn's disease	1 (2.3)

MRSA: Methicillin-resistant *Staphylococcus aureus*

Percutaneous drainage (PCD) was done in 20 (46.5%) patients and there were no procedure-related complications in any of them and the drainage tube was kept *in situ* for an average of 7.4 days. Duration in hospital for the patients on PCD was 13.5 days. Surgery was opted for 2 patients, one patient had been diagnosed with Crohn's disease, and in one patient surgery was done since the symptoms persisted despite prolonged PCD.

Most patients (31 [72.1%]) needed only one admission, while 9 (20.9%) needed a second admission for nonresolution of symptoms, and only 3 (6.98%) patients needed more than two admissions. There were no deaths during hospital admission although one patient after resolution of symptoms was readmitted much later for pneumonia with septic shock and died.

All the patients were followed up for 1 year, all of whom reported complete resolution of the symptoms.

Discussion

Psoas abscess is a rare condition with vague clinical presentation. The classical triad of fever, limp, and back pain is present in <30% of patients.^[3] Our patients presented mainly with fever and back pain.

A study of 124 patients from Spain has shown that the most common cause of IPA is *Staphylococcus aureus*, and *Mycobacterium tuberculosis* is the fourth most common organism.^[4] Current literatures from the West show that hematogenous spread from the gastrointestinal tract is the most common cause of IPA,^[5] while in our study, *M. tuberculosis* is the most common cause of IPA, this is similar to a study done previously from a tertiary care center in North India.^[6]

Psoas abscess can be classified into primary or secondary; primary psoas abscess is due to lymphatic or hematogenous spread from a distant site and secondary IPA is due to contiguous extension, more than 90% of the IPA in Asia and Africa are primary in origin.^[7]

A high index of clinical suspicion is essential for the diagnosis of IPA. Investigations which can aid in diagnosis are imaging techniques while direct aspiration and microbiological cultures are very specific. Other investigations such as erythrocyte sedimentation rate and leukocyte count are nonspecific.

MRI has been shown to be more sensitive for the diagnosis of IPA in previous studies. CT may play a role in management; imaging-guided aspiration and drainage.^[8] In our study, whether it was CT, MRI, or ultrasonography, they were equally sensitive. A study of 15 patients in Kyoto, Japan, involving imaging-guided aspiration showed that the sensitivity of plain or enhanced CT and MRI was 100% if the imaging was performed 6 days after the onset of illness. However, the sensitivity of CT and MRI was less in the early stages, i.e., only 33% and 50%, respectively, and hence CT and MRI can miss psoas abscess in the early stages (<5 days).^[9] A recent case study from Japan has shown that ¹⁸F-fluorodeoxyglucose positron emission tomography-CT (PET-CT) can be used in the diagnosis and follow-up of a patient with tuberculous psoas abscess. PET-CT was also used for assessing the therapeutic response to ATT and resolution of the disease in this case report.^[10]

PCD has been recommended in the treatment of IPA since 1984; even in our case series, PCD was a successful and minimally invasive method to treat IPA. Success rate for PCD in our cohort was 95%. Patients with Crohn's disease need definitive surgery for the management of IPA; this was the case in our patient also.^[11] A study from Taiwan has shown that patients with psoas abscess due to gas-forming organisms had better outcome with surgery rather than PCD (59.3% vs. 15.4%) while the outcomes in nongas-forming organisms were similar for surgery and PCD.^[12] The overall mortality in this study was very

high (25%) for psoas abscesses compared to our study which had a mortality of only 2%.

In our study, among patients who had a positive culture report, the most common organism identified was *M. tuberculosis*. The patients who were culture negative in our cohort had a high chance of being treated empirically with anti-TB medications.

Conclusion

The leading cause of psoas abscess in our cohort of patients from a tertiary care center in South India was TB. When the culture did not yield anything, the patients were most often started on empirical ATT. Most of the patients needed an intervention in the form of PCD or rarely surgery. There was complete resolution of symptoms in most of our patients and the outcome was favorable in our case series with only one death due to sepsis from another source.

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Conflicts of interest

There are no conflicts of interest.

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