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Iliopsoas Abscess: Presentation, Etiology, Treatment Options, and Outcomes: A Retrospective Analysis of 19 Cases

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Abstract

Iliopsoas abscess (IPA) is an exceptional condition with high rates of mortality and morbidity. Pyogenic abscesses (PAs), which account for more than half of iliopsoas abscesses, have developed comparatively more frequently as the prevalence of tuberculosis disease has diminished. Our study aims to analyze the presentation, treatment, and outcomes in 19 patients with a diagnosis of IPA. A retrospective analysis of 19 consecutive IPA cases managed at teaching hospitals (Benghazi Medical Center and Urology Center) Benghazi-Libya. Among 19 patients with a diagnosis of IPA, 12 were males (63.1 %) with a mean age of 50 years (range, 11 to 78 y). and 7 were females (36.9 %) with an average age of 41 (16 - 67) years the most frequent feature was lower abdominal pain (73.6 %), fever (57.8 %), followed by limping (36.8 %), and Weight loss (21.1 %). Leukocytosis was the most common laboratory finding (86.4 %), whereas anemia was the second most common laboratory finding found in (26.3%). Three patients (15.8 %) underwent ultrasound (U/S) with negative results before CT (computed tomography) which was the confirmatory scan for all patients. Six patients underwent open surgical drainage (31.6 %) and thirteen (68.4 %) were submitted to percutaneous drainage (PCD) under ultrasound guidance with an overall success rate of 97 %. Compared to surgery, PCD had a lower mean in-hospital stay. US-guided PCD along with the proper antibiotic medication is safe, effective, and results in a shorter hospital stay.

Keywords: Iliopsoas Abscess, Percutaneous Drainage, Open Drainage.

INTRODUCTION

The term "psoitis" was initially used by (Mynter & Journal, 1881) to characterize an accumulation of purulent material in the iliopsoas compartment, which is now known as an iliopsoas abscess (IPA) (Mynter & Journal, 1881). Due to its subtle onset and vague clinical presentation, the condition is frequently overlooked (Benkhadoura et al., 2019). IPA is categorized into primary or secondary types. Secondary IPA due to the continuous spread of contamination from an adjacent organ (appendix, sigmoid colon, vertebra, and kidney).

Primary IPA because of the hematogenous spread from an unknown source of infection (Taiwo, 2001). It frequently arises as a result of spinal TB dissemination. However, the incidence of tuberculosis is declining because of progress in contemporary antituberculosis therapies. The ma-

jority of iliopsoas abscesses are of bacterial origin (Mallick et al., 2004). The classical triad of pain, fever, and limp, for clinical diagnosis of IPA, are uncommonly seen (Tabrizian et al., 2009). When patients suffer vague symptoms, IPA is frequently diagnosed using Computed Tomography (CT), ultrasonography (US), and magnetic resonance imaging (MRI) (Kinoshita et al., 2016).

Percutaneous drainage (PCD) has been conventionally employed to manage intra-abdominal or pelvic abscesses, and it has now become the primary treatment for an IPA (Yamagami et al., 2009). Given that PCD is less invasive and demands a shorter hospital stay, it is favored over open surgical drainage when conducted under ultrasound guidance. The expenses associated with CT-guided PCD are greater, and there is a risk of radiation exposure. We explore our experiences with IPAs and evaluate the various drainage methods.

MATERIALS AND METHODS

The medical records of 19 consecutive patients admitted and managed in two major Teaching Hospitals (Benghazi Medical Center and the Urology Center) in Benghazi, Libya, between March 2015 and July 2023 were retrospectively analyzed. The choice of performing PCD is dependent on surgeons' and radiologists' experience. The analyzed variables were age, sex, image findings, clinical presentation, treatment outcome, therapeutic effectiveness, in-hospital stay, and mortality.

Procedure:
Before PCD, all patients underwent CT scans with a slice thickness ranging from 5 to 10 mm before and after the intravenous administration of a 100 to 120 ml contrast bolus. Ultrasound-guided aspiration and catheter drainage are primarily employed for single abscesses. Open surgery, however, is advised for complicated abscesses (Christin & Sarosi, 1992; Li et al., 2017; Livne et al., 1994). For abscesses situated on the lateral wall of the pelvis, an anterior approach, positioned just above the anterior iliac spine, was utilized, whereas a posterolateral approach, via paravertebral muscles, was favored for abscesses involving the psoas muscle; a catheter (nephrostomy tube 14-16 Fr or a chest tube No. 24) was placed into the cavity and linked to a non-suction drainage system.

A- iliopsoas mass. B- percutaneous drainage

Figure (1). Percutaneous drainage of iliopsoas abscess

RESULTS

Among 19 patients with a diagnosis of IPA, 12 were males (63.2 %) with a mean age of 66 years (range, 11-78 y), and 7 were females (36.8 %) with an average age of 42 (16-67) years. Thirteen patients (68 %) presented with secondary abscess. The most common etiologies were Staphylococcus aureus (8 cases) and Escherichia coli infection (5 cases). Tuberculosis of the spine was the underlying condition in 6 patients (32 %) with secondary IPAs.

Table (1). Patients Age and Sex

	Primary n=6	Secondary n=13
Age years	24-50	11-78
Sex		
Male	4	8
Female	2	5
Recurrence	1	1
Mortality	0	0

At clinical presentation, the most common symptom was lower abdominal pain (73.6 %) and fever (57.8 %), followed by limping (36.8 %) and weight loss (21.1 %). Mynter's triad, composed of fever, back pain, and limp was present in a limited number of patients. Leukocytosis was the most common laboratory finding (86.4 %), whereas anemia was the second most common laboratory finding identified (26.3 %).

Table (2). Clinical presentation

Clinical finding	No. of patients	Percentage
Lower abdominal pain	14	73.6 %
Flank mass	3	15.8 %
Fever	11	57.8 %
Limping	7	36.8 %
Weight loss	4	21.1 %
Anemia	5	26.3 %
Leukocytosis	13	86.4 %

CT was recommended for all patients, although three patients (15 %) had a prior ultrasound that resulted negatively before undergoing CT, which served as the confirmatory scan for all patients. Blood cultures revealed positive results in 31.6 % of the patients. In terms of treatment, six patients underwent surgical open drainage (31.6 %), while thirteen patients (68.4 %) underwent percutaneous drainage (PCD) guided by ultrasound. No patient was treated with antibiotics alone; antibiotics were administered concurrently to all patients in both groups.

Table 3: Site of occurrence of IPA

Site of occurrence of IPA	Number of cases	percentage
Right	13	68.4 %
Left	6	31.6 %

Compared to surgery, PCD had statistically significant shorter mean hospital stay (5.92 vs 21.29 days with a P value of 0.0458). Among a total of 19 cases, PCDs were performed in 13 patients with an overall success rate of 92 %. On the other hand, 6 patients underwent open surgical drainage.

Hospital stay was significantly shorter in patients treated via PCD compared to those who received open drainage. The overall recurrence rate was 10 % (2/19). No recurrence was noted in patients treated via open surgical drainage. Of the 13 patients who underwent PCD, two (15.4 %) presented with recurrence 3-6 months into their follow-up periods. Two patients with recurrent IPA (one primary case and one secondary) were successfully managed via repeat PCD under ultrasound guidance. No mortality was recorded.

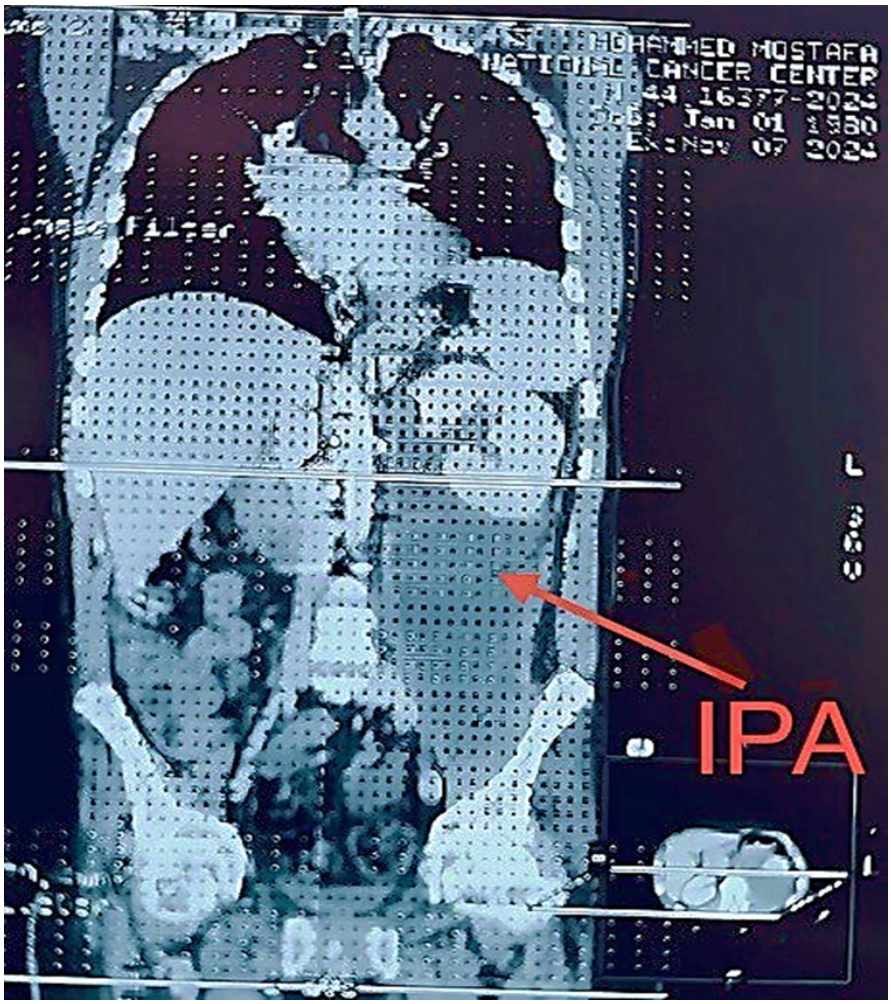

Figure (2). Axial CT scan of left iliopsoas abscess

Table 3: Comparison of PCD vs Open Drainage

	Open drainage (n=6)	Percutaneous drainage (n=13)	P Value
Primary	2	4	
Secondary	4	9	
Length of hospital stay	5-60 days Mean 21.29	2-10 days Mean 5.92	P value 0.0458 significant
Recurrence	0	2	
Mortality	0	0	

DISCUSSION

The iliopsoas muscles have an abundant blood supply and are wrapped in retroperitoneal lymphatic systems, rendering them susceptible to infections from nearby structures and distant lo-

cations. Due to its subtle onset and the possibility of life-threatening acute sepsis, IPA is often overlooked. Although the exact frequency of IPA is unknown, the rising use of CT in patients suspected of having IPA is resulting in the diagnosis of more cases. Regarding imaging techniques, CT has a well-established position as the standard method for examining retroperitoneal abscesses, demonstrating a reported sensitivity of 100 %, specificity of 77 %, and accuracy of 88% (Yeh et al., 1995).

The infectious source is likely to be identified since these imaging techniques can distinctly outline surrounding tissues, specifically the vertebrae and epidural space. Additionally, CT has proven to be advantageous in strategizing a surgical approach. While MRI currently lacks the adaptability of either CT or ultrasound as a tool for drainage procedures, it may provide supplementary information when spinal or vertebral involvement is suspected (Negus & Sidhu, 2000). Despite recent developments in diagnostic techniques, the mortality rate of IPA has not significantly decreased (6.7 % in a study by (Ricci et al., 1986) and 5 % in a study by (López et al., 2009). The actual incidence of the condition is unknown (Yacoub et al., 2008).

Nevertheless, the existing literature suggests that this condition is becoming increasingly common globally. For effective management of IPA patients, antibiotic treatment accompanied by abscess drainage is essential. PCD or surgery are possible drainage methods. Surgery is usually required to eliminate or address the infected sources in IPA patients who also present concurrent intra-abdominal or retroperitoneal complications, such as perforated appendicitis or ruptured infected aortic aneurysm.

IPA patients were often treated with surgical drainage throughout the 1980s, in an era when imaging techniques were not commonly employed (Ricci et al., 1986). Afaq et al. likewise observed that there were no deaths in 72 cases in Nepal, where every patient underwent surgical treatment as the primary approach (Afaq et al., 2002).

Recent studies have shown that IPA can be successfully treated with a combination of antibiotics and PCD (Cantasdemir et al., 2003). The primary contributor to secondary IPA is Crohn's disease (Ricci et al., 1986). Wong et al. found that spondylitis (spondylodiscitis involving the disc) was the foremost reason for secondary psoas abscesses. IPAs are often overlooked at the time of initial presentation (Wong et al., 2013).

In the present study, lower back/flank pain was the most common symptom; back pain, limping, and fever were not often noted. Patients treated with PCD had an average hospital stay of 9.5 days, which was considerably shorter than those treated with open drainage. Tabrizian et al. reported a mean hospital stay of 25 days, while Cantasdemir et al. noted a mean of 11.5 days (Cantasdemir et al., 2003; Tabrizian et al., 2009). Yacoub et al. documented a median hospital stay of 29 days (Yacoub et al., 2008). In this research, the average length of hospital stay for patients receiving PCD was significantly shorter than that for those undergoing open surgical drainage; thus, the expenses associated with PCD are considerably lower than those for open surgical drainage. The participants in this study had a mean hospital stay similar to that reported by Cantasdemir et al. (Cantasdemir et al., 2003).

The reduced hospital duration in our study may be linked to the early discharge of patients with drainage catheters (especially those managed with PCD), along with follow-up as required, and the rapid diagnosis enabled by the increased use of CT. In the present study, the total recurrence rate was found to be 10.5 % (2/19). The recurrence rates observed in two additional studies were 16.7 % and 7.7 %, respectively (Cantasdemir et al., 2003; Yacoub et al., 2008). On the

other hand, Baier et al. reported a comparatively high recurrence rate of 37.5 % (Baier et al., 2006). In the present study, no underlying pathology was identified to explain the recurrence. However, the likely reason for the recurrence in those three patients was the premature removal of the drainage catheter. Kim et al., Tabrizian et al., and Yacoub et al., documented mortality rates of 11.2 %, 5 %, and 3 %, respectively (Kim et al., 2013; Tabrizian et al., 2009; Yacoub et al., 2008). According to Baier et al., 15 % of patients (6/40) died; all patients were treated with open-access drainage. Three individuals lost their lives due to sepsis, while three others died from ischemic heart attacks (Baier et al., 2006). The authors report no cases of mortality, which might be attributed to the young age and absence of comorbidities among the majority of the patients in the study.

CONCLUSION

- Iliopsoas abscess is not an uncommon condition, and its symptoms are typically non-specific.
- To make an early diagnosis of this illness, a high index of suspicion is necessary.
- Imaging modalities such as CT and US help manage and diagnose IPA.
- PCD was attended with shorter hospital stays and lower costs compared with open drainage.
- Along with the proper antibiotics, US-guided percutaneous drainage serves as the primary treatment of iliopsoas abscess and is considered to be a safe and successful technique.

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ETHICS

Participants were informed of the study's purpose and procedures, and their participation was voluntary. Participants were provided with a detailed information sheet outlining the study's aims, the interview process, and the measures taken to ensure confidentiality. Written informed consent was obtained from all participants at the time of admission.

Duality of Interest: The authors declare that they have no competing interests.

Author Contributions: All authors contributed equally to this work. Contributions by performing surgery, sharing notes, and analysis of data.

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