Management and Treatment of Iliopsoas Abscess

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Hypothesis: Even with improved diagnostic modalities, the optimum management strategy for iliopsoas abscess (IPA) is not uniform, and a better understanding of treatment options is needed.

Design: Retrospective case series.

Setting: Academic center.

Patients: Sixty-one consecutive patients diagnosed as having IPA at the Mount Sinai Medical Center, New York, New York, from August 1, 2000, to December 30, 2007.

Main Outcome Measures: Development and cause of IPA, the need for additional interventions, morbidity, and mortality.

Results: The mean age of the patients was 53 years. Most patients were initially seen with pain (95% [58 of 61]), gastrointestinal tract complaints (43% [26 of 61]), and lower extremity pain (30% [18 of 61]). Primary and secondary abscesses occurred in 11% (7 of 61) and 89% (54 of 61), respectively. The most frequent underlying cause of secondary abscesses was inflammatory bowel disease. Broad-spectrum antibiotics were prescribed in all patients. Computed tomography was the most common diagnostic modality used. Abscesses were larger than 6 cm in 39% of patients (24 of 61), bilateral in 13% (8 of 61), and multiple in 25% (15 of 61). Nine patients were treated using antibiotics alone, with a success rate of 78% (7 of 9). Forty-eight patients initially underwent percutaneous drainage, which was successful in 40% (19 of 48). Among those with unresolved IPAs, 71% of patients ultimately required surgery, and the IPAs were typically associated with underlying gastrointestinal tract causes. Seven percent (4 of 61) of patients directly underwent exploratory surgery and drainage, and all of these interventions were successful. The overall mortality was 5% (3 of 61).

Conclusions: Iliopsoas abscess remains a therapeutic challenge. Gastrointestinal tract disease is the most common cause, with computed tomography as the diagnostic modality of choice. Percutaneous drainage remains the initial treatment modality but is rarely the sole therapy required. Patients with inflammatory bowel disease are likely to require ultimate operative management.

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**METHODS**

A retrospective review of patients diagnosed as having an IPA and receiving treatment at the Mount Sinai Medical Center, New York, New York, from August 1, 2000, to December 30, 2007, was performed. Cases were identified through the use of a radiology database. Records were reviewed for patient demographics,

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**I**LIOPSOAS ABSCESS (IPA) IS A RETROPERITONEAL COLLECTION INVOLVING THE ILIOPSOAS MUSCLE. IT WAS FIRST DESCRIBED BY MYNTER¹ IN 1881 AS “PSOITS” AND REMAINS A RARELY REPORTED CONDITION. TWO MECHANISMS LEAD TO THE FORMATION OF AN IPA. IT CAN BE CAUSED BY CONTIGUOUS SPREAD OF INFECTED ORGANS OR BY HEMATOGENOUS SPREAD FROM SITES OF OCCULT INFECTION Owing TO THE RICH VASCULAR SUPPLY OF MUSCLES.² THEREFORE, MANY INVESTIGATIONS HAVE DIVIDED THIS CONDITION INTO PRIMARY AND SECONDARY IPAS. TRADITIONALLY SPREAD BY SPINAL TUBERCULOSIS, THE DECLINE OF THIS MAJOR PATHOGEN IN DEVELOPED COUNTRIES HAS AFFECTED THE ETIOLOGIC AND EPIDEMIOLOGIC FINDINGS OF IPAS.

The classic triad of pain, fever, and limp, described by Mynter¹ in 1881, is atypical and is rarely seen.² Iliopsoas abscess is commonly diagnosed via modern imaging techniques, such as ultrasonography, computed tomography (CT), and magnetic resonance imaging. However, even with improved diagnostic modalities, the optimum management strategy is not uniform. Traditionally, it consists of broad-spectrum antibiotics, combined in most cases with drainage of the abscess through a percutaneous or an open technique. In this study, we review the experience with IPAs at our institution to describe this disease and to better understand the treatment options.

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Iliopsoas abscess was diagnosed in 61 patients (32 men and 29 women) during the study period (August 1, 2000, to December 30, 2007). The mean age of the patients was 53 years (age range, 14-95 years). Nonspecific symptoms were found in most patients. Table 1 summarizes the most common initial symptoms, including abdominal pain, other gastrointestinal tract complaints, and lower extremity pain. Only 26% (16 of 61) of patients were initially seen with fever (>38.5°C), and an elevated white blood cell count (>11,000/µL [to convert white blood cell count to 10^9/L, multiply by 0.001]) was observed in 46% (28 of 61) of patients. Inflammatory markers such as erythrocyte sedimentation rate and C-reactive protein level, when obtained, were universally elevated in all patients.

Computed tomography was the most common (89% [54 of 61]) modality used to diagnose IPAs. Magnetic resonance imaging was used in 18% (11 of 61) and ultrasonography in 5% (3 of 61). The mean size of IPAs was 6 cm (range, 2.3-28 cm). Most patients (87% [53 of 61]) were modality used to diagnose IPAs. Magnetic resonance imaging was used in 18% (11 of 61) and ultrasonography in 5% (3 of 61). The mean size of IPAs was 6 cm (range, 2.3-28 cm). Most patients (87% [53 of 61]) were universally elevated in all patients.

The cause of the IPAs could be determined in 89% (54 of 61) of patients (Table 3). Gastrointestinal tract origins were most frequent, with cases of inflammatory bowel disease being the most prevalent among these. These cases primarily comprised Crohn disease abscesses secondarily involving the iliopsoas muscles. BACTERIEMIC states such as human immunodeficiency virus or AIDS. Historically, tuberculosis is a common cause of IPA; we had only 1 case of a tuberculous abscess originating from the spine. Eleven percent (7 of 61) of patients had primary IPAs having no associated or causal origin, and 89% (54 of 61) had secondary IPAs.

The mean duration of symptoms was 13 days, and the mean hospital stay was 25 days. The mean follow-up was 20 months (range, 0.4-87 months).

The patients were retrospectively divided into 3 treatment arms based on the initial therapeutic intervention. Nine patients (15%) were initially treated conservatively with antibiotics alone. Percutaneous drainage (PCD) was performed initially in 48 patients (79%). Four patients (7%) directly underwent exploratory surgery and open drainage. The treatment arms are summarized in Table 4.

In 9 patients who were treated with antibiotics alone, all but 1 had an abscess less than 3.5 cm (P > .05). The most common (44% [4 of 9]) cause was bacteremia. In 7 of 9 patients (78%), antibiotic therapy alone was successful.
We report a large series of cases that extends the literature on IPA in adults. The next largest documented study evaluated 40 patients. We describe 61 consecutive patients diagnosed as having IPA and our findings on their clinical courses, microbiologic causes, therapeutic approaches, and outcomes.

Historically, tuberculosis was the most common cause of IPA in the developed world. However, the cause of IPA is changing, and almost three-quarters of IPAs are due to hematogenous spread. In our series, the most common cause of IPA was continuous spread from gastrointestinal tract diseases, mainly Crohn disease. This could be related to the large number of patients treated for inflammatory bowel diseases at our institution. This is in agreement with the review by Ricci et al, which found Crohn disease, appendicitis, ulcerative colitis, diverticulitis, colon cancer, and vertebral osteomyelitis, in that order, to be the most common causes of IPA secondary to continuous spread.

Before the widespread use of modern imaging studies, many cases of retroperitoneal abscess were diagnosed at autopsy. Once an IPA is suspected, CT is the investigation of choice, with a high sensitivity rate approaching 100%.

Other diagnostic modalities such as plain abdominal radiographs, ultrasonography, and magnetic resonance imaging have not shown any advantage over CT in the diagnosis of IPA. In our study, CT was the most common (89% [54 of 61]) diagnostic tool used to diagnose IPAs. Magnetic resonance imaging was mostly used in combination with other radiologic studies.

Once the diagnosis of IPA has been made, the cause should be determined before the initiation of treatment. The mainstays of IPA treatment are broad-spectrum antibiotic therapy and PCD. Percutaneous drainage was first described in 1984. Undrained abscesses were associated with a high mortality rate. In our study, patients with bacteremia and small abscesses (<3.5 cm) responded well to antibiotic treatment alone. However, we did not find any statistical correlation between abscess size and treatment success. In general, it is unlikely that antibiotic therapy without drainage would be beneficial with large, complex, or loculated abscesses. Treatment options consist of percutaneous or open drainage. As a safe and minimally invasive alternative to open drainage, PCD is usually considered a first-line treatment option. Success rates of PCD treatment alone vary in the literature from 70% to 90%. Failure rates of PCD alone in our study were as high as 60% (29 of 48 patients), and 44% (21 of 48) of patients ultimately required open drainage. Most patients with an underlying gastrointestinal tract cause such as Crohn disease ultimately required operative management ($P < .05$). Therefore, it is important to surgically address the underlying gastrointestinal tract cause.

Because it is impossible at this point to establish a general treatment plan applicable for all patients, associated conditions should be considered when planning therapeutic management of IPA. Percutaneous drainage remains the primary initial treatment modality but is rarely the sole therapy required. Based on our findings, patients with inflammatory bowel disease are ultimately likely to require operative management. However, inter-

### Table 4. Treatments and Outcomes of Iliopsoas Abscesses

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. (%) of Patients (N=61)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotic treatment alone</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>9 (15)</td>
</tr>
<tr>
<td>Success</td>
<td>7 (78)</td>
</tr>
<tr>
<td>Open drainage</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>4 (7)</td>
</tr>
<tr>
<td>Success</td>
<td>4 (100)</td>
</tr>
<tr>
<td>PCD</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>48 (79)</td>
</tr>
<tr>
<td>PCD alone</td>
<td>19 (40)</td>
</tr>
<tr>
<td>PCD with interval open drainage</td>
<td>21 (44)</td>
</tr>
<tr>
<td>Multiple PCDs</td>
<td>3 (6)</td>
</tr>
<tr>
<td>Overall mortality a</td>
<td>3 (5)</td>
</tr>
</tbody>
</table>

Abbreviation: PCD, percutaneous drainage.

*a One occurred after the initial PCD treatment.*
val PCD may be safely used as an initial treatment modality and is often followed by open drainage to address the underlying gastrointestinal tract causes.

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REFERENCES