Annals of Clinical and Medical Case Reports

Case Report ISSN 2639-8109 | Volume 6

An Atypical Presentation of Primary Tubercular Psoas Abscess Presenting as Groin Pain

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Received: 24 Apr 2021
Accepted: 12 May 2021
Published: 17 May 2021

Keywords:

Psoas abscess; Tuberculosis; Groin pain; Pott's disease; Surgical drainage

Citation:

Gomes RR. An Atypical Presentation of Primary Tubercular Psoas Abscess Presenting as Groin Pain. Ann Clin Med Case Rep. 2021; V6(15): 1-5

1. Abstract

Psoas abscess, a collection of pus in the iliopsoas compartment is an unusual lesion that is unfamiliar to many medicine specialists, which can make an accurate and timely diagnosis problematic. The symptoms associated with this disorder often involve hip pain instead of abdominal or back pain. For this reason, the diagnosis of psoas abscess in patients who present with groin pain may be delayed because such pain is atypical for this condition. Tuberculous abscesses in the iliopsoas muscle are usually secondary to pott´s disease or spinal tuberculosis. Another possibility is direct extension from nearby structures or hematogenous spread from a distant focus. Here we report a rare case of a 24-year-old immunocompetent lady who presented with right groin pain and limping and subsequently was diagnosed with psoas abscess with no other apparent focus. Diagnosis is done based on history, physical examination, plain radiology, microbiological investigation and CT scan of abdomen which revealed a large psoas abscess caused by *M. tuberculosis*. She was treated with DOTS category I along with surgical drainage of the abscess and significant functional improvement was noted on follow up. The objective of this article is to keep in mind the possibility of primary tuberculosis in the form of an abscess in the psoas in order to help in its complex diagnostic approach, as well as review the most adequate diagnostic and therapeutic methods.

2. Introduction

Psoas(or iliopsoas) abscess, a purulent collection in the iliopsoas muscle compartment is a rare condition with vague presentation and insidious onset making diagnosis difficult particularly for primary care physicians [1]. It was first described in 1881by Mynter, who referred to it as "psoitis" [2]. It can be classified as primary (30%), when there is no an underlying process even though that could be a hematogenous or lymphatic spread of the bacteria from a hidden focus; or secondary (70%), when it is the result of local extension from a nearby infectious focus, for example any peritoneal organ or the spine. In fact, in developed countries, Pott´s disease (TB spine) is the most common cause of tuberculous abscess in the psoas [3]. TB spine represents 50% of skeletal TB, 15% of extra-pulmonary TB and 2% of all cases of TB [4]. Currently, either S. aureus or a mixture of enteric organisms including aerobic and anaerobic gram-negative bacilli are usually isolated from psoas abscess [5]. Its diagnosis requires high clinical suspicion based on the clinical history of the patient, as well as an exhaustive physical and radiological examination. Diagnostic certainty is obtained with the microbiological and histopathological results of the samples obtained [6]. Early diagnosis and treatment are essential to prevent complications, such as the extension to nearby structures or the process chronification.

3. Case report

A 24-year-old lady, not known to have diabetes, hypertension, bronchial asthma presented to our emergency department with a 2 months history of right groin pain with exacerbation for 1 month and evening persisting low-grade fever (maximum recorded temperature was 100.4^0 F) for 3 months. Groin pain was limiting her activity, followed by pain in the abdomen more on right side which was dull aching and radiating to the umbilical area. There was no history of night sweat, joint pain, weight loss, anorexia, cough, and

hemoptysis. Her menstrual history was non-significant. Her bowel, bladder habit was normal. She had neither past history of TB nor history of contact with patient with active tuberculosis. She vaccinated as per local immunization schedule including BCG vaccination. There was no history of previous hospitalization or surgery. She has two children with normal delivery. On examination, she was ill looking, pyrexial with temperature 100.2^0 F, vitals were stable. On locomotor system examination her hip was held at 80 degrees of flexion while walking with increased lumbar lordosis. She exhibited painful and restricted movements of the hip joint, and extension and internal rotation of the hip triggered extreme pain. On palpation, thrust tenderness present on left paraspinal area at T-L spine and tenderness present at T12-L1 spine. Swelling and crepitation were not appreciated, toe movement present. Cardiovascular system, alimentary system, respiratory system, central nervous system examination was within normal limit. On laboratory investigation, complete blood count revealed hemoglobin level of 11.0 g/dL (normal level: 12-16 g/dL); a leukocyte count of 11.5 k/µL (normal level: 4.0-11.0 k/µL) with neutrophil 56.1% and lymphocyte 30.6%; a platelet count of 192 k/µL (normal level: 150-450 k/ µL); Peripheral bllod film : normocytic normochromic anemia with mild neutrophilic leukocytosis, serum SGPT 29 U/L (normal level: 0-35 U/L);. His results also demonstrated serum C-reactive protein level of 230.4 mg/L (normal level: 0-5 mg/L), an erythrocyte sedimentation rate of 86 mm/h (normal level: 0-15 mm/h). The patient's creatinine level at admission was 0.74 mg/dL (normal level: 0.6-1.2 mg/dL). Random blood sugar (4.3 mg/dl), serum electrolytes, and urine routine examination were normal on admission. Viral markers for hepatitis B and C virus were negative. X ray of right hip and X ray of lumbosacral spine with both sacroiliac joint was noncontributory. Ultrasonography of whole abdomen showed large cystic area (10.3× 10.3 cm) with internal echoes in the retroperitoneal space beside the right kidney. For further clarification of the abdominal mass CT abdomen was done which revealed a large loculated hypodense lesion containing fluid and debri having nearly thick margin in the right psoas muscle. After intravenous contrast peripheral rim enhancement was noted consistent with right psoas abscess (Figure 1, 2). However right sacroiliac joint, the lumbar spine and the intervertebral discs appeared normal.

Due to the large dimensions of the collection, it is surgically drained through Watson-Jones approach, and samples for the microbiological and histopathological study were obtained. The gram stain and the aerobic cultures were negative. Ziehl- Neelsen´s staining was positive for acid-fast bacilli (Figure 3). The diagnosis is confirmed with positive polymerase chain reaction for M. Tuberculosis. Histopathological examination suggestive of granulomatous inflammation consistent with tuberculosis. Thus the patient was diagnosed as a case of primary tuberculous psoas abscess due to the absence of other foci: no pathological chest x-ray, no gastrointestinal or genitourinary symptoms and no spine pain.

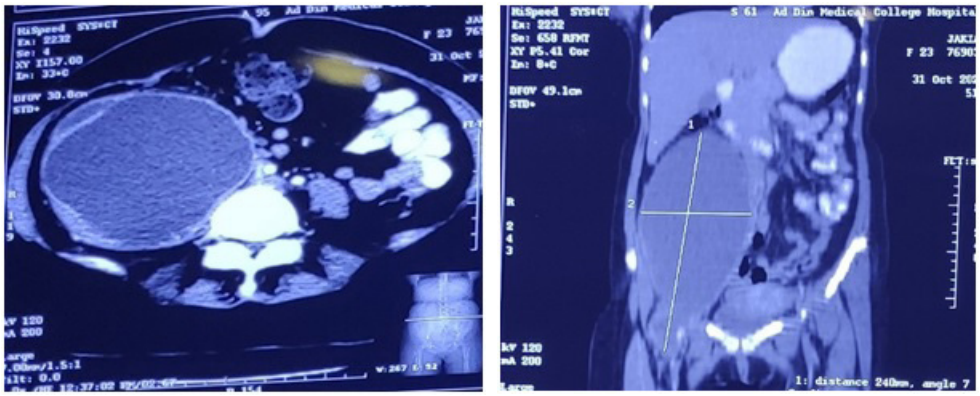

Figure 1 and 2: CT abdomen revealing right psoas abscess.

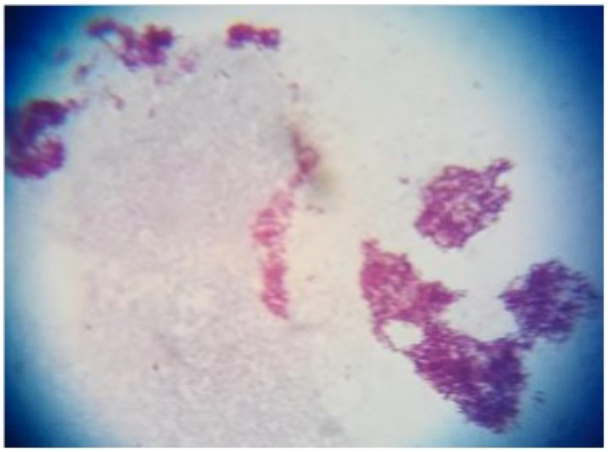

Figure 3: Acid fast bacilli on Zeihl Neelsen's staining

She was started anti-tuberculosis treatment as per local treatment guideline. Five months later, the patient is still in treatment, there is a clear clinical improvement and there are no signs of recurrence of the abscess in the follow-up controls. There is a plan to continue anti tuberculous therapy for six months.

4. Discussion

Psoas and iliacus muscle-together called as iliopsoas are in the iliopsoas compartment (an extraperitoneal space that contains the iliopsoas and the iliacus muscles.) The psoas major is a long muscle that runs across the extra peritoneal space and connects the mediastinum from its cranial origin located in the transverse processes of thoracic vertebra 12, and the lesser trochanter, where it joins the iliacus muscle as a tendon. Due to this large extension, there are many neighboring structures that can create a secondary abscess in the psoas. Infections can enter into this muscle form its neighboring structures like iliac lymph nodes, sigmoid colon and abdominal aorta [7] In 1986, after a review of 367 cases, Ricci established that the most common cause of secondary abscess in the psoas was Crohn's disease [8]. These data are questioned in the article by Navarro et al., who determined that the most common origin of secondary iliopsoas abscess is the vertebral osteomyelitis in 35% of cases. In this article Crohn's disease only accounts for 3% of cases of secondary abscess [9]. Vertebral osteomyelitis (10% cases of secondary psoas abscess) and psoas abscess are inter-related infections and share the same risk factors [1]. Nearly two third of the vertebral osteomyelitis is pyogenic and only one third is tubercular [1]. Van den berge, et al, from Rotterdam, Netherlands had mentioned that two of the patients in their series had a psoas abscess secondary to tuberculous osteiomyelitis [5]. In India, 5% of skeletal tuberculosis cases develop psoas abscess and this reflects infection and poor socio-economic conditions.

In the case of primary abscess of the psoas, it usually appears in patients with some predisposing factor, such as diabetes mellitus, kidney failure, HIV infection or other circumstance that compromises the immunological state of the patient. Most of the cases of primary abscess that have been published in the literature do not seem to affect the general state of the patient, with a subacute or chronic unspecific evolution which tends to delay diagnosis [10]. Berge et al. described a classic triad of symptoms of psoas abscess: lumbar pain, limitation of hip mobility and fever [5].

The review by Ricci et al. shows several etiological agents of the disease. In the case of secondary abscess, the most commonly isolated species were *Escherichia coli* and *Bacteriodes spp*. The most common agent in the case of primary abscess is *S. aureus* (88%), although there are other published causes, such as brucellosis, trichinosis, typhoid fever or *Pneumococcus*. More recently, Navarro-López et al. have reviewed 124 cases and published the same most common etiological agents: *S. aureus* (43%) in case of the primary abscess and *E. coli* (25%) in case of secondary abscess. Primary tuberculous psoas abscess in a patient without any other apparent focus and without any previous predisposing pathology is an extremely rare process that has very rarely been published [11].

Psoas abscess is a rare disorder that is often difficult to identify. The clinical presentation of a psoas abscess is often variable and nonspecific [16]. The classical clinical triad (fever, back pain, and lower extremity weakness) is present in less than a third of the patients with psoas abscess8.The abscess may present as back pain, pyrexia of unknown origin, groin pain that mimics a septic hip, increased frequency of micturition, or abdominal pain. As the psoas muscle is innervated by L2–L4, pain can radiate to hip and the lower extremity, mimicking the sciatic nerve symptom of pain. Indeed, there is a direct anatomical link between the psoas muscle and surrounding neural structures (lumbosacral structures) that can produce radicular pain. Onset is usually sub acute, and symptoms are generally present for a few weeks [12]. In the supine position, the knee is moderately flexed and the hip mildly externally rotated [17]. Hyperextension of the involved side results in increased leg pain. However, collection of pus in the psoas muscle compartment may present with a gradual onset of symptoms, moderate pain, and low-grade or absent fever, as was seen in our case.

Patients may present with lumbar lordosis. Distal extension of a psoas abscess may present as a mass in the inguinal region. Proximity to the hip capsule can precipitate symptoms that mimic a septic hip. The iliopectineal bursa that separates the tendon from hip joint communicates with the capsule of the hip in 15% of the population [13], allowing infection to spread to the hip. Clinically, it may be possible to distinguish a septic hip from a psoas abscess [14]. Movements of the hip in flexion are painless in cases of psoas abscess but are very painful in either flexion or extension in cases of septic arthritis. Retroperitoneal or intraperitoneal lesions may cause irritation of the psoas muscle as in cases of retrocecal appendicitis [15]. While all of these lesions cause pain on stretching of the muscle, they are difficult to distinguish from psoas abscess clinically.

Psoas muscle abscess is often initially misdiagnosed as muscle strain, acute myositis, contusion, hematoma, septic pelvic thrombophlebitis, perinephric abscess, pyelonephritis, acute appendicitis, pelvic or spinal osteomyelitis, trochanteric bursitis, sacroiliitis, cellulitis, or necrotizing fasciitis. In addition, tumors arising from the structures within the pelvis or lumbar area may mimic a psoas abscess [18-20]. In neurosurgical practice, psoas abscess must be considered in the differential diagnosis of low back and leg pain even without the presence of fever.

During the diagnostic stage of the tuberculous abscess it is important to look for any possible focus of infection: lung, spine, hip, genitourinary system and gastrointestinal tract. Only once that these foci have been ruled out we can talk about a primary abscess.

Laboratory tests reveal nonspecific signs of inflammation: marked

elevation of the erythrocyte sedimentation rate and CRP levels, an increased peripheral white blood cell count, and occasionally anemia. Blood cultures may be positive for a particular organism causing the abscess. HIV test is recommended, as this is a cause for immunosuppression predisposing to the development of PPA. In endemic areas, every effort should be made to ensure that the mycobacterium is excluded by acid-fast staining and culture techniques [21,22]. CT-scan and magnetic resonance imaging (MRI) are the best radiological modalities for diagnosis because of the low sensitivity and specificity of ultrasound [23,24].

S. aureus is the most frequently identified pathogen in patients with PPA (about 90% of cases). Secondary psoas abscess is usually caused by enteric bacteria such as Streptococcus species (4.9%) and Escherichia coli (2.8%) [8]. M. tuberculosis is currently an uncommon cause of PPA and often associated with a concomitant spondylodiscitis (Pott's disease) [6,22,25]. Our patient was diagnosed as a primary tubercular psoas abscess since no other source of tuberculosis was identified. If tuberculosis is suspected, etiological confirmation is made either by demonstration of M. tuberculosis on a pathological specimen or histological evidence of epithelioid-giant cell granulomas with caseating necrosis on the biopsy material. DNA amplification techniques and the Quanti-FERON®-TB Gold In-Tube assay are also helpful for early and rapid diagnosis [25].

In addition, transient bacteremia following pharyngitis or urinary tract infection may predispose patients to this condition [26,27]. On the other hand, alterations to the immune status during pregnancy can lead to impaired cell-mediated immunity with an increased susceptibility to certain infections such as tuberculosis [28]. Our patient had no known history suggesting a malignancy or dysfunctional immunity. In addition, it is unclear as to how a woman who was healthy previously could develop such a potentially serious complication after an apparently uncomplicated vaginal delivery. Furthermore, our patient has no potential risk factors or source of infection for developing a psoas abscess.

The tuberculous abscess of the psoas requires a multidisciplinary management. Usually, it is possible to carry out an ultrasound guided percutaneous drainage, although in some cases it is necessary to perform a surgical drainage due to the extension of the abscess (as in our case), always accompanied by adequate therapy with anti-tuberculous drugs that will depend on the sensitivity spectrum of the mycobacteria [29]. The average duration of the anti-tuberculous treatment in the published literature was 9 months. This treatment plan reports good results in the reviewed literature, and most of the patients have shown good prognosis (better in the primary cases than those secondary to other diseases) [8]. If treated early and adequately, most patients with PPA will be cured without further complications or recurrent infection [16]. The possibility of another systemic source of infection (multifocal infection) should be considered when the patient does not respond to anti tubercular treatment.

5. Conclusion

PPA is an uncommon but serious clinical entity encountered in medicine and orthopedics leading to delay in diagnosis because of the rarity of this infectious disease, insidious development, the lack of specific (localizing) symptoms and signs, and its similarity to many differential diagnoses. When suspected, CT-scan and/or magnetic resonance imaging help in making an accurate diagnosis and facilitate percutaneous or open surgical drainage of the abscess. Correct and fast identification of the microorganisms in addition to appropriate usage of antibiotic regimen improves the outcome. Therefore, psoas abscess must be considered in the differential diagnosis for patients with chronic groin pain even in the absence of fever.

of the specimen also revealed fibrocollagenous tissue and foci of caseation necrosis and scattered epitheloid cells, lymphocytes, histiocytes and langerhan’s type giant cells with no evidence of malignancy

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