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Psoas muscle abscess simulating acute appendicitis: A case report

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ABSTRACT

INTRODUCTION: Psoas abscess is a rare clinical entity with vague symptomatology. We report a psoas abscess that simulated symptoms of acute appendicitis.**PRESENTATION OF CASE:** A twenty-five year old male presented pain irradiating to the right iliac fossa and lumbar region associated with thigh flexion. Laboratorial exams revealed leukocytosis with a neutrophil shift to the left. Abdominal Ultrasound showed significant intestinal distension and a small quantity of free fluid at the right iliac fossa. Laparotomy and an appendectomy were performed. During immediate post-operative, the patient evolved with worsening of the pain and the leukocytosis, therefore, we chose to maintain his antalgic posture. An abdominal Computerized Tomography scan with contrast was solicited, revealing an increase of the iliac and psoas muscles of the right side, and multiple bacterial focuses. A retroperitoneal access was performed and 300 ml of purulent secretion was drained. Afterwards, we implanted a Penrose Drain. The patient had a good post-op evolution, being discharged 7 days after the drainage.**DISCUSSION:** The psoas muscle is a flexor of the thigh. Psoas abscess is an underdiagnosed condition, its main treatment is surgery associated with antibiotic therapy. CT scan seems to be the best choice of diagnostic image exam, although some authors prefer the nuclear magnetic resonance.**CONCLUSION:** The psoas muscle abscess is uncommon and poorly characterized in its etiology, clinical associations, and its therapeutic approach. On the other hand, acute appendicitis is the most common abdominal emergency, with a 7% death rate, and surgery is its main treatment.© 2016 The Author(s). Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

The psoas abscess (PA), also known as Psoitis, is a rare infectious pathology that presents itself as a pyogenic collection on the iliopsoas muscle compartment. It was described for the first time in 1881 by Mynter [1]. It is an underdiagnosed disease that can produce vague clinical characteristics, causing difficulty in its diagnosis [1,2]. Cases of psoas abscess in puerperal primipara women [3], diabetic patients [4], elderly [5], and in cases associated with Pott disease [6] and AIDS [2] were reported in the literature.

Its known causes are many, although *Staphylococcus aureus*, *Escherichia coli*, *Bacteroides* sp., *Mycobacterium tuberculosis*, *Streptococcus viridans*, *Enterococcus faecalis*, and *Peptostreptococcus* are the most common source of infection. Immunosuppressed patients have a higher risk of developing this disease. Primary PA possess a better prognosis, and its mortality rates ranges from 2.5% to 18.9%,

nevertheless, its mortality in non-treated patients is as high as 100% [3,7].

The PA incidence was estimated to be 12 cases per year in the world, approximately, although these numbers are increasing in industrialized countries [8,9]. Since the diagnosis is established with the help of sophisticated image exams, and the fact that some abscess heal with just antibiotic therapy, it is possible that the real frequency of the PA is greater than the estimated. This hypothesis deserves additional reflection, especially in non-industrialized regions [5]. Garner et al. concluded that the PA was underdiagnosed after performing a research in which they found the disease in 15 patients over the course of 3 years [1]. There is no data regarding its incidence in Brazil.

We report a case of psoas abscess that simulated acute appendicitis symptoms. This work has been reported in line with the CARE guidelines criteria.

2. Presentation of case

A 25 year-old Caucasian male was admitted to the emergency of the Municipal Hospital Moacyr Rodrigues do Carmo with complaints of pain at right inguinal region and fever, for a day. During

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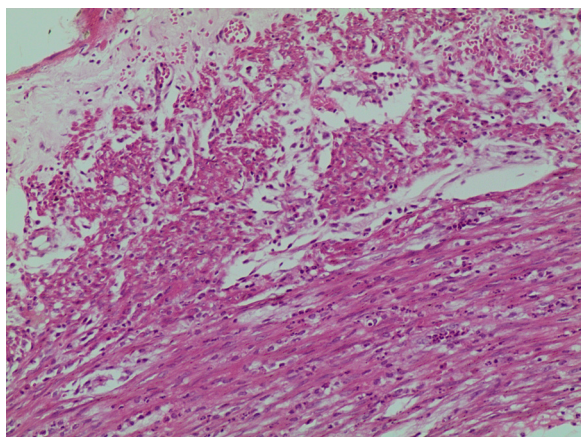


Fig. 1. The appendix. Histopathological exam of the Appendix showing no signs of acute inflammation. H&E - X10.

the consult, the patient reported pain worsening, as it was now irradiating to the right iliac fossa. The pain relieved while walking and during supine with the right lower limb flexed over the abdomen. The patient presented loss of appetite, nausea, and fever, also, the patient denied vomiting and diarrhea.

Physical examination showed a regular general state, he was lucid and oriented in time and space. The patient showed a pain face and pallor, and was anicteric, acyanotic, eupneic in ambient air and presented a feverish state. He had preference over the supine position with the right lower limb flexed. The patient was unable to walk due to the intense pain. Intestinal peristalsis was slightly reduced, patient felt pain during palpation of the right iliac fossa, which also revealed a tympanic sound. His blood pressure was 110×80 mmHg, heart rate was 110 BPM, respiratory rate was 24 per minute and his temperature was 38°C .

Laboratorial exams revealed leukocytosis with a shift to the left, and the abdominal ultrasound showed a distension of intestinal loops and small quantity of free fluid at the right iliac fossa. 1 day later, we opted to put the patient under an epidural anesthesia and proceed with an open laparotomy through an oblique incision on the McBurney's point, in which we found a hyperemic retrocecal vermiform Appendix and purulent fluid, then, we opted to do an appendectomy and lavage of the abdominal cavity. Histopathological exam of the Appendix revealed no signs of inflammation (Fig. 1). During immediate post-op, the pain and the leukocytosis worsened, thus, we kept the patient in an antalgic posture (thigh flexion). 2 days later, a contrasted CT scan was requested, which revealed an increase of the iliac and psoas muscles of the right side, and multiple bacterial foci. The largest collection measured 5.0×4.0 cm (Fig. 2). One hour later we performed a retroperitoneal access by expanding the previous incision, in order to reach the muscle, and drained 300 ml of purulent secretion, while carrying out another lavage and an implant of a percutaneous Penrose drain. The patient was put on Piperacillin and Tazobactam, he reported that the pain had diminished after the drainage. He responded well to the treatment and was discharged 7 days after the surgery. He returned 14 days later for follow-up and showed no signs of abscess or any symptoms. Routine laboratorial exams also showed no alterations.

3. Discussion

The psoas muscle (PM) is the main flexor of the thigh, although it also flexes the trunk over the hip. Its proximal insertion is on the anterior surface of the transverse processes of all lumbar vertebrae, the lateral margin of the vertebral body of multiple vertebrae (T12 to L5), and the intervertebral disc between them. Its distal insertion

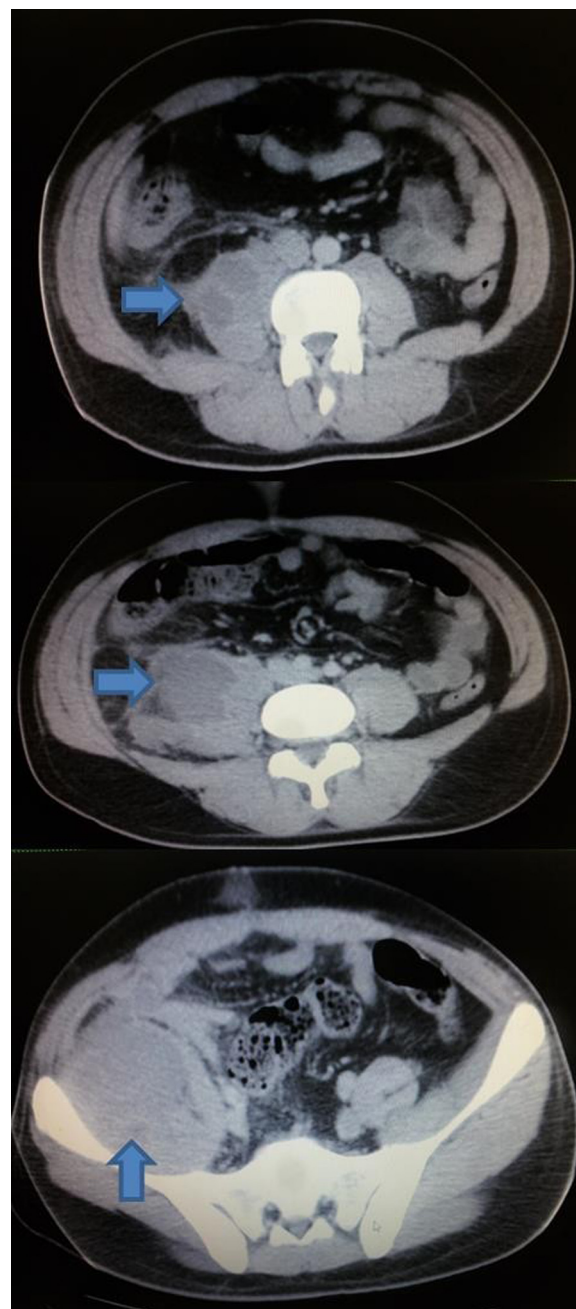


Fig. 2. The Psoas Abscess. Abdomen CT scan showing the abscess at the psoas muscle in three different segments (blue arrows).

is at the lesser trochanter of the femur [10]. In 70% of individuals, the PM a single structure, although 30% of individuals presents a muscle located anteriorly to the PM that follows its trajectory: the psoas minor muscle [11]. Its main function is the flexion of the thigh over the hip, nevertheless, the muscle also shows a slight degree of action during lateral rotation, and abduction of the thigh. Anatomical relations of the PM are the kidneys, ureters, cecum, appendix, colon, sigmoid, pancreas, lumbar lymph nodes, and nerves from the lumbar plexus [10,11].

When any of these structures are compromised due to pathological processes, the use of this muscle can result in pain. Likewise, infectious diseases of nearby organs can spread to the PM through contiguity. According to Penedo et al., there is a higher incidence of the PA on the right side, although there are no definite explanations for this fact [12].

The PA is classified in primary and secondary. Primary PA usually originates through hematogenic dissemination, also, it is more common in children and adults below 30-year-old and it is usually caused by *Staphylococcus aureus*. Secondary PA, on the other hand, is more common in adults over 50-year-old, and originates through infections from adjacent sites, for example: the gastrointestinal tract (*Escherichia coli* and other Enterobacteria), and the vertebral column (*Mycobacterium tuberculosis*) [9].

The symptoms of this disease are unspecific. The typical triad of fever, lumbago, and restriction of the hip movement is present in only 30% of cases [13]. Symptoms such as abdominal pain, nausea, vomiting, loss of appetite, weight loss, and malaise can occur. Moreover, the PA can be associated with other diseases, including: Crohn's disease, diverticulitis, appendicitis, colorectal cancer, urinary tract infection, vertebral osteomyelitis, septic arthritis, sacroiliitis, abdominal aortic aneurysm, endocarditis, and suppurative lymphadenitis. Furthermore, the PA can also be associated with procedures such as femoral vessel catheterization and extracorporeal lithotripsy [13].

Some authors describe two clinical presentations of this illness: the typical manifestation in which the patient presents fever and low lumbar or inguinal pain; and the atypical manifestation, in which the patient presents fever and abdominal discomfort [14]. In the present case, the patient initially showed an atypical form of PA that simulated a classic "text-book" case of appendicitis, although it posteriorly evolved to a typical presentation of the PA, as the patient developed strong pain at inguinal region, leukocytosis and persistent fever during immediate post-op.

The PA is a rare disease with a difficult diagnosis, since the symptoms are usually unspecific. This leads to a delay during diagnostic process, frequently taking over 45 days [15]. The current case had an early diagnosis of PA during immediate post-op after the unnecessary appendectomy, 3 days after admission.

Complete blood count accusing leukocytosis (over 15900/mm³), erythrocyte sedimentation rate (ESR) higher than 90 mm/h, and high rates of urea (over 305 mg/dl) are findings that may be not present in all cases, although the increase of the latter can suggest an acute or sub-acute etiology [12]. Our patient had a high ESR and leukocytosis count ever since his first evaluation up until the post-op of the abscess drainage.

Simple abdomen radiography can demonstrate the presence of retroperitoneal collections, blurring of the psoas muscle region, and air enhancing duodenal or renal contour, although its diagnostic value for PA is restrict, as these alterations are only present in 30% of cases [16].

Contrasted computerized tomography (CT scan) should be the standard choice for Psoitis confirmation, as it has a sensibility of 100% [2,5,16,17]. In this case, we opted to use the CT scan during the first day of the appendectomy post-op, as the patient still presented fever and pain. This exam was of extreme importance in order for us to reach a correct diagnosis, and should also be performed with the purpose of finding any other sites of residual collections in other structures, such as the vertebral column [2]. In contraposition, some authors stated that the nuclear magnetic resonance (NMR) can differentiate soft tissues more accurately, producing a clear view of the abscess wall and its surrounding structures without the use of a radioccontrast agent, thus, making the NMR a better choice than the CT scan [18].

PA treatment is usually performed with broad spectrum antibiotics and drainage of the abscess, although the surgery should precede the pharmacological approach. This drainage can be percutaneous, and must be performed using the Ultrasound or CT scan as a guide. In our hospital, extraperitoneal incision of the compromised iliac fossa at the McBurney's point is the conventional approach—however, it is more commonly performed during appendectomies. This technique should be used when the

percutaneous drainage fails or in cases where the abscess is multiloculated. The CT scan and percutaneous drainage are standard procedures for treating this illness [12].

Reports in the literature suggest antibiotic therapy with Cefotaxime 2 g/4–6 h or Cloxacillin 2 g/4–6 h, associated with 500 mg/6–8 h of Metronidazole, intravenously. Some smaller abscess (below 5 mm) can be treated initially with only antibiotics [2,12]. Other authors suggest that the treatment for this disease should be with broad spectrum antibiotics (Clindamycin, Penicilin, and Aminoglycosides) for two weeks after the abscess drainage [2]. For patients with AIDS that develops PA, the antibiotic therapy is performed with Oxacillin and Gentamycin, intravenously, during 4–6 weeks [19].

We believe that the etiology of this PA could be related to an extrapulmonary form of Tuberculosis (Pott's disease), as the patient lived in a proper environment for development of this illness (overpopulated area), and it has been shown in the literature an association between both diseases [20].

4. Conclusion

Psoas muscles abscess is a rare pathology and it is poorly characterized in its etiology, clinical associations and therapeutic approach, leading to an underdiagnosed disease with high mortality rates. On the other hand, acute appendicitis is one of the most common abdominal emergencies, and has a mortality rate of 7%. Our case report is an alert to physicians and surgeons, as psoas muscle abscess are deadly and can often mimic other diseases symptoms, thus, requiring knowledge of this entity in order to quickly deduce the diagnosis and provide an early treatment. Our case adds to the literature the fact that Psoitis can mimic appendicitis symptoms, and may cause confusion during the diagnosis and treatment. We highlight the fact that the patient had its Appendix removed without the necessity.

Conflict of interest

The authors declare no conflicts of interests.

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Ethical approval

Does not apply.

Consents

Written informed consent was obtained from the patient for publication of this case report and accompanying images. Furthermore, no personal information regarding the patient is present in this study.

Author contribution

Admission, diagnosis and treatment: Babinski/ Miller LFF.
Getting consent from the patient: Pires/ Babinski.
Data analysis: Carvalho/ Monteiro/ Marsillac.
Review of the literature: Babinski/ Pires.
Writing of the paper: Miller ELC/ Babinski.
English translation: Pires/ Monteiro.

Guarantor

I, Márcio Antonio Babinski accept full responsibility for the work and the conduct of the study, had access to the data, and controlled the decision to publish.

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