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Case Report

Surgery Section

Primary Iliopsoas Abscess Caused by *Salmonella paratyphi* A-A Rare Case

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ABSTRACT

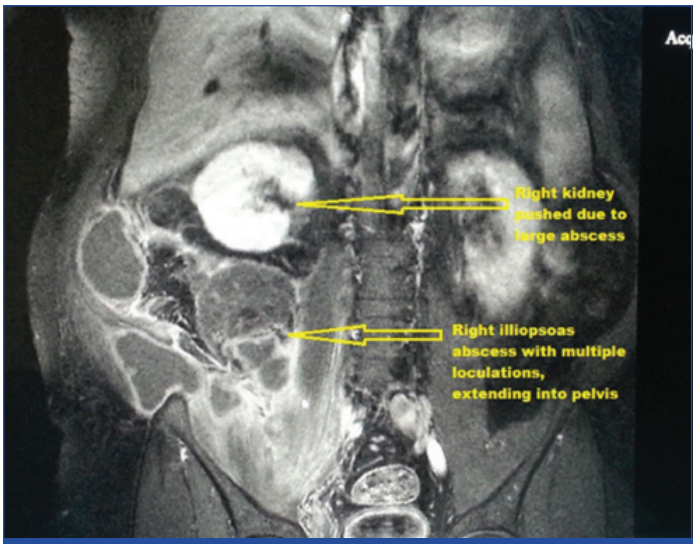
Salmonella paratyphi A is a gram negative bacillus causing enteric fever. Although it can cause other systemic pathologies, localised infections in the form of abscess are rare. In literature hepatic, splenic, thyroid, renal, ovarian, psoas abscesses have been reported to be caused by *Salmonella paratyphi*. Iliopsoas abscesses mentioned in literature were associated with osteomyelitis, septic arthritis or other local pathologies. No case of Primary Iliopsoas Abscess (IPA) caused by *Salmonella paratyphi* A is mentioned in literature. We present a case of primary iliopsoas abscess, which was caused by *Salmonella paratyphi* A. Abscess was drained and antibiotics were started according to sensitivity report with complete recovery.

Keywords: Gram negative bacillus, Osteomyelitis, Psoas abscess, Salmonellosis

CASE REPORT

A 59-year-old male, known case of hypertension on medications, presented to Department of Surgery with complaints of abdominal discomfort in the region of right iliac fossa and right lumbar region since two weeks. He also had fever and chills for two days. On examination, he had raised body temperature, tachycardia and tachypnoea. His abdomen was soft with tenderness and fullness in right iliac fossa extending into right lumbar region. Right hip was slightly flexed. He also had mild parasthesia in right lateral aspect of thigh. He had no urinary complaints. He had undergone laparoscopic cholecystectomy two years back.

Ultrasonography (USG) showed right iliac fossa and pelvic collection with internal septations with echoes. His leucocyte count and ESR were high. MRI was suggestive of retroperitoneal collection involving right psoas and illiacus muscle, extending into pelvis and right lumbar region with peripheral enhancement and multiple loculations. Largest loculation measured 9×6 cm. Right kidney was pushed anteriorly due to collection. However, no vertebral or bowel involvement was noted [Table/Fig-1]. He was started on third generation cephalosporins empirically. Blood culture and serum agglutination tests for *Salmonella typhi* and *paratyphi* antigens were negative.



[Table/Fig-1]: MRI image showing right Illiopsoas abscess with multiple loculations, extending into pelvis. Right kidney is seen pushed due to large abscess cavity.

Considering larger size, multiple loculations and extension into pelvis; decision was taken to perform surgical drainage over image guided drainage. On surgical exploration, frank pus was drained. Abscess wall was sent for histopathology. After thorough wash, tube drain was kept in cavity. Pus culture grew *Salmonella parathyphi* A, which was sensitive to ampicillin, cephalosporins and levofloxacin. Histopathology revealed necrotizing inflammatory changes with no evidence of tuberculosis or Crohn's disease.

Patient recovered rapidly postoperatively and was discharged on postoperative day three. Drain was removed on follow up. Follow up sonography revealed no residual collection. Patient remained clinically and symptomatically better thereafter.

DISCUSSION

Psoas and iliacus muscles, often referred together as ilio-psoas, pass along posterior abdominal wall, then below the inguinal ligament, to get inserted on lesser trochanter of femur as a common iliopsoas tendon. They are invested by psoas fascia. IPA is the purulent collection beneath this fascia. IPA is a rare condition with a reported incidence of 0.4/100,000 in the UK [1].

Primary Iliopsoas abscess arises due to hematogenous or lymphatic spread of organism from distant/occult site. Abundant blood supply of these muscles predisposes for the hematogenous spread of the organisms. Primary IPAs are more common in Asia and Africa (99%), than in Europe (17%) [2]. IPA is more common in young patients, in males and on right side than left side [3-5].

Primary IPA is associated with diabetes mellitus, IV drug abuse, renal failure and immunosuppression [6]. Primary IPA makes up approximately 30% of all cases. It is more common in children where it can be mistaken for septic arthritis of the hip. In our case, primary IPA had an occult origin, while no known predisposing factor mentioned above was present.

Secondary iliopsoas abscess is formed by contiguous spread of inflammation/infection from nearby pathology, commonly from intestinal, spinal or skeletal origin. Iliopsoas lies in close proximity with sigmoid, appendix, jejunum, ureters, aorta, kidneys, pancreas, spine and iliac lymph nodes predisposing to local spread of infection. Instrumentation or procedures of groin, hip or lumbar region have higher risk of developing secondary IPA e.g., femoral artery catheterisation [7,8]. Trauma to the muscle is also a significant risk factor [9,10]. Conditions associated with secondary IPAs include crohn's disease, appendicits, ulcerative colitis, diverticulitis, urinary tract infection, vertebral osteomyelitis,

hip septic arthitis, endocarditis, hepatocellular carcinoma and colorectal carcinoma [11].

Clinical presentation can be variable and non specific, frequently causing delays in diagnosis. Classical triad of fever, back pain and limp is seen in 30% of patients [12]. Other features include flank/groin/abdominal pain, weight loss, nausea, malaise. Patient lies in supine position with knee moderately flexed and hip mildly externally rotated. A large IPA may cause compression of ureter leading to hydronephrosis, or extrinsic compression of iliac vein leading to deep vein thrombosis.

Lab investigations may show raised TLC, ESR, CRP and anaemia. Direct abscess aspirate is the most definitive diagnostic test with higher yield and specificity. USG is diagnostic in 60% cases [2,13]. CT scan is considered gold standard for diagnosis [4]. The major advantage of CT is in management by percutaneous drainage. Some believe MRI is superior with higher sensitivity for better delineation of soft tissue and inflammatory changes, visualisation of abscess wall and surrounding structures [5,14].

A definitive microbiological diagnosis is obtained in 75% of IPA cases [15]. Most IPAs are monomicrobial. However, IPAs originating from gastrointestinal and urinary tracts have shown to be polymicrobial [15]. The most common organism in both primary and secondary IPA (with skeletal infection as the source) is Staphylococcus aureus followed by *Escherichia coli* [2,15]. Other organisms seen include *Bacteroides*, *Mycobacterium tuberculosis*, *Streptococcus viridans, Enterococcus faecalis, Peptostreptococcus, S. viridians, Pasteurella multocida, Clostridium, Yersinia, Klebsiella*, Methicillan Resistant *S. aureus* (MRSA) HIV infections increase risk of IPA by *Mycobacterium tuberculosis, Mycobacterium avium* and *Nocardia* infection [2,15,16]. In our case, microbiology found a monomicrobial source as *Salmonella paratyphi* type A, which is a rare finding.

Salmonella paratyphi A is usually transmitted through ingestion. This organism is also known to cause infective endocarditis, pericarditis, empyema, deep venous thrombosis, meningitis, osteomyelitis, hepatitis and pancreatitis. It can also lead to localised disease in the form of abscess. *Salmonella paratyphi* abscesses have been reported in liver, spleen, thyroid, ovary and kidney [17-19]. Though there are rare reports of iliopsoas abscess caused by *Salmonella paratyphi* in association with local pathology [17-20], primary iliopsoas abscess caused by *Salmonella paratyphi* A is not mentioned in literature.

Management involves appropriate antibiotics and adequate drainage. In patients with suspected primary IPA anti-staphylococcal antiobiotics are indicated before culture reports [3]. In suspected secondary IPA broad spectrum antibiotics like clindamycin, aminoglycosides and anti-staphylococcal penicillins are indicated [5]. Antibiotics are tailored according to culture reports. Few small abscesses can be managed with antibiotics alone.

Percutaneous image guided drainage is preferred over the surgical drainage due to its less procedure related morbidity [21]. Indications for surgical drainage include, failure of percutaneous drainage, clotting disorders, presence of other intra abdominal pathology requiring surgery and the technical limitations to CT guided drainage such as small abscess, multiple septae within the abscess or an inaccessible abscess location [22,23]. In our case, third generation cephalosporins were started empirically. As later on culture report organism was found to be sensitive to it hence same antibiotics were continued.

CONCLUSION

In present case, *Salmonella paratyphi* A is found to cause psoas abscess. No similar report was found in literature. Though it is known to cause primary abscesses in other solid organs, its causative role in primary IPA is a new finding.

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