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Perforated retroperitoneal appendicitis presented with right thigh abscess: case report and literature review

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Abstract

The typical clinical presentation of acute appendicitis is initial diffuse abdominal pain that shifts to right iliac fossa, nausea, vomiting supported with elevated white blood cell count [3]. It is reported that there are atypical presentation of acute appendicitis approximately 20%-30%. Retroperitoneal perforated appendix can cause retroperitoneal and psoas abscess. After abscess formation, inflammation and pus may extend to pelvis and extra-abdominal compartments through certain routes and tissue plains. Reported routes in literature such as deep to inguinal ligament (through psoas sheath, femoral sheath and femoral canal), fibro-osseous canals (through sacrosclatic notch and Obturator foramen). We report a 67 years old patient with initial presentation of right thigh abscess and psoas abscess caused by perforated retroperitoneal appendicitis. He was managed with vertical drainage of the thigh abscess and laparoscopic appendectomy with psoas abscess drainage. There are several reports that diagnostic modalities such as CT of the abdomen and pelvis or MRI could direct the management to surgical or non-surgical plans. The early surgical intervention to the intra-abdomen pathology with sufficient drainage of the psoas and thigh abscess is the definite treatment. It is suggested that in unexplained thigh or groin pain/soft tissue infection with fever and leukocytosis a gastrointestinal pathology should not be overlooked.

Keywords: Appendicitis, retroperitoneal appendicitis, thigh abscess, psoas abscess

Introduction

Acute appendicitis is the most common abdominal surgical emergency globally, which is treated with surgical intervention [1]. It is caused by obstruction of appendix lumen with fecalith, which will lead to bacterial colonization, inflammation, ischemia and progress to perforation [2]. The typical clinical presentation of acute appendicitis is initial diffuse abdominal pain that shifts to right iliac fossa, nausea, vomiting supported with elevated white blood cell count [3]. It is reported that there are atypical presentations of acute appendicitis approximately 20%-30% [1]. Atypical presentation of acute appendicitis depends on the anatomical location of the appendix, the age of the patient and coexisting conditions such as pregnancy and diabetes mellitus [4]. In the literature, there are several reports of atypical presentation of acute appendicitis as with intestinal obstruction [3], retroperitoneal air [5], and acute appendicitis in groin hernia orifices [6]. The perforated appendix is reported as common in elderly patients due to delayed diagnosis or delayed decision of surgical intervention [1]. In this case, we report perforated retroperitoneal appendicitis with initial presentation of right thigh abscess and psoas abscess.

Case

We present a 65-year-old male who was originally admitted under the care of the internal medicine team as a case of iron deficiency for investigation. He is a known case of Type 2 diabetes, Hypertension, and Dyslipidemia. The patient complained of sharp right hip pain for one week duration, non-radiating, made worse by movement, with no clear history of trauma.

Laboratory investigation Showed: WBC 16×10^9 , HB 10.3 mg/dl, and PLT 398. On examination: temperature 38.2 °C, pulse 72 bpm, blood pressure 150/70 mmHg, chest had fair bilateral air entry, abdomen soft and lax, no Organomegaly, lower limbs showed mild pitting edema. Right hip showed mild limited range of movement, no swelling, no warmth, and erythema. During hospital admission under internal medicine care, the patient right hip pain

persisted through admission, with an increase in all inflammatory markers, and despite physiotherapy. There was no obvious cause of this pain as all X-rays remained unremarkable. MRI hip was done and showed a large collection and was noted immediately medial to the vastus lateralis muscle, which extends for about 10 cm in length and about 1.5 cm in max depth [Figure 1]. Another collection is seen postero-lateral to this muscle extending to the gluteal region. In the pelvis, similar high signal foci are seen in the iliopsoas muscle. Appearances are in keeping with multiple abscesses. Our surgical team was consulted to see the patient and according to the MRI results an emergency incision and drainage procedure was done under general anesthesia. A vertical incision 10 cm in length on the lateral side of the right thigh was made, and approximately 300 ml of pus was drained. Post-operative Computer Tomography (CT) Abdomen and Pelvis showed Large multi-loculated abscess noted in the right ilio-*ps*oas muscle, largest pocket 9×5×16 cm associated with multiple intra-muscular and subcutaneous collections noted in the right upper thigh as previous MRI study [Figure 2, 3]. CT guided percutaneous *ps*oas abscess drainage was done, vacuum therapy applied in right thigh drainage wound. Follow up CT abdomen was done one-week post drainage, revealed large right ilio-*ps*oas abscess drainage with no significant interval changes of size. Diagnostic laparoscopy under general anesthesia showed evidence of a perforated appendix at the base, situated in the retroperitoneal space with pus. Laparoscopic appendectomy was done, and the ilio-*ps*oas abscess was drained. Drains inserted in the retroperitoneal space, and in the pelvis. The patient developed entero-cutaneous fistula after drainage removed in the 4th post-op day. Follow up CT abdomen done to delineate the fistula tract. It revealed a redistribution of the free intra-abdominal air that raises the possibility of a bowel fistula. The site is likely close or near the ileocecal junction. The patient is under treatment for fistula on the time writing this case report.

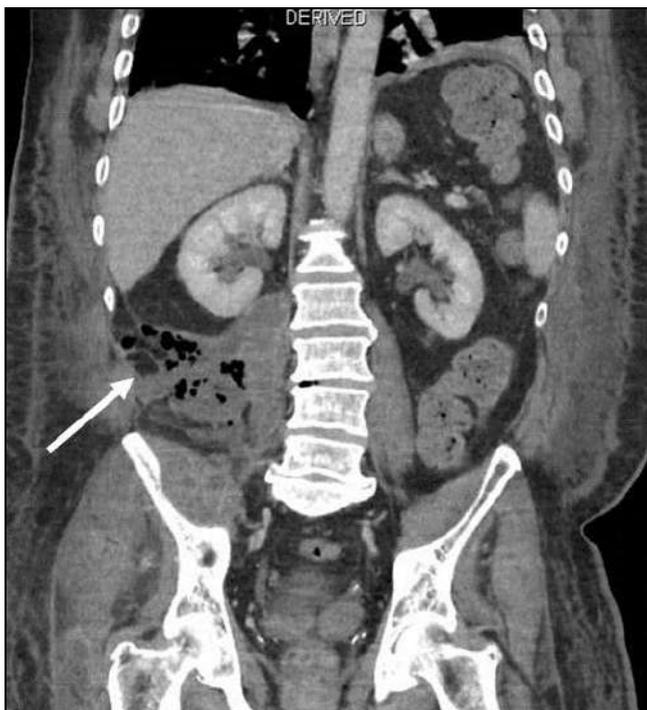


Fig 1: CT Abdomen is showing air locules and fluid collection adjacent to right *ps*oas muscle. (Transverse plane)

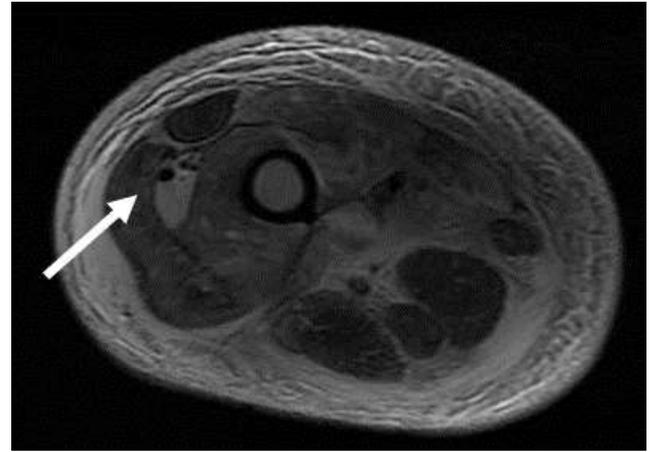


Fig 2: MRI right thigh (Transverse plane)



Fig 3: MRI right thigh (Coronal plane)

Discussion

Retroperitoneal perforated appendix can lead to atypical presentation and confusing findings [7]. It can cause retroperitoneal and *ps*oas abscess [7]. Generally, *ps*oas and thigh abscess are caused by perforated gastrointestinal tract as acute appendicitis, diverticular disease, Crohn's disease and perforated rectal cancer [8]. After abscess formation, inflammation and pus may extend to the pelvis and extra-abdominal compartments through certain routes and tissue plains [7]. Reported routes in literature such as deep to inguinal ligament (through *ps*oas sheath, femoral sheath and femoral canal), fibro-osseous (osseous) canals (through the Sacrosiatic notch and Obturator foramen) [7, 8]. In the literature, there are similar cases to this presented case and it is summarized in table 1.

Table 1: Summarize previous cases similar to the presented case

Case	Year	Age	Gender	Presentation	Diagnostic test	Primary cause
Lal S ^[8]	2012	40	Male	Gluteal and thigh abscess	CT-Abdomen and lower limbs	Retroperitoneal perforation of the Retrocaecal appendicular tip
Awad A ^[9]	2009	45	Male	Right thigh abscess	CT-Abdomen and lower limbs	Retroperitoneal perforated of appendicular base
Dong-Soo K ^[10]	2015	53	Male	Right thigh and psoas abscess	CT-Abdomen and lower limbs	Ruptured appendicitis
Hsieh CH ^[11]	2006	56	Male	Right thigh abscess	CT-Abdomen and lower limbs	gangrenous ruptured appendix
Uchiyam T ^[12]	2005	83	Male	Right thigh emphysema	CT-Abdomen and lower limbs	A retroperitoneal perforation of the retrocecal appendix
Sharma SB ^[13]	2005	6	Male	Right thigh abscess	Abdomen and thigh US	retroperitoneal perforation of the retrocecal appendicular tip
Naidoo S ^[14]	2016	50	Male	Right thigh abscess	CT-Abdomen and lower limbs	perforated retrocecal appendicitis
Nanavati AJ ^[15]	2015	53	Male	Right thigh abscess	MRI Pelvis and lower limbs	Perforation at the base of the appendix
Edwards JD ^[16]	1986	76	Male	Right thigh emphysema	X-ray of pelvis and lower limb	perforated retrocecal appendix
English J ^[17]	2012	56	female	Right thigh abscess	MRI pelvis and lower limb	perforated retrocecal appendix
Sookraj K ^[18]	2009	67	Male	Right thigh abscess	CT-Abdomen and lower limbs	retroperitoneal appendiceal perforation

In all previously mentioned reports, the symptoms were atypical and the initial medical treatments were unsuccessful. The atypical presentation of acute appendicitis can contribute to delay in diagnosis. The diagnosis acute appendicitis is usually established by clinical decision or scoring systems, but the CT of the abdomen and pelvis with sensitivity and specificity more than 91% is superior^[19]. Also, there are several reports that diagnostic modalities, such as CT of the abdomen and pelvis or MRI, could direct the management to surgical or non-surgical plans^[8, 14]. The early surgical intervention to the intra-abdomen pathology with sufficient drainage of the psoas and thigh abscess is the definite treatment^[13]. Percutaneous drainage of the psoas abscess could be used to drainage the psoas abscess, if it was accessible^[17]. CT guided percutaneous drainage of psoas abscess is safe and effective^[20].

Microbiology studies can also help in the diagnosis, if appropriately interpreted^[15]. Where primary psoas abscess is usually caused by *Staphylococcus aureus* and secondary psoas abscess is caused by mixed intestinal floras (*E coli*, *Klebsiella* and *Bacteroides*)^[11, 17]. As mentioned previously, psoas abscess is communicating with extra-abdominal sites and may present as thigh abscess. Swab or aspiration culture of the thigh abscess revealed mixed intestinal flora as in this presented case; then suspicion alerted us of possible intra-abdominal pathology.

Conclusion

Retroperitoneal perforated appendicitis could present as psoas and thigh abscess due to the anatomical communicating routes between the abdomen and lower limbs. It is suggested that in unexplained thigh or groin pain/soft tissue infection with fever and leukocytosis a gastrointestinal pathology should not be overlooked.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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