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Case Report

Psoas abscess and osteomyelitis of femoral head due to ileocecal adenocarcinoma: a case report

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Abstract: Retroperitoneal abscess or psoas abscess secondary to perforated colon cancer is unusual. The subtle symptoms of colon carcinoma associated with psoas abscess readily delay the diagnoses, potentially resulting in prolonged sepsis and higher mortality. We report a 64-year-old woman presented with swelling and pain in the right abdomen and inguinal region with painful motion of right hip. A computed tomography (CT) scan showed thick wall of the ileocecum and a huge right-sided retroperitoneal abscess with gas. MRI revealed a large right-sided psoas abscess and destruction of femoral head. Culture of the pus from the inguinal region showed the infection of *Escherichia coli*. A right hemicolectomy with drainage was performed. Pathology of resected specimen indicated a well-differentiated adenocarcinoma. Thus, the psoas abscess and destruction of femoral head were considered to be caused by retroperitoneal perforation of ileocecal adenocarcinoma.

Keywords: Psoas abscess, osteomyelitis, colon cancer

Introduction

Psoas abscess can be classified as primary and secondary. Secondary psoas abscesses are mostly caused from bone, gastrointestinal tract, and urinary tract [1]. The clinical features of psoas abscess are not specific and have an insidious onset, resulting in diagnostic and treatment delays [2, 3]. Delay in drainage of psoas abscess or retroperitoneal abscess could cause avascular necrosis of the femoral head, osteomyelitis, cellulitis of the thigh, and septic arthritis of the hip [4, 5]. We report a case of psoas abscess and osteomyelitis of femoral head secondary to perforated ileocecal adenocarcinoma.

Case report

A 64-year-old woman admitted to our hospital with swelling and pain in the right abdomen for 2 months. She was initially suspected of having a primary retroperitoneal abscess in local hospital 1 month before. Then incision and drainage of psoas abscess was performed and treated with broad-spectrum antibiotic. However, condition got worse with swelling in inguinal region and inability to walk due to painful motion of right hipfor about 10-day. Then she came to us. There was no history of change in weightlossandbowelhabits,likediarrheaorconstipation.

Physical examination, the abdomen was distended and bowel sounds were present. In addition, the right inguinal region revealed local tenderness and a little heat with unremarkable redness. The active or passive movements of right hip generated pain.

Blood tests showed increased WBC of 11200/μL (normal: 4000-10000/μL), an elevated C-reactive protein (CRP) level of 10.8 mg/dL (normal: 0-0.8 mg/dL), erythrocyte sedimentation rate (ESR) of 80 mm/hr (normal: 0-20 mm/hr), and hemoglobin (Hb) of 8.9 g/dL (normal: 11-15 g/dL). Carcinoembryonic antigen (CEA), carbohydrate antigen (CA) 19-9 and CA125 were in the normal ranges respectively. Plain X-ray photograph of the pelvis demonstrated joint spacen arrowing with destructive femoral head on the right side (**Figure 1**). A computed tomography (CT) scan of the abdomen and pelvic indicatedthick wall of the ileocecum and a huge right-

Figure 1. Plain X-ray photograph of the pelvis revealed collapse of right femoral head.

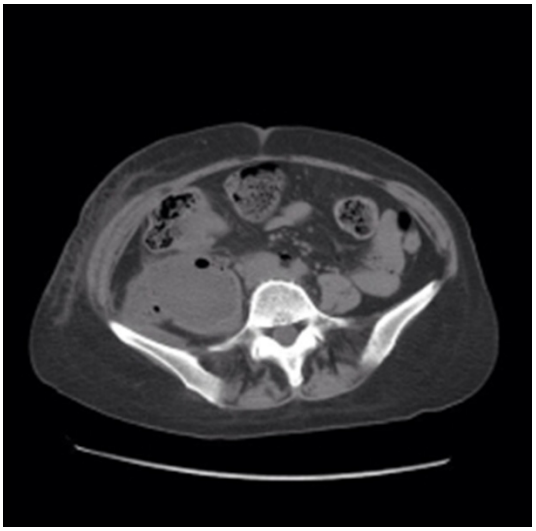

Figure 2. CT scan showing a huge right-sided retroperitoneal abscess.

sided retroperitoneal abscess with gas, refer to the psoas and iliac muscles (**Figure 2**). MRI revealed a large right-sided psoas abscess and osteomyelitis of femoral head with no signs of vertebral lesion (**Figure 3**). *Escherichia coli* was detected in culture of the pus from abstraction of the inguinal region guided by ultrasound. Then she was treated intravenously with imipenem.

So was performed an exploratory laparotomy which emphasized ileocecal region. The perforation was found at the site of the cancer. In addition, the perforated cecum was in continuity with abscess of the right-side psoas muscle. The large purulent necrotic accumulations were evacuated. The fast frozen pathology of the necrotic tissue from the abscess revealed well-differentiated adenocarcinoma (**Figure 4A**). Then she under went a right hemicolectomyandlymph node dissection with drainage of abdominal cavity. The tumor was 3.0 cm×3.0 cm, affecting the cecum and terminal ileum. Histopathology revealed it to be a well-differentiated adenocarcinoma (**Figure 4B**). Thus, the retroperitoneal abscess and destruction of femoral head were considered have been caused by retroperitoneal perforation of ileocecaladenocarcinoma. Local radiotherapy was given to the right abdominal wall after incision healing. Postoperative adjuvant chemotherapy was performed and there had been no evidence of recurrence after 6 months discharged from the hospital. In addition, she was advised to undergo elective total hip arthroplasty.

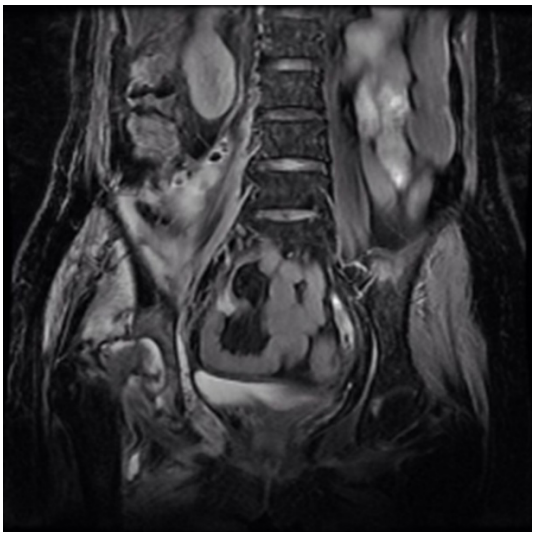

Figure 3. T2-weighted MRI (coronal view) showing high signal around right psoas muscle and right femoral head.

Discussion

Psoas abscess, a rare but dangerous condition, can be classified as primary developing through a hematogenous or lymphatic route and secondary spreading from adjacent structure [2, 3]. Currently, primary psoas abscesses are rare, and most cases of psoas abscesses are secondary [1, 3, 6-8]. Attributing to the particular anatomy of psoas lie in close proximity to

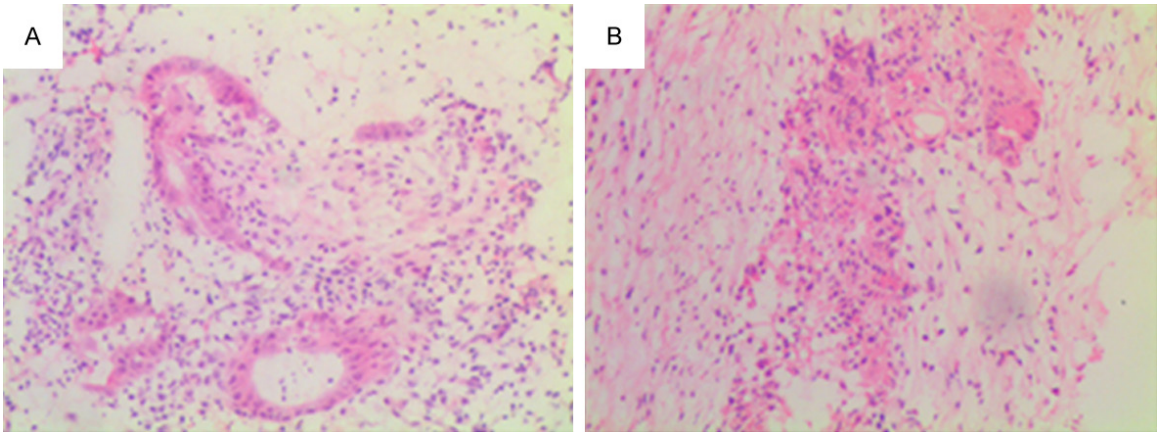

Figure 4. Histological features of the necrotic tissue (A) and the resected specimen (B), revealing well-differentiated adenocarcinoma (H&E, ×100).

Table 1. Cases of colon cancer complicated with remote abscess reported between 2000 and 2015

Author, year	Age/ sex	Abscess location	Cancer location	Pathology	Management	Follow-up	Outcome
Kobayashi et al. 2001 [17]	72/F	Right IPA, right gluteal region	Cecum	Well-differentiated adenocarcinoma	En-bloc resection of cancerous lesion and surrounding tissues	1 year	No recurrence
Matsumoto et al. 2001 [18]	81/M	Anterior abdominal wall abscess	Transverse Colon	Well-differentiated adenocarcinoma	Right hemicolectomy	11 months	No recurrence
Meshikhes et al. 2002 [19]	66/F	Right iliac fossa	Cecum	Moderately differentiated adenocarcinoma	Right hemicolectomy, drainage of the abscess	1 month	Tumor recurrence
Yamada et al. 2002 [20]	62/M	Retroperitoneal abscess	Ascending colon	Well-differentiated adenocarcinoma	Right hemicolectomy, drainage of the abscess	51 days	No recurrence
Tsukuda et al. 2005 [21]	76/F	Right abdominal wall, retroperitoneal and thigh abscess	Ascending colon	Moderately differentiated adenocarcinoma	Right hemicolectomy, drainage of the abscess	3 months	No recurrence
Okita et al. 2007 [22]	85/F	Right IPA	Cecum	Well-differentiated adenocarcinoma	Laparotomy, drainage of the abscess	3 years	No recurrence
Karthikeyan et al. 2014 [23]	50/F	Right iliac fossa, right gluteal region	Cecum	Non-operation treatment	Non-operation treatment	NP	NP

M, male, F, female, NP, not provided, IPA, Iliopsoas abscess.

abdominal organs and pelvic structures. Hence, infections in these organs can spread to the psoas muscle [2]. In recent study, Crohn's disease is deemed to the most common aetiology of secondary psoas abscess in overseas countries [3, 8]. Whereas, the most common aetiology of secondary psoas abscess is orthopedic infections in Asia, such as pyogenic spondylodiscitis [6-8]. The most common organism of psoas abscess is *S. aureus*, but *Escherichia coli* is the predominant etiological organism of gastrointestinal [3, 6-8]. However, *Mycobacterium tuberculosis* is considered the important cause of psoas abscess in developing countries, especially tuberculosis spine (Pott's disease) [9, 10]. Thus, in the present case, the abscess of hip joint was first considered originating from Pott's disease with psoas abscess. Whereas, MRI of the spine did not show any signs of vertebral lesion.

The most frequent complication of colonic carcinoma is bowel obstruction, ranging from 8% to 40%, and the incidence of perforation in a previous large series is 2.6% to 10% [11, 12]. Perforations are rare but serious complications of colorectal cancer, with a high mortality rate [13, 14]. Perforation of colorectal carcinoma occurs through direct perforation from tumor necrosis or proximal perforation in a markedly dilated colon [11, 14]. Previously, Chen and Sheen-Chen [11] reviewed 1950 patients with colorectal adenocarcinoma and found that patients with perforation at the site of the cancer had a similar 5-year survival rate to uncomplicated cancer, and it was better than those

with perforation proximal to the cancer. In our case, the perforation was found at the site of the cancer. Abscess formation occurs in 0.3 to 0.4% of colonic carcinoma and is the second most common complication of perforative lesions [15]. Perforation is usually intraperitoneal and rarely caused in retroperitoneal [16]. Retroperitoneal abscess could tract into gluteal region, thigh or anterior abdominal wall. We reviewed of literature associated with remote abscesses caused by perforation of colon cancer (**Table 1**).

The clinical presentation of psoas abscess is not specific and often variable. The classical triad (fever, back pain, and limp) is present in only 30% of the patients with psoas abscess [2, 3]. Other symptoms like vague abdominal pain, malaise, nausea, and weight loss should also be considered [2]. Wong et al. reviewed 37 patients with psoas abscess and found that none of them presented with classical triad. While, around half of patients (43%) presented with back, hip or thigh pain [8]. The vague clinical features of psoas abscess often result in diagnostic and treatment delays [4, 5]. Psoas abscess could spread to lower limb owing to delay in drainage. The abscess track into hip due to the anatomic relationship of psoas muscle and hip joint. Psoas muscle arises from the lateral borders of T12 to the L5 vertebrae, then passes the hip joint and inserts on the lesser trochanter of the femur via the iliopsoas tendon [2, 3]. Iliopsoas bursa, located between the psoas muscletendon and the hip capsule, communicates with the hip joint in 15% of patients. Psoas abscess can infect the hip joint by this potential route [2, 5, 24]. In addition, abscess can track to the hip capsule directly along the iliopsoas muscle [24]. Only a very small number of cases refer to psoas abscess with infection of hip [4, 24-26].

Treatment of a psoas abscess is based on early use of appropriate antibiotics with drainage either percutaneously or surgically [2, 3, 8]. Although drainage of psoas abscess caused by colon cancer would possibly result in regional spreading of cancer cells, drainage is still recommended. As delay in drainage could resulting in prolonged sepsis and associated high morbidity and mortality [4]. Besides, Chen et al. [11] indicated that regional spillage of cancer cells from a perforation at the site of colon cancer was not an indicator of poor prognosis. The present case, local radiotherapy and adjuvant chemotherapy was given post operation. One-stage surgery of debridement and sequestrectomy of hip joint did not perform, since these procedures could possibly cause regional spreading of cancer cells. It is advised elective total hip arthroplasty after healing of abscess in abdominal cavity.

In conclusion, colon carcinoma should be considered as a possible cause of unexplained psoas abscess and osteomyelitis of femoral head. Symptoms of psoas abscess are often subtle. Early diagnosis with availability of recent imaging techniques and a conjunction of appropriate antibiotics and adequate drainage would reduce mortality and morbidity rates.

Disclosure of conflict of interest

None.

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