

Can herniation pit of the femoral neck mimic an acute appendicitis? A case report

A. VOLPI¹, O.C. PANNARALE¹, G. MANCUSI MATERI¹, V. FAVIA², A. PANEBIANCO¹,
A. PRESTERA¹, P. IALONGO¹, S. GIUNGATO¹, R. LOZITO¹, N. PALASCIANO¹

SUMMARY: Can herniation pit of the femoral neck mimic an acute appendicitis? A case report.

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Although in most cases the diagnosis of acute appendicitis is straightforward, not all patients experience typical symptoms and other conditions may mimic appendicitis. In fact, 15-25% of appendectomies involve the removal of a normal appendix. To date, there is no literature evidence that herniation pit (HP) may mimic acute appendicitis. We report a case of a 30 year old woman admitted to the Emergency Department for severe, acute pain developing a few hours earlier in the lower right fossa, with irradiation to the right thigh. She did not present any fever, nausea or vomiting, Blumberg's sign was absent but the psoas sign and obturator sign were both positive. WBC count was 16,000/mm³ and the Alvarado score was 4. Biochemistry profile was normal. US was unclear and transvaginal ultrasound did not show any gynecological disease. CT scan showed only an herniation pit of the right femoral neck. The patient was admitted to an orthopedic ward and treated with anti-inflammatory therapy. She was discharged after 2 days without any pain and in good conditions. Our case demonstrates that herniation pits of the right femoral neck should be considered a potential cause of right lower abdominal pain mimicking acute appendicitis, particularly if the psoas sign and obturator sign are positive and the patient is physically active.

RIASSUNTO: L'erniation pit del collo del femore può simulare una appendicite acuta? Case report.

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Sebbene nella maggior parte dei casi la diagnosi di appendicite acuta sia semplice, non tutti i pazienti mostrano i tipici sintomi, anche perché altre condizioni possono mimare una appendicite. Infatti nel 15-25% dei casi viene rimossa chirurgicamente una appendice normale. Al momento non ci sono in letteratura pubblicazioni riguardanti l'erniation pit del collo femorale che mima una appendicite acuta. Viene riportato il caso di una giovane donna di 30 anni ricoverata presso la Chirurgia d'urgenza per dolore acuto ed intenso in fossa iliaca dx, irradiato al fianco omolaterale, insorto da poche ore. La paziente non presentava né febbre, né vomito o nausea; il segno di Blumberg era negativo con segno dell'otturatore e dello psoas entrambi positivi. I globuli bianchi erano 16,000/mm³ e lo score di Alvarado era 4. Gli esami di laboratorio erano nella norma. Una ecografia addominale eseguita risultava poco chiara; una consulenza ginecologia con ecografia trans vaginale non evidenziavano patologie ginecologiche in atto. Una TAC mise in evidenza una herniation pit del collo femorale dx. La paziente pertanto, fu trasferita in ortopedia e sottoposta a terapia antiinfiammatoria. Fu dimessa dopo 2 giorni, senza dolore addominale, in buone condizioni. Il caso dimostra che l'HPs del collo femorale dx può essere considerata una potenziale causa di dolore in fossa iliaca dx e mimare una appendicite acuta, soprattutto se sono positivi i segni dello psoas e dell'otturatore e la paziente è fisicamente attiva.

KEY WORDS: Femoral neck - Herniation pit - Acute appendicitis - Abdominal pain.
Collo femorale - Herniation pit - Appendicite acuta - Dolore addominale.

Introduction

Signs and symptoms of acute appendicitis include pain in the lower right abdomen, fever, nausea and vomiting.

However, not all patients with these symptoms have an acute appendicitis. In fact, the negative appendectomy rate in many clinical reports is 15-25% (1-3). Diagnosis may be difficult and scoring systems, such as the Alvarado score, have proved useful in determining the need for further investigation and treatment for acute appendicitis (4). However, the accuracy of these clinically-based scores is inferior to imaging (5). Diagnostic tools usually provide additional information. Other causes of abdominal pain are gastrointestinal, gynecological, uro-

University of Bari, Bari, Italy
¹ Department of Emergency and Organ Transplantation
III General Surgery Unit
² "Policlinico" General Hospital, Bari, Italy
I Radiodiagnostic Unit

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Fig. 1 - CT showing herniation pit on the right femoral neck.

logical, orthopedic and miscellaneous other conditions (6).

There is no literature evidence of herniation pit (HP) mimicking acute appendicitis. Herniation pits of the femoral neck were first described by Pitt et al. (7). They are the result of mechanical stress from the overlying joint capsule and iliopsoas tendon. They are characterized by a small (usually ≤ 1 cm) central lucency surrounded by a thin sclerotic border, and are found exclusively in the superolateral quadrant of the adult femoral neck.

We report the case of a young woman admitted for suspected appendicitis and discharged a few days later with a diagnosis of herniation pit.

Case report

A physically active 30-year old woman was admitted to our surgical unit for severe acute abdominal pain in the lower right quadrant with irradiation to the right thigh, that had developed a few hours earlier. There was no fever, nausea or vomiting. She was in the 3rd day of her menstrual cycle. The Alvarado score was 4. She had had the same symptoms three times in the previous two years. Her clinical history also included an episode of iron deficiency anemia, resolved with oral iron.

No urinary signs or symptoms were found. The psoas sign and obturator sign were both positive. Physical examination of abdomen revealed no tenderness, but there was pain in the lower right quadrant and McBurney's point. Chest and abdominal X-rays were nor-

mal; WBC count was $16,000/\text{mm}^3$. Biochemistry profile showed only moderately low ionized calcium and blood iron.

US revealed a suspected left ovarian cyst. For this reason the patient underwent a transvaginal ultrasound, that was negative for gynecological disorders. A CT scan was performed to clarify the diagnosis, and revealed a lesion on the right femoral neck known as herniation pit. The patient was treated with anti-inflammatory therapy and all symptoms had completely disappeared 3 days after admission.

She was admitted to an orthopedic ward and was discharged 2 days later without any pain and in good general conditions. She was prescribed anti-inflammatory therapy for 10 days and recommended to reduce her physical activity and return for regular follow-up examinations. Six months later, her condition is still good.

Discussion

The rate of negative appendectomies, defined as the removal of a non-inflamed appendix, remains high (15-25%). The general problem and incidence, as well as the influence of modern diagnostic techniques on the rate of negative appendectomies, are of particular clinical importance. The risk of overtreatment in the reduction of the negative appendectomy rate could lead to acceptance of a higher perforation rate. Moreover, diagnosis of acute appendicitis in young women can be difficult, as many signs and symptoms are non-sensitive and non-specific. Acute appendicitis in females may be confused with numerous conditions causing acute pelvic pain. In fact, mul-

multiple studies have shown that 20 to 50 percent of women presenting with pelvic pain have pelvic inflammatory disease (PID), sometimes caused by ruptured ovarian cysts (8). Although this is an easily reached diagnosis in most cases, its presentation is not always typical and there are other conditions which may mimic appendicitis.

Although CT has a higher diagnostic accuracy, ultrasound is safe, easily accessible and, above all, does not use ionizing radiation. For these reasons, we believe that US should be the primary investigation for all patients with suspected appendicitis, as also suggested by other investigators (9).

In our patient HP mimicked an acute appendicitis. How can this happen? Herniation pits of the femoral neck are caused by mechanical stress from the overlying joint capsule and iliopsoas tendon, and consist of a small opening in the anterior surface of the femoral neck through which fibrous and cartilaginous elements infiltrate the cortex through a perforation. They are usually asymptomatic and generally considered an incidental radiological finding (7,10). The clinical signs and symptoms are reduced internal rotation and pain on hip flexion, adduction, and internal rotation, so-called impingement. This syndrome should be considered a potential cause of hip pain, particularly if the patient is physically active, but there is no literature evidence of abdominal symptoms. However, stretching of the iliopsoas muscle can elicit flank pain in a retrocecal appendix, as it is in contact with the psoas muscle; in fact in many patients the psoas sign is positive (11,12). Moreover, patients with a pel-

vic appendix may show no abdominal signs but the obturator sign may be present, again due to anatomical considerations.

For these reasons, when the US result is ambiguous and psoas or obturator signs are present, a CT should be carried out. CT is the most accurate study for evaluating patients without a clear clinical diagnosis of acute appendicitis: its sensitivity and specificity (both 100%) are both superior to US (sensitivity 77% and specificity 86%) (14). The use of CT to evaluate potential appendicitis has decreased the negative appendectomy rate from 42.9% to 3.3% in women aged 18-45 years and may be useful for the diagnosis of rare diseases that mimic acute appendicitis (13,14).

Conclusions

This case reports evidence that herniation pits of the right femoral neck should be considered a potential cause of right lower abdominal pain that mimics an acute appendicitis, particularly if the psoas sign and obturator sign are positive and the patient is physically active. We suggest a more focused use of preoperative imaging such as CT scan, especially in females of reproductive age, when ultrasound (first choice test) is non-diagnostic or unclear. CT scan can diagnose rare diseases, such as HPs, and help prevent unnecessary surgery, thus reducing the negative appendectomy rate and its associated costs.

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