CASE REPORT

Amyand's hernia detected incidentally in two patients

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Accepted 4 October 2017

SUMMARY

The appendix is rarely present inside the inguinal hernia sac. The risk of appendicitis increases in these patients since the blood supply to the appendix can be impaired. The condition is frequently asymptomatic, and even if symptomatic it gives rise to non-specific symptoms. There is no specific laboratory finding. Diagnosis is frequently made with radiological imaging. We report two cases diagnosed as Amyand's hernia with CT.

BACKGROUND

Protrusion of the peritoneum, one of the weak points in the abdominal wall and intra-abdominal structures to the extra-abdominal area is known as hernia. The omentum and intestinal loops are more frequently found in the inguinal hernia sac, while the bladder, Meckel's diverticulum or the ovaries may be seen more rarely. Amyand's hernia involves the presence of the appendix inside the inguinal hernia sac and represents 1% of all inguinal hernias.¹ Non-complicated cases are asymptomatic or may involve non-specific symptoms, such as inguinal swelling, tenderness and pain. The main determinant of the severity of clinical findings is the presence of inflammation or incarceration.¹ Amyand's hernia is more common in men. Cases involving women in the literature frequently occur in the postmenopausal period.² We report two cases of incidentally identified Amyand's hernia.

CASE PRESENTATION**Case 1**

An 80-year-old male patient presented to our hospital due to right flank pain. His medical

history revealed that he had undergone left nephrectomy 40 years previously due to nephrolithiasis. No history of chronic disease was described, apart from benign prostatic hypertrophy. At routine biochemistry tests, urea was 50.9 mg/dL and triglyceride 228 mg/dL. Other biochemical parameters and complete blood count were normal. Cholelithiasis, stone in the right distal ureter and appendix protruding into the right inguinal canal were observed at abdominal CT (figure 1). Because the patient was asymptomatic and there was no finding indicating appendicitis, the surgical operation was not performed.

Case 2

A 68-year-old male patient presented to our hospital for routine check-ups. His medical history revealed that resection due to bladder tumour had been performed 1 year previously. At routine examination, haemoglobin was 11.6 g/dL and aspartate aminotransferase (AST) 57.3 U/L. Other biochemical parameters and complete blood count were normal. Herniation of the appendix into the inguinal canal compatible with Amyand's hernia was observed at CT (figure 2). Asymptomatic patient was taken to medical follow-up because of Amyand's hernia.

DISCUSSION

The appendix inside the inguinal canal in Amyand's hernia may be normal or inflamed. Contraction of the abdominal muscles causes an increase in intra-abdominal pressure. Both increased intra-abdominal pressure and adhesions in chronic cases impair blood supply to the

Figure 1 An 80-year-old male patient with right flank pain. Appendix protruding (arrows) into the right inguinal canal on coronal abdominal CT (A and B) images.

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To cite: Resorlu M, Aylanç N, Karatag O, et al. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2017-221837

Figure 2 A 68-year-old male patient under monitoring due to bladder neoplasm. Appendix protruding into the right inguinal canal on coronal (A) and axial (B) abdominal CT images (Arrows)

appendix. All these factors contribute to the development of acute appendicitis.³ Losanoff and Basson divided Amyand's hernia into four types; in type 1, the appendix is normal, while appendicitis and limited inflammation in the hernia sac are seen in type 2, appendicitis causing peritonitis in type three and accompanying abdominal pathologies in type 4.⁴ Most patients are male, and the right inguinal canal is frequently involved. Inguinal hernia is 10 times more common in men. The greater prevalence on the right side is due to the location of the appendix. It may rarely be seen on the left in anatomical variations such as situs inversus, intestinal malrotations and mobile caecum.¹ Physical examination and laboratory results may not contribute sufficiently to differential diagnosis. Common symptoms include sudden onset epigastric pain, tenderness in the right lower quadrant and inguinal swelling. Both our patients were elderly and male and had no symptoms of Amyand's hernia.

Complicated cases may present to hospital with symptoms of appendicitis or incarcerated or strangulated hernia.⁵ Since non-complicated cases are asymptomatic or produce non-specific symptoms, the condition is generally identified incidentally during surgery. Incarceration should be considered in case of non-reducible hernia together with swelling, redness and pain in the inguinal region. If the appendix is inflamed, it can mimic orchitis and testicular torsion.⁶ Ultrasonography and particularly CT are useful in diagnosis. However, ultrasonography may fail to show the appendix in the inflamed hernia sac. CT is not routinely used in the diagnosis of hernia. Amyand's hernia is therefore diagnosed incidentally during surgery or radiological imaging performed for other purposes.⁷ An appendix originating from the caecum and terminating with a blind end in the hernia

sac may be observed with ultrasonography. Wall thickening and stranding in fatty tissue may be seen if inflammation is present.²

The treatment protocol is determined based on the state of the appendix, age and Losanoff classification. Appendectomy is performed if the appendix is inflamed or perforated. Appendectomy can also be performed in the early age group even if the appendix is non-inflamed because of the risk of subsequent appendicitis.⁴ Some authors put forward that increased intra-abdominal pressure and cohesions, in long term, can be the cause of appendicitis. However, the other group of authors support that prophylactic appendectomy was not necessary because of increasing of the surgical risk and probability of spreading of infection by appendectomy.^{6,7} Appendectomy is not recommended in elderly patients if the appendix is non-inflamed. Mesh use is not recommended in cases of appendicitis complicated by suppurative inflammation due to the risk of wound infection and leakage.^{6,8}

In conclusion, although Amyand's hernia is rare, it can be life threatening if complicated. Radiologists and surgeons with a primary role in diagnosis and treatment should consider Amyand's hernia at differential diagnosis.

Contributors Design of the work: all authors. Intellectual content: MR, OK, NA. Final approval: all authors. Writing of article: all authors.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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Learning points

- Amyand's hernia ascribes to the condition in which a perforated, inflamed or normal appendix is present in the inguinal hernia sac.
- Clinical findings of Amyand's hernia differs depending on the extent of inflammation of the appendix and its preoperative diagnosis is very difficult.
- Radiological diagnosis is done by showing appendix connected to caecum within the hernia sac by ultrasonography or CT.

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