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Rare Pathology: Appendicular Diverticula – A Case Report

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1. Abstract

Appendicular diverticulosis is a very rare condition in which there is an acute inflammation of a diverticulum arising from the vermiform appendix. It was first described in 1893 by a pathologist named Kelyneck [6]. Appendicular diverticulosis (AD) is most commonly found to be in age groups (>43 years) and mimics acute appendicitis in its presentation [2]. The cause of appendicular diverticulosis remains idiopathic but is thought to be secondary to orifice obstruction and subsequent inflammation which predisposes to the formation of false diverticula. Some are also thought to be congenital, based on the histology.

2. Introduction

Diverticulum of the appendix, an uncommon condition which clinically presents as a case of acute appendicitis. Patients would present with right iliac fossa pain, associated with other typical symptoms. Occasionally patients may present with chronic non-resolving abdominal pain. It is very commonly confused with acute appendicitis and is often diagnosed intra operatively. It is then confirmed after the histology report of the appendix has been released. Occasionally, the diverticulum, if very significant, may be mistaken for a carcinoma and some surgeons may proceed with a right Hemicolectomy [5]. Appendicular diverticulum is highly associated with a higher risk of neoplasms especially carcinoid tumors [1, 5].

3. Case presentation

Mr. M a 43-year-old gentleman with no known medical co-mor-

bidities presented to the Emergency department complaining of a 5-day history of abdominal pain. The pain started in the right iliac fossa, non-radiating. Associated symptoms included fever, nausea, anorexia and generalized body weakness.

He initially sought medical advice in Malaysia and was diagnosed as a case of acute appendicitis. Mr. M decided to sign LAMA and travelled back to Oman for a second opinion.

On Examination the patient was alert, conscious and in pain. His abdomen was soft but tender at the right iliac fossa with a palpable mass felt over the same quadrant. Patient had a positive Rovsing's and a positive cough sign.

Upon Further Investigations, Patient Had the Following Laboratory Results:

Complete Blood Count (CBC): Hb 10; WBC 7.0 x 10⁹; Neutrophils 4.0 x 10⁹

C - reactive protein (CRP): 167 mg/L

All other blood tests were normal with no noted abnormality.

A Computed tomography (CT) scan was done on initial presentation which was reported as ill-defined collection in the RIF with enhancing wall measuring 6 x 2.5 x 7.6 cm size. Collection is encasing the terminal part of the ileum with a suspicious focal perforation contained within the collection. Evidence of rim enhancing fluid collection at the RIF with fat stranding in favor of appendicular mass/abscess with suspicious terminal ideal contained perforation.

As the patient was hemodynamically normal and was clinically well, it was decided by the team to treat the patient conservatively with IV fluids, IV antibiotics and to post pone his surgery for 6 weeks. The patient was planned to undergo a repeated CT in 6 weeks' time as well as a colonoscopy (Figure 1, 2).

Prior to discharge red flag signs were explained to the patient and he was told to come back to ED in the case of any of those signs arising. A Repeated CT scan was then done on 26/04/2020 which showed marked improvement in regard to the inflammation that was seen in the first CT. Nonetheless, there were persistent inflammatory changes of the appendix with surrounding fat stranding with the base of the appendix adherent to the cecum (Figure 3).

Mr. M underwent a Laparoscopic appendectomy after the CT scan and the appendix was sent for biopsy. Post Operatively, he was well, vitally normal and was discharged on Day 2 Post - OP. The patient was told to return to the outpatient's clinic in 2 - 4 weeks'

time for the histology report to be traced and to follow up with the patient's general condition.

The Histology Report was Reported Back as Follows - Microscopic Report:

The entire appendix sampled, and the sections reveal partial fibrous obliteration of the lumen. The residual mucosa and submucosa show reactive lymphoid follicles. A microscopic diverticulum is seen formed of out pouching of mucosa and sub mucosa through the variably hypertrophied muscle wall. The wall displayed scattered eosinophils and mast cells. The sub serosa shows fibrosis. The mesoappendix shows fibrous nodules and occasional foamy histiocytes. Impression: Appendix, appendectomy: Microscopic diverticulum and hypertrophied muscle wall. No significant inflammation apart from occasional foci of fat necrosis in mesoappendix (Figure 4,5).



Figure 1 and 2



Figure 3

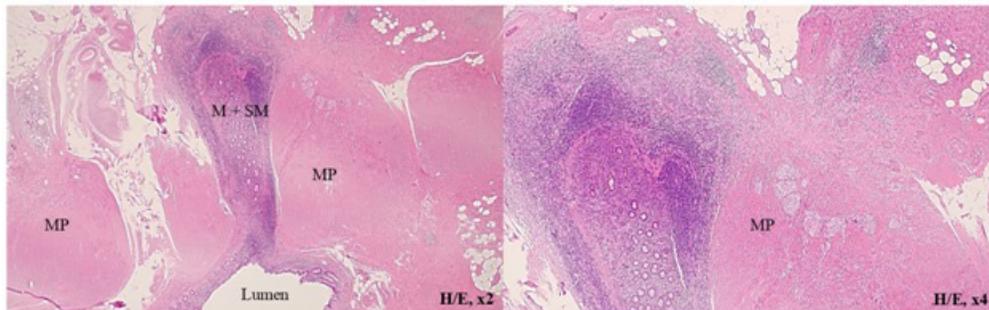


Figure 4 and 5: a) Section Through the diverticulum showing a defect in the muscularis propria (MP), through which the mucosa (M) and submucosa (SM) invaginate. b) The Mucosa and submucosa invaginate through the full-thickness of the muscularis propria into mesoappendix fat.

H/E: hematoxylin and Eosin stain

4. Discussion

Appendicular diverticulosis has two histological types: Acquired and congenital. Acquired appendicular diverticulosis also known as false diverticulum is the commonest type. It is usually small, measuring 2 – 5 mm and occur due to the herniation of the mucosa and the submucosa through a defect in the muscular layer. The pathology and the etiology remain unknown; However, risk factors include: Male gender, age >30 years, Hirschsprung's disease and cystic fibrosis. It is not associated with colonic diverticula/diverticulosis [6]. The congenital appendicular diverticulosis (True diverticulum) is a very rare condition which has an associated chromosomal abnormality. It includes the herniation of all 3 appendiceal layers through a normal histological wall. It is associated with other diseases such as Patau's syndrome.

4.1. Appendicular Diverticula can be Subdivided into 4 Main Types

Type I Acute diverticulitis without appendicitis (45.7%)

Type II Acute diverticulitis with acute appendicitis

Type III Diverticulosis with acute appendicitis

Type IV Diverticulosis with normal appendix

Note: Types I, II and III are subdivided also in with or without perforation [5, 6]

Patients may be asymptomatic or may just complain of persistent lower abdominal pain. When acute diverticulitis develops, the patient presents with the symptoms of acute appendicitis. Due to the mildness of symptoms it often leads to diagnosis delay and this increases the risk of complications, of which perforation carries the highest rate of mortality [3]. Diagnosis is commonly made post operatively and is confirmed by pathology based on the histopathological features. However, in some cases, US scan and CT often help in preoperative diagnosis. Diagnosis is very important as AD has both high risk of complications (perforations) and highly associated with neoplasm especially carcinoid tumors and mucinous tumors. Thus, it is recommended to execute an accurate evaluation of the appendiceal specimen to r/o neoplasms [3].

On comparison with appendicitis, the pain is described as insidious in nature, intermittent, and extended over a long period the cardinal features of appendicitis. Anorexia, nausea and vomiting are usually absent. AD usually occurs in the 3rd decade, whilst acute appendicitis presents much earlier than that. Thus, AD should be considered as one of the differentials in adult male patient presenting with right lower quadrant pain or tenderness [5, 7, 8].

Laparoscopic or conventional resection (appendectomy) is the treatment of choice but depending on the extent of durations and intraoperative findings extended resections such as cecectomy, or right hemicolectomy can be done.

As the preoperative images of AD often resembles appendiceal

mucocele, thus surgery should be performed safely, to avoid rupture with consequent risk of peritoneal seeding and pseudomyxoma peritonei. Prophylactic appendectomy should be performed in patients with incidental finding of AD and in asymptomatic patients to avoid the complications [6].

5. Conclusion

In a 30-year-old patient presenting with typical symptoms and signs of acute appendicitis, consideration of appendicular diverticula/diverticulitis should be made. An Appendectomy with precautions followed by histological examination is set as a mean of treatment and confirmation of the diagnosis

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