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Appendiceal Endometriosis Presenting as Acute Appendicitis: Case Report

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Abstract

Endometriosis is defined as endometrial glands and stroma in and extra-uterine site and affecting 6%-10% of women in reproductive age. Appendiceal endometriosis is very rare condition with prevalence around 2.8% of women with endometriosis. In symptomatic cases it can simulate acute appendicitis. This report presents the 20-years-old female patient with right lower abdominal pain associated with anorexia, vomiting and nausea. The symptoms, physical examination and abdominopelvic ultrasound suggested to acute appendicitis. We did laparoscopic exploration and appendectomy. Diagnostic confirmation of appendiceal endometriosis was performed after histopathological analysis. We demonstrated that it would be crucial to consider appendiceal endometriosis in the differential diagnosis for right lower quadrant abdominal pain.

Keywords: ***Endometriosis; Appendicitis; Reproductive age; Abdominal pain***

1. Introduction

Endometriosis is defined as endometrial glands and stroma in and extra-uterine site. Endometriosis affecting 6%-10% of women in reproductive age [1]. Most cases of intestinal endometriosis invade the rectum and sigmoid colon and are usually multifocal [2]. Endometriosis of vermiform appendix is exceedingly rare with prevalence around 2,8% of women with endometriosis and 0.4% of women in the general population [1]. In symptomatic case, appendiceal endometriosis can simulate acute appendicitis, and because of that preoperative diagnosis could be challenging. This condition should be considered in the differential diagnosis of acute abdominal pain located in the right lower quadrant in women in reproductive period [3]. The definitive diagnosis is usually established by histopathological examination of the appendix [4]. We report a case of acute

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appendicitis caused by endometriosis of the vermiform appendix, diagnosed after laparoscopic appendectomy and confirmed by histopathological analysis.

2. Case History

A 20-year-old female presented to the emergency department complaining of a one-day history of epigastric pain migrating to right lower abdominal quadrant. Anorexia, nause and vomiting were associated symptoms. She denied fever, diarrhoea and irregular menstrual cycles. Physical examination revealed distended lower parts of abdomen, tender to palpation over McBurney's point with signs of peritoneal irritation. Vital signs were within normal limits. Her menstrual cycles were regular and she was on her 10^{th} day of menstrual cycle. She had two laparoscopic cystectomies two years ago because of endometriotic ovarian cysts and she was taking hormonal therapy after that.

Laboratory evaluation revealed white blood cell count 9.56×10^9/L, hemoglobin 134 g/L, platelet count 173×10^9/L, other biochemical analysis were within normal limits. Alvarado score (MANTREL score) was calculated to be 6. Abdominal and pelvic ultrasound (US) identify the dilated and noncompressible vermiform appendix suggestive of acute appendicitis. Laparoscopic exploration with three ports (one 10 mm and two 5 mm ports) was performed which found bloody ascites; the appendix tip's was pelvic positioned and appendix was enlarged with thick wall but not inflamed; fallopian tubes were tortuous without signs of inflammation; ovaries were with cysts without signs of inflammation; without peritoneal studding or endometrial implants (FIG. 1a, b). An appendectomy was performed; the specimen retrieved in endobag and sent off for pathology evaluation.

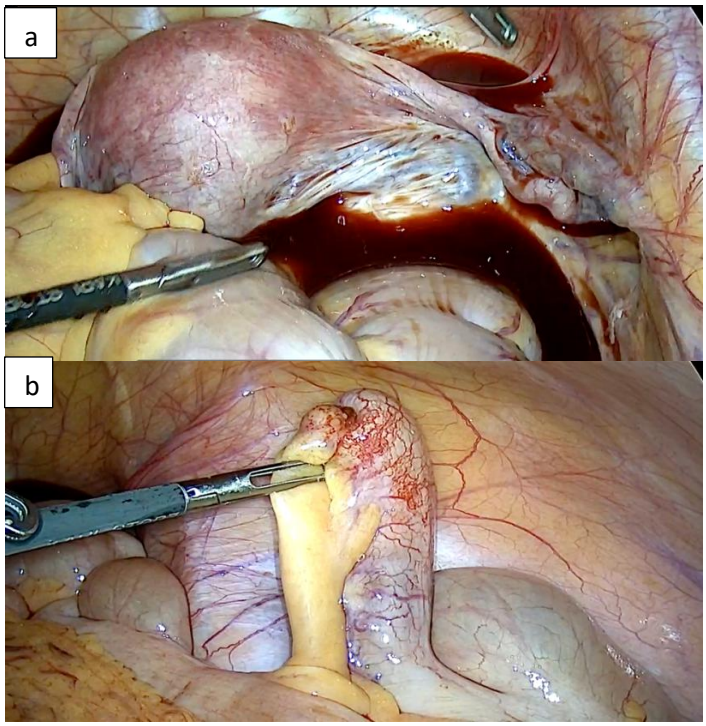

FIG. 1. **Laparoscopic exploration. A bloody ascites. B appendix.**

The postoperative course was stable, and the patient was discharged after 2 days of hospitalization.

Macroscopically, the resected appendix measured 5.5 cm long and 1.5 cm in diameter (FIG. 2). Microscopic examination of the appendix showed: cross sections the muscular layer was thinned, while the lumen was markedly dilated and almost entirely filled with a flashy polypoid mass, with reddish, sponge/like cut surface; this intraluminal mass was histologically consistent with foci of endometriosis, which extended throughout muscularis propria of the entire specimen, with signs of fresh hemorrhage and extensive hyalinization, which resulted in polypoid appearance on grossing (FIG. 3a); disruption of circular layer of the muscularis propria of the appendix by one of the cystically dilated endometrial type glands, can be appreciated in FIG. 3b, while signs of fresh hemorrhage as well as fibrosis within the endometrial type stroma are visible in FIG. 3c.

FIG. 2. **Appendix.**

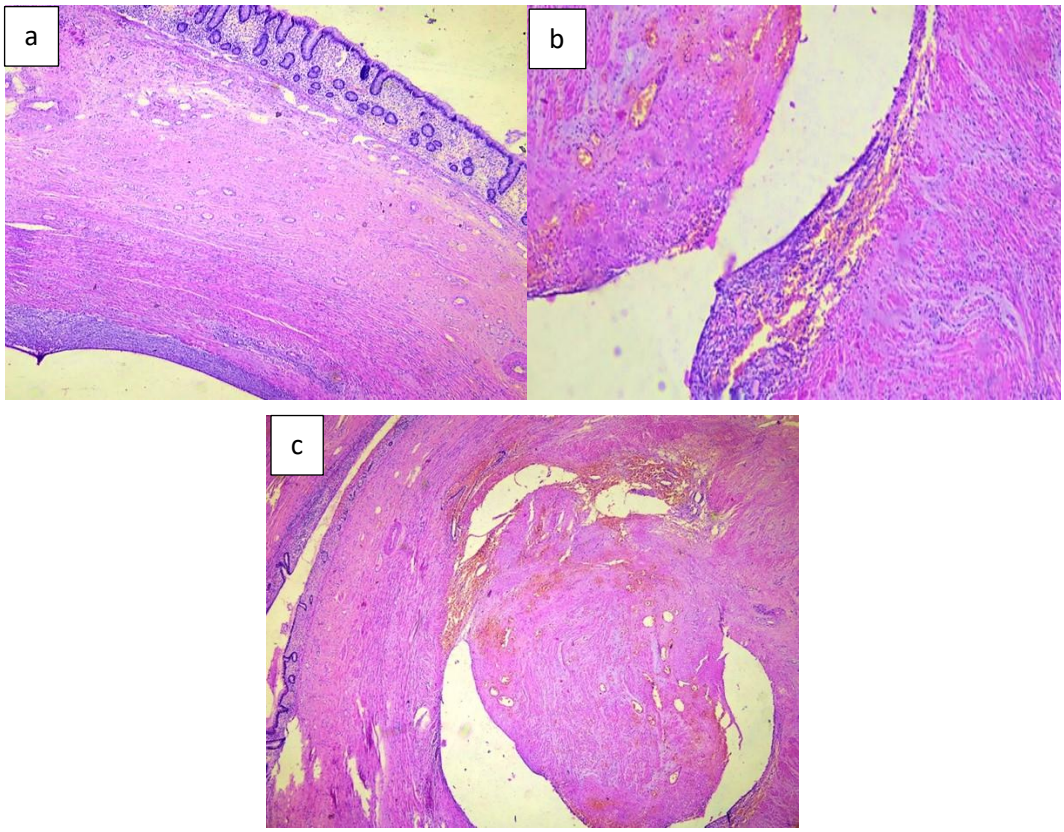

FIG. 3. **Microscopic examination. a foci of endometriosis which extended throughout muscularis propria with haemorrhage and hyalinization. b disruption of circular layer muscularis propria. c signs of fresh haemorrhage as well as fibrosis within the endometrial type stroma. (H&E, 20x magnification).**

3. Discussion

Endometriosis is a disease common to reproductive-aged women. Gustofson et al. in their review of literature, presented that the prevalence of endometriosis and all other abnormalities of the appendix ranged from 3.5% to 5% in those with an appendix [5]. Endometriosis od the gastrointestinal tract is therefore uncommon and it rarely involves the appendix. Involvement of the appendix may present as appendicitis or appendicular mass that may mimic a neoplasm [4].

Endometriosis is a risk factor for developing appendiceal endometriosis. Patients with deep infiltrating endometriosis have a six-fold higher risk of developing appendiceal endometriosis compared with women without endometriosis [6].

Patient may present with clinical signs of acute appendicitis or with other atypical symptoms such as abdominal colic. Laboratory and imaging studies are usually non-specific in the diagnosis of appendiceal endometriosis. The computed tomography finding confirmed acute appendicitis or appendiceal abnormality. Definitive diagnosis can be made by histopathologic examination, when endometrial glands and stroma are present outside of uterus [6]. Pathology should be considered the gold standard for appendiceal process assessment [1].

The treatment of endometriosis of appendix vermiform is primarily surgical, and the secondary is hormonal therapy [7]. The first choice of most of the authors in the management of the appendiceal endometriosis was diagnostic and therapeutic laparoscopy with appendectomy [3]. Lainas et al. described the conversion from laparoscopy to midline infraumbilical laparotomy with *en block* appendectomy and segmental resection of sigmoid colon by invasion of the appendiceal mass in the terminal ileum and sigmoid colon [8]. In one more case, conversion to open surgery occurred due to an inability to identify the appendix because of extensive adherence to the abdominal wall [9]. Saleem et al. suggested that in patients with severe endometriosis incidental appendectomy is recommended because endometriosis of the appendix may be missed on visual inspection [10].

Several theories exist about pathogenesis of extrauterine endometriosis: implantation or retrograde menstruation theory; direct transplantation and dissemination theory; coelomic metaplasia theory; the induction theory; the embryonic rest theory and the cellular immunity theory [4]. John et al. theorized that the symptoms are not caused by a true luminal obstruction of the appendix, but rather due to compression of neural plexi. The expansion and growth of the endometrial tissue caused compression of the neural plexi located in the wall of the appendix leading to visceral pain, nausea, vomiting and anorexia [1].

4. Conclusion

Endometriosis of the appendix is very rare condition, with few reports in the medical literature. Appendiceal endometriosis is difficult to diagnose perioperatively because of range of symptoms including clinical presentation of acute appendicitis as in this case report. The pathogenesis of appendiceal endometriosis is still unclear. Appendiceal endometriosis should be included in the differential diagnosis for right lower quadrant pain. During literature reviews we can concluded that is supported the need for laparoscopic examination and appendectomy even if there are no characteristic gross abnormalities identified. The anatomopathological examination of the appendix is essential for diagnostic confirmation.

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