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CASE REPORT

Crohn's disease misdiagnosed as appendicitis—a case report

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ABSTRACT

Background: Crohn's disease (CD) is a chronic transmural inflammation and could be misdiagnosed as appendicitis, infectious enterocolitis, Meckel's diverticulitis, or mesenteric adenitis. The aim of this presentation was to improve the diagnostic tools of CD.

Case presentation: A 22-year-old girl presented to a private hospital due to severe progressive right lower quadrant abdominal pain associated with fever and leukocytosis. She was diagnosed as acute appendicitis. Appendectomy was done, but the patient was not improved. Further medical advice was sought in emergency room in Al-Noor-Specialist Hospital after 2 weeks. Histopathological examinations of the appendix raised the possibility of inflammatory bowel disease. Full history, complete physical examinations, advanced lab tests, imaging, and good response to treatment confirmed the diagnosis of Crohn's disease.

Conclusion: Physicians must consider differential diagnosis by taking a good history, performing a well-focused physical examination, and order specific investigations to confirm the diagnosis.

Keywords: Crohn's disease, appendicitis, abdominal pain, misdiagnosis.

Introduction

Crohn's disease (CD) is a chronic transmural inflammation, which may include any part of the gastrointestinal tract starting from mouth till the anus. CD specially affects distal ileum, colon, or peri-anal region [1]. CD is diagnosed by history, physical examination, lab and radiological imaging, endoscopic, and histopathological findings [1]. CD has various differential diagnosis, including inflammatory, neoplastic, and infectious diseases [2,3].

Due to inconsistent presentations of CD, it could be misdiagnosed as appendicitis, infectious enterocolitis, Meckel's diverticulitis, or mesenteric adenitis. In addition, in young females, acute gynecological complications, such as ovarian torsion, ectopic pregnancy, and hemorrhagic ovarian cyst might be the cause [4]. The aim of the presentation was to improve the diagnostic tools of CD particularly when exploration surgery is considered in young (less than 45) women. The appendectomy may increase the risk of peritoneal adhesions, ectopic pregnancy, and infertility [5].

Case Presentation

A 22-year-old girl presented to emergency room (ER) of Al-Noor Specialist Hospital because of severe progressive right lower quadrant abdominal pain. Two weeks prior to her visit, the patient had undergone appendectomy in a private hospital. Ultrasound showed dilated appendix with collection of fluid, from which presumptive diagnosis of appendicitis was made. The patient was taken to the operation room for a lifesaving open appendectomy then the patient was not improved and went to emergency room (ER), but later she presented to the present ER with deteriorated condition complaining of severe abdominal pain. The patient was afebrile and vitally stable but crushed down due to pain. The abdominal examination showed severe right iliac fossa pain and tenderness, but no guarding or rebound was observed. Other systems examinations were unremarkable.

The patient's initial laboratory investigation indicated a low hemoglobin (104 g/l), mildly decreased red blood cell (3.7*10^12/l), mild decreased mean corpuscular

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volume (82.8 FI), with slightly decrease platelet volume (11.4 FI). The patient had blood urea nitrogen (2.13 mmol/l), creatinine was normal (64 mmol/l),with normal sodium (141.13 mmol/l), low albumin (31 g/l), normal potassium (3.413 mmol/l) with high increase in hemolysis icteric Lipemia (111 mg/dl), blood glucose was normal (5.1 mmol/l) with normal total bilirubin (9.6 µmol/l), direct bilirubin (1.06 µmol/l), normal amylase (27 µ/day), normal partial thromboplastin time (19.6 seconds), normal international normalized ratio (INR) (1.08 seconds), and PT (12.6 seconds). The stool for occult blood was performed and it was positive. Anti-saccharomyces cerevisiae antibodies (ASCA) titer was high. C-reactive protein (CRP) was high with high calprotectin level.

CT was done and showed thickening of the terminal ilium which was 10 cm, with associated subcentimetric regional lymphadenopathy (Figure 1).

There was localized fluid collection and peripheral irregular enhancement was noted anterior to the thickened terminal ileum measuring 3.4 × 4.9 × 3.8 cm (LS × AP × TS, respectively). There was suspicious hyper enhanced soft tissue connection between fluid collection and the thickened terminal ileum, which could be a fistula. Pneumoperitoneum was not present. The liver measured 17.1 cm and there was homogenous enhancement with no focal lesion. Gallbladder, pancreas, both kidneys, and adrenals appeared unremarkable. The abdominal lymph nodes were not enlarged. The uterus was bulky and in myometrium there were multiple hyposensitized fibroids and endometriosis.

There were multiple bilateral ovarian cysts, amongst which the largest one was noted at left ovary measuring 2.5 * 2 cm, which could be luteal cyst (Figure 2). Free fluid was minimal. No aggressive osseous lesions were detected. Basal lung zones appeared unremarkable. Final impression was the presence of circumferential thickening of the terminal ileum associated subcentmeric regionally lymphadenopathy and adjacent localized fluid collection with suspicious fistula, as described above, could represent inflammatory disease like CD. CT was cited from Radiology department at ALNOOR speciality hospital, Makkah, Saudi Arabia.

Biopsy was taken from duodenum and showed partial villous atrophy. Colonoscopy was refused by the patient relatives.

Patient was discharged on oral medication; pentasa (Mesalamine) 1000 mg twice daily, prednisolone 10 mg, Nexium (Esomeprazole) 20 mg, $CaCO_3$ 600 g and Multivitamins 1 tablet.

Anti tumor necrosis factor (Anti TNF) was decided due to suspicion of fistula. Work up was done to exclude tuberculosis (TB). Follow up and hospital medication were; Stelara (ustekinumab/biological Tx) 130 mg 2 ampules in 200 ml normal saline IV infusion over 1 hour, and then one amp 90 mg subcutaneous every 2 months. The patient's condition improved regarding cessation of diarrhea, body weight gain, improved appetite, and disappearance of the abdominal pain. Consent was taken with full explanation of the drugs for patient and her parents.

Discussion

CD is a chronic, idiopathic transmural inflammatory disease with a propensity to affect the distal ileum, although any part of the alimentary tract can be involved [6]. Isolated involvement of the appendix in Cohn's disease has been reported [7]. Crohn's disease limited to appendix usually affects young adults [8].

This young female patient came to ER in Al-Noor specialist hospital after doing appendectomy in a private hospital on the basis that she had fever, lower right abdominal pain accompanied by leukocytosis. But after appendectomy, the patient still suffered from chronic diarrhea, abdominal pain, and body weight loss. Biopsy was taken during appendectomy and revealed high suspicious of inflammatory bowel disease (IBD).

The common triad of fever, right lower abdomen, and leukocytosis is highly suggestive of appendicitis. However, this triad should not exclude other possibilities,

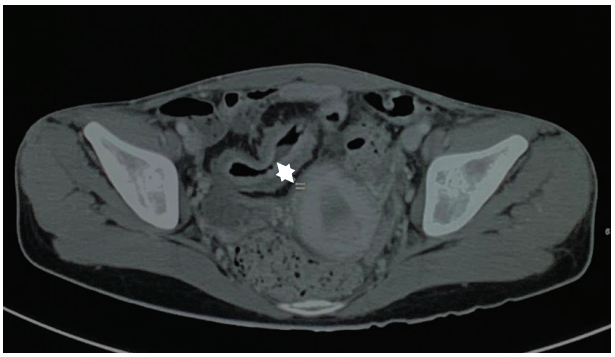

Figure 1. *PAbdominal CT imaging (The white arrow shows thickening of the terminal ilium which was 10 cm. Seemingly associated with subcentimetric regional lymphadenopathy).*

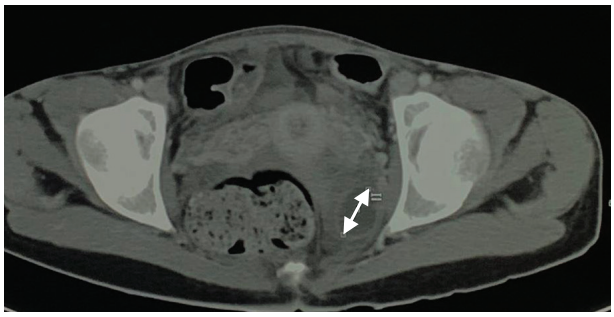

Figure 2. *Abdominal CT imaging. (Multiple bilateral ovarian cysts, the arrow shows the largest one was noted at left ovary measuring 2.5 * 2 cm).*

such as IBD, malignancies, infections, and others. Careful history, complete examinations, and selective lab and imaging techniques will help in differential diagnosis. Special care should be addressed to young females especially accompanied by chronic diarrhea, body weight loss, or bleeding per rectum. The hazards of neglecting the previous notes will lead to morbidities like peritoneal adhesions which could lead to fallopian tube obstructions in females and could affect fertility in the future.

The patient was subjected to further investigations to confirm CD. Calprotectin was high in addition to high titer of ASCA. Unfortunately, colonoscopy was not done due to unavailable pediatric size of colonoscopy in addition to refusal of the patient relatives. The patient responded well to pentasa and prednisolone. After 2 months of this conventional treatment, the patient was subjected to anti-TNF therapy due to suspicion of fistula, after doing the precautions to exclude some infections in specific TB.

The response of the patient to treatment improved as regarding body weight gain from 36 to 45 Kg, decreased severity of diarrhea, increased appetite and disappearance of abdominal pain to high extent.

Conclusion

Physicians must consider differential diagnosis by taking a good history, performing a well-focused physical examination, and order specific investigations to confirm the diagnosis, especially when the decision is made upon a young female patient in a child bearing age and the high risk of developing infertility.

List of Abbreviations

ASCA	Anti-saccharomyces cerevisiae antibodies
CD	Crohn's disease
IBD	Inflammatory bowel disease
TB	Tuberculosis
PTT	Partial thromboplastin time

Conflicts of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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Consent for publication

Informed consent was obtained from participant.

Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

Author details

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