Original Article

Incidental Gynecological Conditions in Patients Presented with Acute Appendicitis

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Abstract

Background: Female patients during reproductive age had a high rate of gynecological conditions, such as ovarian cysts, ovarian torsion, uterine fibroids, or endometriosis, that occur and misdiagnosed with acute or chronic appendicitis; these disorders can be without identifiable pathologies and discovered accidentally during appendectomy. **Objectives:** The aim of this article is to study the most common gynecological conditions that are accidentally encountered in female patients presented with acute appendicitis. **Materials and Methods:** A cross-sectional study was done on 97 female patients who were admitted to the hospital for open and laparoscopic appendectomy during the period of January–April 2021. **Results:** The study included 97 patients, 71 (73%) were of the age group 20–49 years, 35 of them had incidental gynecological findings, and the rest 62 were having true acute appendicitis, ovarian cyst, and ectopic pregnancy which were the most common findings (16, 5) cases, respectively. **Conclusion:** Surgical gynecological conditions in female patients with appendectomy are commonly encountered, and the most common diagnoses were ovarian cysts.

Keywords: Appendicitis, gynecological conditions, ovarian cyst

Introduction

Incidental removal of a normal appendix during laparoscopy or laparotomy is frequently performed in an attempt to prevent future appendicitis. However, surgical gynecological disorders during appendectomy cases had been reported commonly.[1] In female patients during reproductive age, there is a high rate of gynecological conditions, such as ovarian cysts, ovarian torsion, uterine fibroids, or endometriosis, that occur and misdiagnosed with acute or chronic appendicitis, these disorders can be without identifiable pathologies and discovered accidentally during appendectomy.[2,3] Incidental appendectomy at the time of surgery had been reported as a good option for treatment for women with these pathologies. Early and accurate diagnosis of acute appendicitis is required to reduce the morbidity and mortality associated with gynecological findings and their complications.[4] Gynecological conditions can be asymptomatic or have pathologies similar to acute appendicitis, and elective appendectomy plays an important role in the management of these conditions.[5]

Study objectives: This article investigates the most common gynecological conditions that are accidentally encountered in female patients presented with acute appendicitis.

Materials and Methods

A cross-sectional study was done in Al-Imamein Al-Kadhemein Teaching Hospital for the period from January to April 2021. The study population included 97 female patients who were the total number of cases admitted to the surgical ward with suspicion of acute appendicitis during the period of data collection.

Data collection was done by the researcher who filled a structured questionnaire; it included questions regarding

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age, signs and symptoms, laboratory findings (WBC), and management plan.

Patients were clinically evaluated with a modified Alvarado score >7.

Appendectomies with symptoms of acute appendicitis were performed together with gynecologic procedures that needed to be treated surgically, then the appendectomy materials and other incidental findings were examined and sent for histopathological study.

Definition of variables

Complicated ovarian cyst

Hemorrhagic and/or ruptured cyst who presented with acute abdomen.

Endometriosis

Presented with nausea, vomiting, severe right iliac fossa/pelvic pain.

Complicated uterine fibroid

Incidental finding of fibroid that is not related to the patient findings causing abdominal pain, enlargement of the uterus, and amenorrhea.

Ectopic pregnancy

Vitally unstable and presented with acute abdomen and managed operatively as a result.

Ethical approval

The study was conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki. It was carried out with patients' verbal and analytical approval before sample was taken. The study protocol and the subject information and consent form were reviewed and approved by a local ethics committee of Department of Surgery/Al-Nahrain College of Medicine during its annual meeting of research discussion, according to the document number 20330381 (April 3, 2023) to get this approval.

Results

The study included 97 female patients, 71 (73%) were of the age group 20–49 years, 33 (35.3%) had a primary level of education, 65 (67%) were housewives, and 79 (81%) of them living in urban areas [Table 1].

Among the 97 patients included in the study, 35 of them had incidental gynecological findings with normal appendix and the rest 62 were having true acute appendicitis [Table 2].

On presentation of the 62 patients with appendicitis, 91% and 100% of them had right quadrant pain and high WBC count, respectively; both of the two patients of PID had bilateral quadrants pain on presentation, 100% of patients with (tubo-ovarian abscess, adnexal torsion, and ovarian cyst) had high WBC count, while right quadrant pain was the major presenting symptom in (ovarian cyst, torsion, and ectopic pregnancy) (62, 100, and 60), respectively. Sixty-six percent of endometriosis cases were presented by bilateral quadrant pain, nausea and vomiting, and high WBC count [Table 3].

Table 1: Sociodemographic distribution of study sample (n = 97)

Variable		N	100%
Age group	<20	11	11.3
	≥20–49	71	73.3
	More than 50	15	15.4
Occupation	Housewife	65	67
	Employer	23	23.8
	Self-employed	9	9.3
Residency	Urban	79	81
	Rural	8	19

Table 2: Frequency of the differential diagnosis of acute appendicitis in the studied sample

	Diagnosis	N (97)	100%
Appendicitis		62	63
Gynecological findings (35)	Pelvic inflammatory disease	2	2.6
	Tubo-ovarian abscess	4	4.1
	Endometriosis	3	3.2
	Ovarian cyst	16	16.4
	Adnexal torsion	3	3.2
	Complicated fibroids	2	2.6
	Ectopic pregnancy*	5	5.1

*Cases that managed surgically

Among the 35 patients who had gynecological findings other than appendicitis, both PID patients and complicated fibroids had referred to the gynecological ward and treated conservatively; all the patients with ovarian cyst and torsion were treated surgically (16, 3), respectively [Table 4].

Discussion

General surgeons are often asked to evaluate acute abdominal pain which has an expanded differential diagnosis in women of childbearing age. Acute appendicitis accounts for many surgical emergencies as a common cause of nongynecologic pelvic pain.[6] A thorough history and physical examination including a gynecologic examination is the key to determine the etiology of pain. This study describes the incidental findings in patients presented with, but not limited to, acute appendicitis, such as ectopic pregnancy, endometriosis, ovarian torsion, or pelvis inflammatory disease, keeping in mind that they may be concurrent with acute appendicitis or other surgical diseases.

Table 3: Comparison of signs and symptoms of the differential diagnosis of acute appendicitis in the studied sample

Diagnosis	N (%)	RLQ	LLQ pain	BLQ	Fever	Nausea/Vomiting	Elevated WBC	Shock
		N(%)	N(%)	N(%)	N(%)	N(%)	N(%)	N(%)
Appendicitis*	62 (63)	57 (91)	2 (3)	3 (4)	60 (96)	55 (88)	62 (100)	2 (3)
Pelvic inflammatory disease	2 (2.6)	0 (0)	0 (0)	2 (100)	2 (100)	1 (50)	1 (50)	0 (0)
Tubo-ovarian abscess	4 (4.1)	1 (25)	3 (75)	0 (0)	3 (75)	1 (25)	4 (100)	1 (25)
Endometriosis	3 (3.2)	0 (0)	1 (33.3)	2 (66.6)	0 (0)	2 (66.6)	2 (66.6)	0
Ovarian cyst	16 (16.4)	10 (62)	2 (12)	4 (25)	15 (93)	13 (81)	16 (100)	5 (31)
Adnexal torsion	3 (3.2)	3 (100)	0 (0)	0 (0)	2 (66.6)	3 (100)	3 (100)	1 (33.3)
Complicated fibroids	2 (2.6)	0 (0)	0 (0)	2 (100)	0 (0)	0 (0)	2 (100)	2 (100)
Ectopic pregnancy*	5 (5.1)	3 (60)	2 (40)	0 (0)	1 (20)	4 (80)	4 (80)	1 (20)

*Cases that managed surgically

Table 4: Management plan of the female patients with gynecological findings in the studied sample

Diagnosis	*N*% 36	Management plan	
		Surgical	Medical (conservative)
Pelvic inflammatory disease	2 (2.6)	0	2 (100)
Tubo-ovarian abscess	4 (4.1)	3 (75)	1 (25)
Endometriosis	3 (3.2)	2 (75)	1 (25)
Complicated Ovarian cyst	16 (16.4)	16 (100)	0 (0)
Adnexal torsion	3 (3.2)	3 (100)	0
Complicated fibroids	2 (2.6)	0 (0)	2 (100)
Ectopic pregnancy*	5 (5.1)	5 (100)	0 (0)

*Cases that managed surgically

Abdominal pain in young women can present as a unique diagnostic dilemma. In some rare instances, acute appendicitis has been shown to occur simultaneously with a variety of gynecologic diseases.[7] In the current study, 35 of the 97 patients included in the study who had incidental gynecological findings with normal appendix, ovarian cyst, and ectopic pregnancy were the major findings during surgery.

On presentation, majority of appendicitis patients had right quadrant pain and high WBC count, respectively; all the patients with (tubo-ovarian abscess, adnexal torsion, and ovarian cyst) had high WBC count and most of them presented with right quadrant pain; patients with endometriosis and PID were presented by bilateral quadrant pain, nausea and vomiting, and high WBC count. This is comparable to a study done in Qatar that included women with ovarian or para-ovarian cyst, in which ovarian cyst was discovered as an incidental finding in 13 (16%) of women, and lower abdominal pain was the most common presenting complaint followed by loss of appetite, vomiting, and leukocytosis that were present in 80% of cases.[8]

Leukocytosis was a main lab finding in our sample, which is expected due to acute inflammatory process, which is agreed by Louis *et al.*'s[9] study who reported a patient presented with an acute onset of epigastric pain that radiated to the right lower quadrant, tenderness at McBurney's point, and leukocytosis were major findings, with low hematocrit and a typical suprapubic pain and no cervical motion tenderness or palpable adnexal mass. Imaging of these patients reported acute appendicitis and endometrioma.

Regarding management plan and intervention, both PID patients and complicated fibroids had been treated conservatively after referral to the gynecological ward, and all the patients with ovarian cyst and torsion were treated surgically with appendectomy; this is inconsistent with a systematic review of the literature concerning fibroid in which the clinical presentation was abrupt and difficult to manage. Women who develop this complication typically present in hypovolemic shock with abdominal pain without a clear preoperative diagnosis prior to surgery, which was the major line of management.[10] This is inconsistent with Lim *et al.*'s[11] study which reported that there was a trend toward conservative management in the included sample presented with ruptured ovarian cyst in 84.7% of women, while the remaining 15.4% had to do surgery. While some gynecological complaints generally self-limiting, surgery may be necessary in cases of hemodynamic compromise or association with torsion; nevertheless, there is still controversy over the necessity for incidental appendectomy in the surgical treatment of these findings like endometriosis and ectopic pregnancy;[12] some authors limited the need for incidental appendectomy for a narrow range of patients, such as when the adhesion and inflammation are grossly present in the appendix or when the presenting symptoms suggest appendicular disease.[13] In contrast, other authors stated that appendectomy should be done even in cases whose appendixes are found to be grossly normal as the intraluminal findings cannot be examined accurately, and the risk of *in-situ* appendicular disease is still present which may progress without appendectomy done in the right timing. In addition, at present, our hospitals have no specific tests to preoperatively predict appendicular endometriosis, for example, in diagnosed cases of endometriosis.[14]

Conclusion

Surgical gynecological conditions in female patients with appendectomy are commonly encountered, and the most common diagnoses were ovarian cyst and ectopic pregnancy with surgical intervention as a main modality of treatment.

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Conflicts of interest

There are no conflicts of interest.

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