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Short Communication

Is Appendectomy Necessary During Cesarean Section?

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Keywords

- Acute appendicitis
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Abstract

Objective: Acute appendicitis is the disease most frequently requiring non-obstetric surgical intervention during pregnancy. It is a condition threatening both mother and fetus lives and the prevalence in pregnant and non-pregnant women is identical, it is 0.1 % - 0.2 %. The aim of this study is to investigate the approach for acute appendicitis in patients who underwent appendectomy during follow-up of pregnancy by retrospective data of last nine years.

Materials and Methods: Data of 19 pregnant patients who underwent appendectomy during their pregnancy between January 2006 and November 2015 were retrospectively examined. Patients were evaluated with respect to age, age of pregnancy, clinical and laboratory signs, imaging results, surgical signs, postoperative complications, and pathological results.

Results: At their admission, 63.1% of cases were at trimester 3, 21% were at trimester 2, and 33.3% were at trimester 1. In 19 patients, appendectomy was decided and performed during cesarean. Pathological results in 54.5% of these patients reported acute appendicitis. In pregnant cases with appendectomy, 10 patients (52.6%) had acute appendicitis, while 9 patients (47.3%) had normal appendix.

Conclusion: We consider that in case of edema and hyperemia detected by visualizing appendix during cesarean, appendectomy must be performed.

INTRODUCTION

Acute appendicitis is the disease most frequently requiring non-obstetric surgical intervention during pregnancy. Acute appendicitis is a condition threatening both mother and fetus lives and the prevalence in pregnant and non-pregnant women is identical and it is 0.1 % - 0.2 % [1]. Delayed diagnosis and presence of different clinical symptoms due to physiological changes occurred during pregnancy, are mainly harmful for both mother and fetus. In addition to usual complications of appendicitis in pregnant women who undergoes to surgical intervention, additional morbidities due to growth of uterus in pregnant woman and preterm delivery or abortion threat for the fetus may occur [2,3]. Surgical diagnosis is challenging since nausea, vomiting, and abdominal pain are frequently encountered in normal obstetric population. Another factor causing delayed diagnosis, is displacement of appendix from mc-burney point to upward and outward particularly in the last trimester of pregnancy and this condition is fatal and has an impact on maternal and fetal morbidity and mortality. Examination of white blood cell (WBC) count cannot help because there is a clinical picture of physiological leukocytosis in pregnancy. Complaints of patients presenting during pregnancy should be examined in detail and acute appendicitis should be particularly considered particularly in differential diagnosis. Thus, possible complications can be prevented. In addition, detailed obstetric/gynecological and urological examinations should be performed for patients with complaints of abdominal pain during pregnancy and it is important to be careful in differential diagnosis.

MATERIALS AND METHODS

Medical records of 4,185 patients who underwent appendectomy between 2006 and 2015 at our hospital, were retrospectively examined and caution was paid to patients with appendectomy during follow-up of pregnancy and data of cases operated in our hospital were presented with the literature. The aim of this study was to examine diagnosis and treatment of acute appendicitis observed during pregnancy and detected during cesarean by data of nineteen pregnant patients with appendicitis admitting to gynecology and general surgery departments. Ethics committee approval was not received because of retrospective file screening. Our work was done in accordance with helsinkideclationa. Patients included in the study were informed about the patient before and after the study. During assessment of results, SPSS (Statistical Package for Social Sciences) Windows 16.0 program (SPSS Inc., Chicago, Illinois, USA) was used for statistical analysis.

RESULTS

Appendectomy was applied to totally 4.185 patients being 1.852 women (44.2%) aged 3-85 years at our hospital between January 2006 and November 2015. During first investigation, it was observed that appendectomy was applied to 19 patients during pregnancy between January 2010 and November 2015. Acute appendicitis was detected in 52.6 % of patients (n: 10) and lymphoid hyperplasia was present in 47.3% at histopathological examination of appendectomy specimens. Age range of patients was 18 to 41 years. Mean gestational week was 30, mean White Blood Cells (WBC) was 13,000 mg/dl and mean neutrophil percentage was 76 % (Table 1). 15.7% of patients were at trimester 1, 21 % were at trimester 2 and 63.1% were at trimester 3. 11 of 19 surgeries were performed by general surgeon, while 8 were performed by gynecologist. During cesarean, Mc-Burney incision was applied by general surgeons in 10 patients under spinal anesthesia and pfannenstiel incision was applied by gynecologists in other 8 patients under general anesthesia. Appendectomy was applied to one patient by general surgeon during cesarean via pfannenstiel incision since the patient was at 40+2 gestational week and was diagnosed with acute appendicitis. Appendectomy was applied to 11 of 19 patients by opinion of general surgeon due to edematous appendix and presence of macroscopic inflammation signs and acute appendicitis was detected in 5 of these 11 patients during examination of appendectomy specimen. During examination of appendectomy specimen of 8 patients admitting with compliant of abdominal pain and having ultrasound examination (USG), acute appendicitis was determined in 5 cases. In patients who reported acute appendicitis, 2 were at trimester 1, 2 were at trimester 2, and 6 were at the last trimester. Acute appendicitis was detected in 7 cases operated by general surgeon and 3 cases operated by gynecologist (Tables 2,3). During study, it was found that presence of acute appendicitis during pregnancy was independent from age of pregnancy, gestational week, and gravida-parity. Under normal conditions, although WBC value and neutrophil percentage that may be a laboratory sign of acute appendicitis was slightly increased, this was not prominent in our study.

Table 1: Averages.

Table-1	Average	Min	Max
Age	26,6	18	41
Gestational Age	30,3	5	41
Wbc	13000	8800	18900
Neutrophil	76,8	39,4	91

DISCUSSION

Appendicitis in pregnancy is a condition seen in approximately one of 5.000 pregnancies and if it is not diagnosed, it may lead to adverse outcomes for mother and baby and even may cause death. Although it is mostly seen during second trimester of pregnancy in the literature [4-7] 60% of our cases were at trimester 3. Patients classically admit with complaints of loss of appetite, nausea, vomiting, and abdominal pain [8,9]. However, many patients may present with non-specific signs including pyrosis, distention, and bowel disorder. In addition, patients may also have rectal complaints such as clinical sensibility through pelvis under mc-burney point, sense of urination, painful urination, and tenesmus [10]. Establishment of diagnosis of acute appendicitis is difficult in pregnant patients. However, pain is the most frequently seen sign of appendicitis occurring at right lower quadrant near of the mc-burney point without considering gestational week. This clinical picture is more frequently observed at trimesters 1 and 2. The pain also spreads towards right upper

Table 2: Pathology.

Table-2		Pathology				
		Appendicitis		LenfoidHiperplazi		
		N	%	N	%	total
Gravida	1	5	50	5	50	10
	2	5	62.5	3	37.5	8
	3	0	-	1	100	1
Timestar	1	2	66.6	1	33.4	3
	2	2	50	2	50	4
	3	6	50	6	50	12
Result of examination	No	5	45.4	6	54.6	11
	Sensitivity	1	33.3	2	66.6	3
	Mc-Burney	4	80	1	20	5
Preop. Usg	No	5	45.5	6	54.5	11
	Yes	5	62.5	3	67.5	8
Theincision	C/S	5	45.4	6	54.6	11
	Mc-Burney	5	62.5	3	67.5	8
Complaint	Abdominalpain	3	37.5	5	62.5	8
	İnsidental	6	54.6	5	45.5	11
Surgeon	G.surgery	7	70	3	30	10
	Jinekolog	3	33.4	6	66.6	9
Anesthesia	General	4	44.5	5	55.5	9
	Spinal	6	60	4	40	10

Table 3: Application complaints.

Table-3		Application complaints				
		Stomachache		İncidental		
		N	%	N	%	total
Gravida	1	3	30	7	70	10
	2	5	62.5	3	37.5	8
	3	0	0	1	100	1
Timestar	1	3	100	0	0	3
	2	4	100	0	0	4
	3	1	9	11	91	12
Result of examination	No	0	0	11	100	11
	Sensitivity	3	100	0	0	3
	Mc-Burney	5	100	0	0	5
Preop. Usg	No	0	0	10	100	10
	Yes	9	100	0	0	9
Theincision	C/S	1	9	11	91	12
	Mc-Burney	7	100	0	0	7
Pathology	Appendicitis	5	50	5	50	10
	L. Hiperplazi	6	66.6	3	33.4	9
Surgeon	G.surgery	8	80	2	20	10
	Jinekolog	0	0	9	100	9
Anesthesia	General	3	42.9	4	57.1	7
	Spinal	5	41.6	7	58.4	12

Table 4: At the time of the complaints refer patients.

Complaints	n	%
No	11	57,8
Stomachache	8	42,1
Nausea	6	31,5
Vomiting	3	15,7

quadrant due to growth of uterus volume as gestational week increases. Mc-Burney point in a pregnant of 30-weeks is at right side of navel [11]. Although increased WBC count and 80% shifting to left is seen in non-pregnant women with diagnosis of acute appendicitis, slight shifting to left can be seen in normal pregnancy [12]. Leukocytosis was also irrelevant in our cases. Doubtful differential diagnosis of acute appendicitis includes same clinical signs with non-pregnant people. In addition, causes and changes associated with pregnancy accompanied by decrease in bowel function, stomachache, fever, leukocytosis, and nausea/vomiting should be considered [13]. Presenting complaints of patients were shown in (Table 4). USG should be firstly preferred in pregnant patient presenting with above mentioned clinical picture. Detection of tube structure with closed end greater than 6 mm with signs of inflammation at ultrasound is diagnostic [13]. Various studies reported that classical USG finding was present in a great percentage of pregnant individuals with suspected appendicitis. In our study, patients with USG also reported similar signs. However; in studies on diagnostic value of USG, it was interpreted that sensibility varied between 67 – 100 % during appendicitis in pregnancy and sensibility and specificity was 86 % and 96 %, respectively. Various factors affect sensibility of USG. For example, age of pregnancy, body mass index of mother etc., but the most important is education and experience of radiologist performing USG [14]. In case of difficult diagnosis, magnetic resonance (MR) should be preferred as an alternative to computed tomography with radiation affect. MR is the excellent modality to exclude acute appendicitis in pregnant women [15]. In our study, as diagnosis was not difficult, non-USG imaging examination was not required. Cesarean is rarely preferred during appendectomy. This is a risk factor for vaginal delivery in later pregnancies of patients [16]. Therefore, minimally invasive approach should be applied, laparoscopic surgery and classical appendectomy incision in patients complied with respect to gestational week should be performed. In our study, appendectomy together with cesarean was preferred for one patient due to 40+2 gestational week. For other patients, classical appendectomy incision or appendectomy during cesarean was applied. When the diagnosis is relatively accurate, laparoscopy should be preferred before gestational week 20, unless, classical appendectomy incision should be preferred. In patients after gestational week 20, right paramedian incision should be much more preferred [17]. In case of suspected diagnosis, under-navel median incision that makes easy the exploration of stomach, should be preferred for diagnosis and treatment of surgical conditions that mimic appendicitis. In our study, surgery was performed to 8 patients through classical mc-burney and to 11 patients through pfannenstiel incision.

As in our study, abdomen control should be performed well and all organs in abdomen should be examined in pregnant women who completed normal gestational week and were taken

to surgery with cesarean indication. Otherwise, clinics picture of patients might be worsening following cesarean and clinical picture of acute abdomen may occur. Even it can cause secondary abdominal surgeries. In our study, there was appendix with macroscopic sign of acute appendicitis and appendectomy was applied. Acute appendicitis was reported histopathologically in 5 of them had. We recommend further studies on this subject.

Finally, we recommend that patients presenting with complaints of abdominal pain during pregnancy should be carefully examined in respect of conditions associated with acute abdomen, particularly acute appendicitis, USG should be performed regardless of leukocytosis count and even MR imaging modality should be used with respect to differential diagnosis. In surgical preference, appendicitis surgery standards in pregnancy should be performed. As seen in our study, detailed examination of intraabdominal organs provides chance to detect acute abdomen pathologies earlier. However, we recommend that more comprehensive study should be carried out due to absence of enough data on this subject in the literature.

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