

Appendicitis in Pregnancy. A 30 case series

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Abstract

Introduction: Pregnancy with acute Appendicitis is one of the most common surgical emergency in obstetrics. It is associated with maternal and fetal complications so early diagnosis and treatment are life saving.

Aim & objective: To study the clinical, laboratory features and maternal and fetal outcome in pregnant patients with acute appendicitis.

Methodology: Present study was a prospective study carried out on pregnant patients diagnosed with acute appendicitis. Data included sociodemographic data, clinical history and clinical examination. All patients underwent investigations like Complete blood count, C reactive protein, urine routine and microscopy and USG abdomen. Obstetric outcome and maternal complications were noted.

Results & discussion: Majority of the pregnant patients with appendicitis 15(50%) were from the age group of 26-30 years. Majority of the patients 20(66.67%) were in second trimester followed by patients in first trimester 06(20%). Patients in third trimester were 4(13.33%). All the patients were presented with pain. Nausea and vomiting was present in 40% patients each. Out of total 30 patients, 27 patients were operated. 3 patients were on conservative management. In our study, 08(26.67%) patients had bad obstetric outcome. Out of 30 patients 5(16.67%) patients had spontaneous abortion and Premature delivery was seen in 3 patients.

Key words: *appendicitis - pregnancy*

Introduction

Acute appendicitis is the most common surgical emergency in pregnant women. The incidence in first, second and third trimester is 19% to 36%, 27% to 60% and 15% to 33% respectively. It is most commonly observed in second trimester.¹⁻⁴

Important clinical features are pain in abdomen, fever, Nausea, vomiting, anorexia and sometimes PV bleeding. Leucocytosis, increased polymorphs and elevated CRP are some of the important diagnostic features. USG abdomen is diagnostic in these patients. In pregnancy, Symptoms are polymorphous and misleading causing delay in treatment and adverse outcome.⁵ Pregnancy continues to obscure the accurate diagnosis of acute appendicitis due to gestational physiological changes.⁶

Delayed diagnosis is associated with increased risk of abortion, premature labour leading to increased maternal and fetal mortality. These complications are associated with increased risk of premature labour, abortion, maternal and fetal mortality.^{7,8} Present study was conducted to describe the clinical and laboratory features and maternal, fetal outcome in pregnant patients with acute appendicitis.

The aim of the present study is to evaluate the clinical, laboratory features and maternal and fetal outcome in pregnant patients with acute appendicitis.

Patients and methods

Present study was a prospective study carried out in 30 pregnant patients with appendicitis. Study population was pregnant patients diagnosed acute appendicitis and admitted in department of surgery at a tertiary care centre. Inclusion criteria: 1. Pregnant patients diagnosed with acute appendicitis 2. Pregnant patients of any gestational week

Exclusion criteria: 1. Patients with chronic appendicitis 2. Patients not willing to participate in the study.

Study was approved by ethical committee of the institute. A valid written consent was taken from the patients after explaining operative procedure and study to them.

Data was collected with pretested questionnaire. Data included sociodemographic data, detailed clinical history was noted. Presenting complaints were noted. Through clinical examination was done. All patients underwent investigations like Complete blood count, C reactive protein, urine routine and microscopy and USG abdomen.

Twenty seven patients underwent emergency appendectomy on strong clinical, biochemical and USG evidence of appendicitis. Appendectomy was performed through a muscle splitting, classical grid iron incision or incision over the point of maximum tenderness in advanced gestation. General anaesthesia was administered in all patients. All patients received postoperative parenteral antibiotics for three days. Three patients were managed conservatively, one out of these three patients had appendicular lump, and the other two had delayed presentation and regression of signs and symptoms. Obstetric outcome and maternal complications were noted. Data was entered in excel sheet and analysed with SPSS version 20.0.

Results

We studied total 30 patients during the study period. Majority of the pregnant patients with appendicitis 15(50%) were from the age group of 26-30 years. Patients in the age group of 20-25 years were 08(26.67%) and patients in the age group of 31-35 years were 23.33%. Mean age of the patient was 27.6± 3.4 years.

Table 1: Distribution of pregnant patients with appendicitis according to age group

Sr no	Age group (years)	No of patients	Percentage
1	20-25	08	26.67%
2	26-30	15	50%
3	31-35	07	23.33%
4	Total	30	100%

In our study, majority of the patients 20(66.67%) were in second trimester followed by patients in first trimester 06(20%). Patients in third trimester were 4(13.33%). (fig 1) out of 30 patients, 09(30%) patients were primi and 21(70%) were multipara.

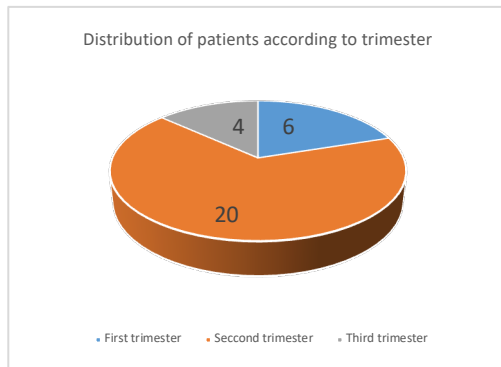


Fig 1: Distribution of pregnant patients with appendicitis according to trimester

All the patients were presented with pain. Pain in RIF (Right Iliac Fossa) was observed in all patients (100%) in first trimester, 30% patients in second trimester and 25% patients in third trimester. Pain in right upper quadrant was observed in 65% of second trimester patients and 50% of third trimester patients. Diffuse pain was complained by 5% patients in second trimester and 25% patients in third trimester. Thus all patients in first trimester had pain in RIF. Majority of the patients in second trimester patients had (65%) pain in right upper quadrant and diffuse pain was commonly seen in third trimester. Nausea and vomiting was present in 40% patients each. Anorexia was seen in 43.33% patients. Fever was observed in 26.67% patients. one patient in second trimester complained of bleeding per vagina. (table 2)

Table 2: Distribution of pregnant patients with appendicitis according to trimester and symptoms

Symptoms	I st Trimester (n=06)	II nd Trimester (n=20)	III rd Trimester (n=04)	Total (n= 30)
Pain RIF	06 (100%)	06(30%)	01(25%)	13(43.33%)
Pain RUQ	00	13(65%)	02(50%)	15(50%)
Diffuse Pain	00	01(5%)	01(25%)	02(6.67%)
Nausea	05(83.33%)	05(25%)	02(50%)	12(40%)
Vomiting	05(83.33%)	06(30%)	01(25%)	12(40%)
Anorexia	05(83.33%)	07(35%)	01(25%)	13(43.33%)
Fever	04(66.67%)	03(15%)	01(25%)	08(26.67%)
Bleeding PV	00	01(5%)	00	01(3.33%)

In our study most commonly observed sign was rebound tenderness 22 (73.33%) followed by tachycardia 19(63.33%). Guarding and decreased bowel sound were seen in 53.33% patients each. One patient had appendicular lump. (table 3)

Table 3: Distribution of pregnant patients with appendicitis according to trimester and signs

Signs	I st Trimester (n=06)	II nd Trimester (n=20)	III rd Trimester (n=04)	Total (n= 30)
Tachycardia	05(83.33%)	11(55%)	03(75%)	19(63.33%)
Rebound tenderness	04(66.67%)	15(75%)	03(75%)	22(73.33%)
Guarding	04(66.67%)	10 (50%)	02(50%)	16(53.33%)
Appendicular lump	00	01 (5%)	00	01(3.33%)
Decreased bowel sounds	03 (50%)	10(50%)	03(75%)	16(53.33%)

In our study, 80% of the patients had elevated CRP. Leucocytosis was observed in 50 % of the patients. WBC count of 10000-160000 was most commonly seen in first trimester patients (66.67%). Patients in third trimester had leucocytosis above 16000 in 50% of the patients. Polymorphs > 80% were seen in 75%, 60% and 66.67% patients in third trimester, second trimester and first trimester respectively. Bacteriuria was seen in 10(33.33%) patients and pyuria was seen in 30% of the patients. out of total 30 patients, 25 patients diagnosed as acute appendicitis on USG abdomen. One patient had appendicular lump on USG. (fig 2)

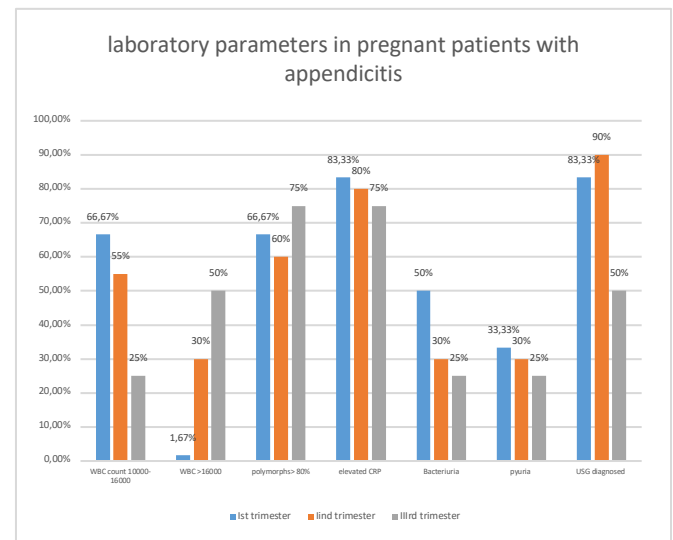


Fig 2: laboratory parameters in pregnant patients with appendicitis

Out of total 30 patients, 27 patients were operated. 3 patients were on conservative management. Among these 3 patients, two were in second trimester and one was in first trimester. Intraoperative and histologically confirmed acute appendicitis was seen in 26(86.66%) patients. 3(10%) patients had perforated appendicitis and one patient had no evidence of acute appendicitis.

In our study, 08(26.67%) patients had bad obstetric outcome. Out of 30 patients 5(16.67%) patients had spontaneous abortion. First trimester appendectomy in 3 (50%) patients followed by spontaneous abortion and 2(10%) patients in second trimester had abortion after appendectomy. None of the patient in third trimester had abortion. Premature delivery was seen in 2(10%) of second trimester and 01(25%) of the third trimester patients. (table 4)

Table 4: Distribution of pregnant patients with appendicitis according to trimester and Obstetric outcome

Obstetric outcome	I st Trimester (n=06)	II nd Trimester (n=20)	III rd Trimester (n=04)	Total (n=30)
Abortion	03	02	00	05 (16.67%)
Premature delivery	00	02	01	03 (10%)

Fever was observed in 07(23.33%) of all patients post operatively. Wound infection was seen in 6(20%) patients. one patient in second trimester had faecal fistula. Maternal mortality was not observed in our study.

Discussion

Majority of the pregnant patients with appendicitis 15(50%) were from the age group of 26-30 years followed by 20-25 years 08(26.67%). In our study, majority of the patients 20(66.67%) were in second trimester followed by patients in first trimester 06(20%). Patients in third trimester were 4(13.33%).

Study by Firstenberg MS et al has shown a preponderance in the second trimester, with approximately 30% of cases occurring during the first trimester, 45% during the second trimester and 25% during the third trimester, labor, or puerperium.⁹

Andersson et al found an inversely proportional relationship between appendicitis and pregnancy and it was mostly in the 3rd trimester.¹⁰ Franca Neto AH et al found that the association of appendicitis and pregnancy is more frequent during the 1st and 2nd trimester.¹¹ Al Qudah MS et al found that rare in the last weeks of pregnancy.¹²

All the patients were presented with pain. Pain in RIF (Right Iliac Fossa) was observed in all patients (100%) in first trimester, 30% patients in second trimester and 25% patients in third trimester. Pain in right upper quadrant was observed in 65% of second trimester patients and 50% of third trimester patients. Diffuse pain was complained by 5% patients in second trimester and 25% patients in third trimester. Thus all patients in first trimester had pain in RIF. Majority of the patients in second trimester patients had (65%) pain in right upper quadrant and diffuse pain was commonly seen in third trimester.

The symptoms of appendicitis can be confused with morning sickness and ectopic pregnancy during first trimester and twisted ovarian cyst in early second trimester. During third trimester, patient complains of pain, higher and more lateral in the abdomen or right flank which is commonly confused with ureteric colic.¹³ Guarding and rigidity are difficult to elicit in third trimester due to stretched abdominal muscles.¹⁴

Positional changes of appendix as the pregnancy are responsible for different symptoms according to changes in stage in pregnancy. The appendix remains in the right iliac fossa during the first trimester, moves to the pelvic brim during second trimester and reaches the lower right upper quadrant in the third trimester.

As the pregnancy progresses, abdominal sensation and defence are less evident because of the laxity of the abdominal wall and the increase in the space between the abdominal wall and the appendix.¹⁵⁻¹⁷

In our study, Out of total 30 patients, 27 patients were operated. 3 patients were on conservative management. In our study, 08(26.67%) patients had bad obstetric outcome. Out of 30 patients 5(16.67%) patients had spontaneous abortion. First trimester appendectomy in 3 (50%) patients followed by spontaneous abortion and 2(10%) patients in second trimester had abortion after appendectomy. None of the patient in third trimester had abortion. Premature delivery was seen in 2(10%) of second trimester and 01(25%) of the third trimester patients.

Fever was observed in 07(23.33%) of all patients post operatively. Wound infection was seen in 6(20%) patients. one patient in second trimester had faecal fistula. Maternal mortality was not observed in our study.

Fetal mortality is high due to septicaemia and prematurity. Appendectomy should be performed on suspicion of the presence of appendicitis just as if pregnancy was not present.¹⁸ If surgery is performed before the appendix ruptures, complications can be minimized, as perforation worsens the obstetric outcomes. A multidisciplinary approach is needed to minimize adverse effects, involving simultaneous gynecological consultation.¹⁹

In a study by Doberneck RC et al and Weingold AB et al, Overall fetal mortality reported is 2-8.5% but increases to 35% in perforation and peritonitis.^{20,21}

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