Original Article:
Non Obstetric Acute Abdomen in Pregnancy – An Experience from Kashmir

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Abstract: Objectives: The objective of this study was to study the profile of pregnant patients who were managed by general surgical unit of a referral hospital in Kashmir valley for non obstetric causes of acute abdomen over a period of seven years. Methods: The study was done retrospectively after acquiring data from databank related to pregnant patients managed for acute abdomen over a period of seven years (from January 2006 to December 2012) in the general surgical department of the medical college of SK Institute of Medical Sciences, Srinagar, Kashmir. Results: 49 non obstetric acute abdomen were managed in pregnant females over a period of seven years, 23 (46.9%) patients reported with a delay of more than 12 hours and 34 (69.4%) cases underwent surgical interventions. Appendicitis was the commonest cause of acute abdomen and Ultrasonography was the only imaging modality utilized. Only 3 cases had preterm labor. Conclusions: Acute abdomen in pregnant females should be assessed with high level of suspicion. Delay in presentation and intervention leads to adverse outcomes.

Key Words: Acute abdomen; Pregnancy; Appendicitis; Complications; Delay.

Introduction:
Acute abdomen is the term used to describe any serious acute intra-abdominal condition characterised by pain, tenderness, and muscular rigidity, and for which emergency surgery might be considered. In pregnancy, acute abdomen remains one of the most challenging diagnostic and therapeutic dilemmas even today in spite of recent advances in medical sciences. (1) The normal anatomical and physiological changes occurring in pregnancy lead to confusion in diagnosis (2) and the general tendency to delay the needed surgical intervention complicates the issues. The situation is even more difficult in places with underdeveloped healthcare systems. The incidence of acute abdomen during pregnancy is reported in literature to be about 1 in 500-635 pregnancies. (1) An acute abdomen may be caused by pregnancy itself or be predisposed by pregnancy or else be the result of a purely incidental cause (2) and may be obstetric or non obstetric in nature. In this study, the authors analysed the profile of patients managed for acute abdomen caused by non obstetric causes and managed in a 300 bedded referral hospital in the Indian side of Kashmir valley.

Material and Methods:
A retrospective study was conducted in the Department of General Surgery, Sheri-Kashmir Institute of Medical Sciences, (Medical College), Bemina, Srinagar, Kashmir, India. A retrospective review of all female patients treated in the Department of General Surgery, Sheri-Kashmir Institute of Medical Sciences(Medical College), Bemina, Srinagar, Kashmir, India from Jan. 2006 to Dec. 2012, for acute abdomen was performed and the subset of patients with whom pregnancy was confirmed by imaging was studied in detail. The data was retrieved from the stored databank of the Medical Records Department and personal verified log books of authors. Patients with obstetric or posttraumatic causes of acute abdomen or cases with inadequate documentation were excluded from this study. The data was analysed statistically by MS Excel 2007 and SPSS-16 software.

Results:
Over a period of seven years, 49 pregnant females were managed for acute abdomen of non obstetric origin ranging in age from 19 years to 37 years (mean – 23.4 years). 11 (22.5%) cases reported in first trimester, 25 (51%) in second trimester and 13(26.5%) in third trimester. 24 (49%) cases reported with delay of less than 12 hours from the onset of symptoms while the rest of 25 (51%) cases reported with delay of more than 12 hours. The patient of mesenteric vein thrombosis had a delay of 36 hours whereas the patients reported with perforated appendix had a delay of about 48 hours. Ultrasonography was the only imaging modality used, except in one case of biliary ascariasis where ERCP was done for diagnosis and management. 33 (67%) cases needed...
surgical intervention whereas 16 (33%) cases were managed conservatively. 15 patients were lost to follow up and hence the fetal outcome was unknown. In 34 cases that were followed up till completion of pregnancy 31 reached full term and 3 had preterm labor. There was only a single fetal loss in a case of perforated appendix. The entire data is as given in Table 1.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number (%age)</th>
<th>Trimester</th>
<th>Age (years)</th>
<th>Delay (hours)</th>
<th>Imaging modality</th>
<th>Management</th>
<th>Outcome of pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendixitis</td>
<td>26 (53.06%)</td>
<td>1st 2nd 3rd</td>
<td>&lt;30 &gt;30</td>
<td>&lt;12 &gt;12</td>
<td>USG-22</td>
<td>-</td>
<td>AP – 24 DR -1 LA-1</td>
</tr>
<tr>
<td>Acute calcular cholecystitis</td>
<td>8 (16.32%)</td>
<td>3 2 3</td>
<td>3 5 6 2</td>
<td>USG-8</td>
<td>6</td>
<td>Chole. -2</td>
<td>4 - 4</td>
</tr>
<tr>
<td>Gut obstruction due to ascarisis</td>
<td>5 (10.2%)</td>
<td>1 2 2</td>
<td>4 1 - 5</td>
<td>USG-4</td>
<td>4</td>
<td>Expl. Lap -1</td>
<td>3 - 2</td>
</tr>
<tr>
<td>Biliary ascariasis</td>
<td>2 (4.08%)</td>
<td>1 1 -</td>
<td>1 1 - 2</td>
<td>USG-2 ERCP-1</td>
<td>2</td>
<td>2 - 2</td>
<td></td>
</tr>
<tr>
<td>Gut obstruction due to TB</td>
<td>2 (4.08%)</td>
<td>- 1 1 -</td>
<td>2 1 1</td>
<td>USG-2</td>
<td>1</td>
<td>Expl. Lap -1</td>
<td>2 - 2</td>
</tr>
<tr>
<td>Obstructed umbilical hernia</td>
<td>2 (4.08%)</td>
<td>- 1 1 1</td>
<td>1 1 - 2</td>
<td>-</td>
<td>1</td>
<td>Rep - 1</td>
<td>2 - 2</td>
</tr>
<tr>
<td>Mesenteric vein thrombosis</td>
<td>1 (2.04%)</td>
<td>- 1 - -</td>
<td>1 1 -</td>
<td>-</td>
<td>Expl. Lap -1</td>
<td>- 1</td>
<td></td>
</tr>
<tr>
<td>Tuberculous peritonitis</td>
<td>1 (2.04%)</td>
<td>- 1 - -</td>
<td>1 1 -</td>
<td>USG-1</td>
<td>1</td>
<td>- - -</td>
<td>1</td>
</tr>
<tr>
<td>Acute pancreatitis</td>
<td>1 (2.04%)</td>
<td>- - 1 -</td>
<td>1 1 -</td>
<td>-</td>
<td>1</td>
<td>- - -</td>
<td>1</td>
</tr>
<tr>
<td>Meckel’s diverticullitis</td>
<td>1 (2.04%)</td>
<td>1 - - -</td>
<td>1 1 -</td>
<td>-</td>
<td>Expl. Lap -1</td>
<td>1 - -</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>49 (100%)</strong></td>
<td><strong>11 25 13</strong></td>
<td><strong>33 16 24</strong></td>
<td><strong>25</strong></td>
<td><strong>16 33 31</strong></td>
<td><strong>3 15</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Abbreviations: USG – Ultrasonography, Expl lap – Exploratory laparotomy, Repair , AP – appendectomy, DR – Drainage of appendicular abscess, LA – Peritoneal lavage, ERCP – Endoscopic retrograde cholangiopancreatography.**

**Discussion**

Acute abdomen in pregnancy is an important surgical emergency with an incidence of about 1 in 500-635 pregnancies. (1) There is a general tendency to delay the management and attribute the complaints to common non serious conditions like pregnancy related urinary tract infections, morning sickness etc. The anatomical displacement of abdominal organs and physiological changes of pregnancy further increase the difficulties in diagnosis. (2, 3)

Review of literature reveals appendicitis to be the commonest non obstetric cause of surgical intervention affecting 1 in 1500 pregnancies. In our series, 26 (53.06%) cases were managed for appendicitis. Patients had reported through all the three trimesters of pregnancy though 16 patients reported in middle trimester. Twenty five cases underwent appendectomy and 1 patient of perforated appendix underwent extra-peritoneal drainage of abscess. Out of the 19 cases that remained under follow-up, only 2 who had reported with perforated appendix had a preterm labor. This finding corroborates with literature as an unruptured appendix has been found to be associated with a fetal loss rate of around 3% to 5% with no significant effect on maternal mortality, in contrast to a fetal loss rate of 20% to 25% and maternal mortality rate of 4% with ruptured appendix. (4, 5) In the literature, the incidence, cause, diagnosis, and management of appendicitis in pregnancy have been described to be similar to those affecting the non-pregnant patient, with some notable exceptions. (6) Traditionally, the belief held is that the location of the appendix rises in the peritoneal cavity as the uterus enlarges, beginning around 12 weeks, and reaching the iliac crest by 24 weeks. (7, 8) This anatomical change is believed to alter the course of disease by impairing localisation of pain and altering the appearance of signs. (9) However recent prospective studies (10) have challenged this long held notion and found no difference in appendix location in women undergoing caesarean at term, in pregnant women undergoing appendectomy, and in non-pregnant women undergoing appendectomy. The commonly used laboratory parameters used for diagnosis of appendicitis have altered reference levels in pregnancy. Appendicitis is expected to cause leukocytosis but pregnancy alone can produce leukocyte counts ranging from 6000-16,000/mm3 in the second and third trimesters and from 20,000-30,000/mm3 in early labor (11) though inflammation leads to an increased number of bands. (9) Acute calcular cholecystitis constituted the second commonest cause of acute abdomen in our experience affecting 8 (16.32%) of cases. This reflects the general trend in Kashmiri population with high prevalence (about 6. 12%) of cholelithiasis. (12) Furthermore in pregnancies, there is a tendency to form biliary sludge and gallstone and reported incidence in literature is 31% and 2% respectively. Most of
these patients remain asymptomatic although about 28% do manifest symptoms. In our series, only 2 out of 8 patients (25%) underwent cholecystectomy and the rest were managed conservatively. But the recent data has proven the safety of prompt laparoscopic cholecystectomy in pregnant women with symptomatic biliary disease presenting in any trimester.(14-16) Early surgical intervention further reduces overall hospital admissions and frequency of premature labor.(17)

Surgical complications of ascariasis in form of intestinal obstruction and biliary ascariasis formed another important category of patients (7 cases, 14.28%) presenting in pregnancy with acute abdomen in our series. This is due to endemicity of ascariasis in Kashmir (18-19), like many underdeveloped parts of the world with poor sanitation facilities.(20-21) Ascariasis presenting as acute abdomen in pregnancy is best managed in local hospital with center for ascariasis and most of the patients are managed by conservative approach.(22) Surgical intervention is required only if conservative approach fails or if patient presents late with features of compromised gut circulation or peritonitis/perforation. In our series, only one patient (20%) who had delayed presentation and failed conservative approach needed exploratory laparotomy with enterotomy and removal of worms to relieve obstruction. Similarly one of the patients of biliary ascariasis responded to conservative management and the other underwent ERCP at a higher gastroenterological centre. The conservative approach included fluid resuscitation and anti-helmintics. In endemic areas, routine de-worming is recommended in females of child bearing age group to decrease the complications during pregnancy.(18)

Abdominal tuberculosis presented as gut obstruction in 2 (4.08%) cases and as peritonitis in 1 (1.04%). One of the cases of obstruction was managed conservatively while the other required exploratory laparotomy with release of adhesions. The case of peritonitis was managed conservatively. After resolution of emergency, the patients were attached to services of local tuberculosis centre for proper antibiotics and supportive care. Tuberculosis is highly prevalent in India and there are more than 14 million tuberculosis patients (23) although peritoneal tuberculosis is the least common variant of this disease in pregnancy. (24) The diagnosis of abdominal tuberculosis is usually difficult in pregnancy unless patient reports with known history of tuberculosis. The aim of management is to avoid hasty, radical and irreversible surgical decision as most of the cases respond favourably to conservative approach.(25)

In our experience, we managed 2 (4.08%) of the cases with obstructed umbilical hernia. In one case, who had presented after 36 hrs of onset of symptoms, surgical intervention was undertaken while in the other , conservative approach was adopted successfully. Umbilical hernia are reported to occur or become symptomatic in pregnancy and the usual contents are omentum or gut though occasional cases of uterine fibroids presenting as incarcerated hernia are reported in literature.(26,27) In literature, pros and cons of surgical versus non surgical approaches have been debated (28) and it is agreed that management of each case should be individualized and surgery when indicated, should not be delayed as the hernia can even rupture (29) leading to maternal and fetal morbidity and mortality. If however, the hernia can be managed conservatively during pregnancy, than the simultaneous repair may be undertaken safely along with caesarean section (30) or after normal delivery. The other conditions which reported as acute abdomen include mesenteric vein thrombosis, acute pancreatitis and Meckel’s diverticulitis. Mesenteric vein thrombosis is a rare entity and the contributing factors include physiological hypercoagulability occurring during pregnancy due to multiple factors including rise in factors VII, VIIC and fibrinogen and reduction in fibrinolytic activity. The patient usually has coexisting morbidities including coagulation defects (beta-thalassemia, antiphospholipid syndrome and prothrombin gene mutation), repeated abdominal surgery (especially caesarean section), appendectomy for gangrenous appendicitis, elective laparoscopic and mistaken intake of oral contraceptives during early pregnancy. Management entails anticoagulation and surgical exploration with possible bowel resection.(31-32)

In our experience, 15 cases were lost to follow-up and out of the remaining 34 patients, only 3 cases delivered prematurely with fetal loss in only one. All the three cases had reported with significant delay (greater than 24 hours) and underwent surgical intervention and had long hospital course (average 8 days) as compared to rest of patients (2-4 days). This corroborates with the evidences from literature that delay in surgical intervention increases maternal and fetal mortality and morbidity.(33-35)

The limitations of our study include smaller sample size of cases and lack of proper follow up facilities. Further documentation, particularly the accurate recording of timing of clinical features and diagnostic parameters, was inadequate in some cases of acute abdomen which led to their exclusion from the study.

Conclusion
To conclude, it is stressed that a high level of index of suspicion must be maintained when evaluating a pregnant patient with abdominal pain as physiologic changes in pregnancy may affect the presentation of acute abdomen in pregnancy. Surgical interventions should not be deferred when there are clear indications and a female should not be penalised for being pregnant.

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References


