



Article

Acute abdomen in pregnancy

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Abstract

Objective: To calculate the frequency of acute abdomen in pregnancy due to non-obstetric causes in a Saudi population, to discuss the etiology of the high incidence, to discuss how pregnancy altered the symptomatology of acute abdomen and to evaluate the result of early surgical intervention and use of tocolytics on maternal and fetal health. *Design:* Retrospective analytic study of all cases of acute abdomen in pregnancy admitted between 1/1/1991 and 31/12/1993 to evaluate the result of early surgical intervention and use of tocolytics. *Setting:* The surgical wards of Asir Central Hospital, Abha, Saudi Arabia. *Subjects:* Sixty pregnant Saudi females who were admitted because of acute abdomen due to non-obstetric causes. *Results:* The frequency of acute abdomen in pregnancy due to non-obstetric causes in this population is 0.39% which is high in comparison to other studies and the etiology is multifactorial. Resemblance of early acute abdomen symptoms like nausea, vomiting to those of normal pregnancy and the anatomical displacement of abdominal organs by the pregnant uterus greatly masked the clinical picture and enhanced surgical delay awaiting definitive criteria for surgical intervention. This delay significantly increased maternal morbidity ($P < 0.05$) and resulted in a poor fetal outcome. Those who had early surgical intervention had a better perinatal outcome ($P < 0.001$) and decreased maternal morbidity ($P < 0.05$). Although tocolytics were used, they proved to be ineffective, altered the maternal clinical picture and had fetal side-effects. *Conclusion:* There is a higher incidence of acute abdomen in pregnancy and although pregnancy blunted the clinical picture, early surgical intervention resulted in a better perinatal outcome and decreased maternal morbidity. Tocolytics had their side effects and did not improve the fetal outcome. © 1998 International Federation of Gynecology and Obstetrics

Keywords: Pregnancy; Acute abdomen; Surgical intervention

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1. Introduction

The incidence of acute abdomen due to non-obstetric causes in pregnancy varies between 0.001 and 0.23% [1] with an average of 0.06% based on a review of all the studies [2]. The commonest cause of acute abdomen in pregnancy is acute appendicitis followed by acute cholecystitis [3,4]. Acute abdomen in pregnancy represents a challenge for the treating surgeon because its symptoms, such as nausea, vomiting and abdominal pain resemble the normal symptoms of pregnancy. The cardinal diagnostic signs of acute abdomen are altered by the anatomic displacement of the pregnant uterus. All these diagnostic uncertainties perpetuate the delay in decision making awaiting clear-cut symptoms and signs. Ironically this delay when prolonged carries a high risk to the mother and the fetus. Tocolytics were thought to calm the uterus from the insult of acute abdomen and the intraoperative manipulation but their benefit is equivocal [5]. In acute abdomen in pregnancy, some authorities advocate aggressive early surgical intervention [6,7] while others adopt an initial trial of medical therapy and if it fails they resort to surgery [8].

The purpose of this article is to analyze the clinical presentation of 60 cases of acute abdomen in pregnancy and to study how pregnancy blunted the signs and symptoms. It also discusses the benefits and risks of early surgical intervention and use of tocolytics in relationship to maternal health and perinatal outcome. The high incidence of biliary disease in the population is also discussed.

2. Subjects and methods

This is a retrospective study of cases of acute abdomen in pregnancy from January 1991 to December 1993. Sixty women with acute abdomen in pregnancy due to non-obstetric causes were admitted to the surgical ward of Asir Central Hospital in southern Saudi Arabia. All the charts of these patients were studied to assess how the pregnancy altered the symptomatology and the management of acute abdomen and the effect of

the management on the maternal health and the perinatal outcome.

The reviewed parameters were gestational age, the symptoms and their duration before admission, signs, results of ultrasound scanning, provisional diagnosis and plan of management, tocolytic used, nature, dose and its effects on the fetal outcome whether abortion, preterm labor or term labor, and the neonate health. Maternal morbidity was assessed by recurrent hospital admissions, duration of hospital stay, body temperature, nature of operation and maternal health during puerperium. The results of ultrasound scan and histopathology were compared to the operative findings. The newborn charts were reviewed and any neonatal abnormality detected prior to discharge from hospital was recorded.

The χ^2 , Fisher exact test and unpaired Student's *t*-test were used as tests of significance at the 5% level. The Statistical Package for Social Sciences (SPSS) version 6.0 was utilized for this purpose.

3. Results

During the period of the study there were 15 562 deliveries of which 60 cases were provisionally diagnosed and admitted as having acute abdomen with pregnancy. The frequency of acute abdomen to all deliveries was 0.39%. Table 1 summarizes the frequency of the symptoms and

Table 1
Distribution of the 60 cases of acute abdomen in pregnancy according to symptoms and signs

Clinical presentation	No.	%
Symptoms		
Abdominal pain	49	82
Nausea and vomiting	38	63
Constipation	19	32
Signs		
Tachycardia	49	82
Pyrexia	45	75
Abdominal rigidity	31	52
Abdominal distension	28	47
Abdominal mass	5	8
Uterine contractions	6	10

Table 2
Index of wrong diagnosis in acute abdomen in pregnancy

Diagnosis	Provisional	Final	Index of wrong diagnosis (%) ^a
Appendicitis	30	18	40
Cholecystitis	12	11	8.4
Ovarian cyst	6	5	16.7
Fibroids	4	3	25
Intestinal obstruction	5	5	0
Others	7	3	57.1

^aIndex of wrong diagnosis % = provisionally diagnosed cases – confirmed cases × 100 provisionally diagnosed cases.

signs of acute abdomen. According to the severity of these symptoms the decision of whether to conserve or operate was taken. The mean duration of symptoms in all patients before hospitalization was 3.5 ± 0.92 days. The interval between admission and operation was 3.6 ± 0.92 days.

Table 2 summarizes the operative findings. The index of wrong diagnosis (the difference between provisional diagnosis and true diagnosis over the total number of provisionally diagnosed cases) was highest in acute appendicitis (40%) and nil in intestinal obstruction. Twenty-three cases had positive ultrasound scan findings; 17 acute cholecystitis, three uterine fibroids, two ovarian cysts and one appendicular mass.

The perinatal outcome was unfavorable in 18 patients (30%); seven cases (17%) in the surgically treated group and 11 patients (57.9%) in the conservatively treated group. The difference is

Table 3
Comparison of perinatal outcome and maternal morbidity after surgical and medical treatment of acute abdomen in pregnancy

Complications	Surgery <i>n</i> = 41	Conservative <i>n</i> = 19	Significance
Perinatal outcome			
Preterm labor	5 (12.2%)	8 (42.1%)	<i>P</i> = 0.013
Abortion	2 (4.9%)	3 (15.8%)	<i>P</i> = 0.177 * NS
Subtotal	7 (17.1%)	11 (57.9%)	<i>P</i> = 0.0013
Maternal morbidity			
Emergency surgery	—	4 (21%)	<i>P</i> = 0.008
Relapse with hospital stay	—	10 (52.6%)	<i>P</i> < 0.0001
Average hospital (days)	6 ± 1.2	13 ± 1.6	<i>t</i> = 18.87, <i>P</i> < 0.0001
Average no. of admissions	1 ± 0.1	4 ± 0.3	<i>t</i> = 57.92, <i>P</i> < 0.0001

statistically significant ($\chi^2 = 10.30$, *P* = 0.0013) Table 3.

Out of the 60 cases admitted 41 (68%) were operated on in the first week after admission and the remaining 19 patients (32%) were discharged following conservative management. Out of these 19 patients, five were symptom-free till delivery and the remaining 14 had repeated hospital readmissions with an average of four admissions and mean hospital stay of 13 ± 1.6 days. Of these 14 patients four ultimately had laparotomy during pregnancy, three for gallstones and one for an ovarian cyst. The remaining 10 patients reached term without a need for laparotomy (Table 3).

Out of the 60 cases of acute abdomen, 32 patients (53.33%) used tocolytics of whom 19 patients (59.4%) had favorable fetal outcome and 13 patients (40.6%) had a poor outcome. Twenty-eight patients (46.67%) received no tocolytics and of these 17 (60.7%) had a favorable outcome and 11 (39.3%) had poor fetal outcome (six abortions and five preterm deliveries of whom one died in the neonatal period). Tocolytics did not significantly improve the perinatal outcome (*P* > 0.05). Fig. 1 stratifies the different tocolytics used and their effect on the fetal outcome.

4. Discussion

The incidence of acute abdomen among pregnant women who delivered in our hospital during the study period was 0.39%. Compared to the

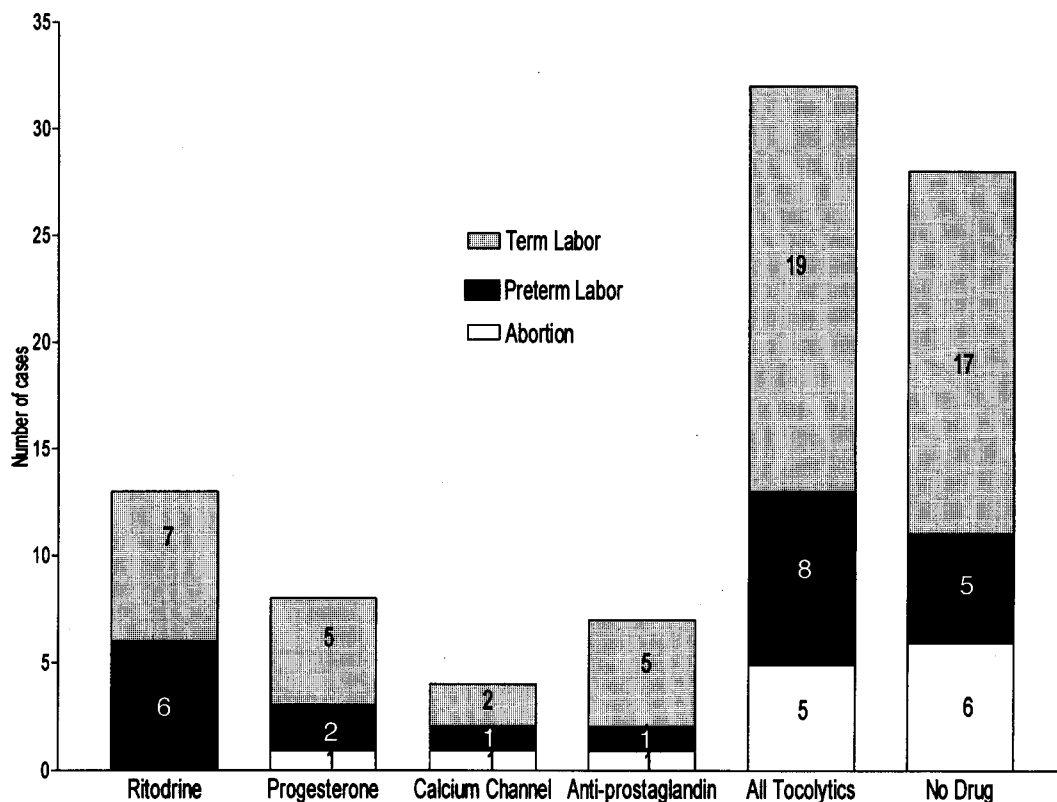


Fig. 1. Effect of individual tocolytic, all tocolytics and no tocolytics on fetal outcome.

findings of Saunders and Milton [1] as well as Babaknia et al. [2] who reported an incidence between 0.001 and 0.23% and an average of 0.06% [1,2], this is a high incidence. This high incidence has a multifactorial etiology. Early marriage and repeated pregnancies till menopause make the probability of an acute abdomen occurring in pregnancy higher. Another reason for the high incidence is the largely prevalent biliary disease, which constitutes 27% of acute abdomen cases in this series. In a recent study 7.5% of pregnant women in this community were found to harbor silent gallstones [9] in comparison to 3.5% in the West [10]. This high incidence of biliary disease could be genetic as suggested by Mofti et al. [11]. The genetic constitution of the community has been fairly preserved by consanguinity. The early marriage and repeated pregnancies [12] and the well-documented deleterious effect of pregnancy on the biliary system are another possible cause.

Most of the women in this society are obese [13] as they live a sedentary life with a diet which is rich in fats and carbohydrates [14].

As seen in Table 1 the commonest symptoms were abdominal pain (82%) nausea and vomiting (63%), and constipation (32%). The signs were rapid pulse (82%), pyrexia (75%), abdominal distension (47%), and presence of a mass (12%). Some of these cardinal features for diagnosing acute abdomen occur normally in pregnancy and when they occur in acute abdomen with pregnancy they are blunted by the anatomical changes which push the appendix up and the pregnant uterus pushes the omentum away making palpation and eliciting rebound tenderness difficult. This clinical uncertainty makes surgeons conserve waiting confirmatory signs or operate and accept the possibility of a negative laparotomy.

From this study it is evident that early surgical intervention should be adopted in acute abdomen

in pregnancy even with less clear evidence as nothing disturbs the perinatal outcome and the maternal health than peritonitis resulting from what appears to be justified delay. Resort to early surgical intervention tempted obstetricians to use tocolytics to calm the uterus. In this study they proved to be of no benefit.

Tocolytics not only failed to improve fetal outcome as reported in this study but also had serious maternal and fetal side effects, which could contraindicate their use, especially ritodrine and prostaglandin synthetase inhibitors. Ritodrine causes maternal and fetal tachycardia, nausea and vomiting as recorded in this study and so it impaired very important signs for managing acute abdomen. Prostaglandin synthetase inhibitors are blamed for constriction of ductus arteriosus when used as a tocolytic but recently it was found that when used between 26 and 34 weeks of pregnancy the danger is minimal [15]. In this study no teratogenesis due to prostaglandin synthetase inhibitor was detected and the reported complications of altered hematological indices, transient renal insufficiency and necrotizing enterocolitis [16] were not seen in this study. Another drawback of the use of prostaglandin synthetase inhibitor is its anti-inflammatory and antipyretic effect, which might mask important clinical parameters for acute abdomen case management and give the surgeon a false sense of security.

Unlike ritodrine and prostaglandin synthetase inhibitor, nifedipine is safer and doesn't alter the disease symptomatology [5]. Although nifedipine was blamed for causing hypotension, this proved to be insignificant [17,18]. In this study progestogens were used in the first trimester. Albeit feared for teratogenicity [19], the evidence is not conclusive [20] and no malformations were reported in this study.

From the study it is evident that early surgical intervention should be resorted to in cases of acute abdomen in pregnancy even with less clear evidence. In this series the diagnostic error as proved by laparotomy and histopathology is high. Out of 30 cases of suspected appendicitis, 12 cases were proved to be histologically normal. This high index of wrong diagnosis (40%) in acute

appendicitis is due to displacement, resemblance of acute appendicitis symptoms to those of normal pregnancy and the lack of a test with a high predictive value for detection of appendicitis. Non-invasive investigations like ultrasound scan are of a poor predictive value especially in the acute appendicitis [21]. Also the exclusion of intraabdominal pathology and the readiness for surgical intervention has been promoted by safe anesthesia and availability of laparoscopic surgery during early pregnancy [22].

The results of this study showed that tocolytics did not improve fetal outcome and that they had some other side effects. These findings are different from those which Allen et al. [23] reported, as they recorded a 100% success rate of tocolysis in prevention of labor. The discrepancy between the two studies could be due to the time the treatment initiated the pathology and the operative methodology. Other workers share with us the same conclusions of having poor results with tocolytics in acute abdomen [24].

In conclusion we acknowledge the limitations of this study for being retrospective. However, it casts more light on dim zones of tocolytics use in acute abdomen and prove their inefficiency. Tocolytics like ritodrine and prostaglandin synthetase inhibitors are having maternal side effects which might interfere with the case management but nifedipine and progesterone are devoid of similar side effects and could be used safely pending more studies as the number of cases in this study is small. Also early surgical intervention is recommended in cases of acute abdomen in pregnancy even with less clear evidence and better to have an early negative laparotomy than to jeopardize the maternal and perinatal health by delayed surgery.

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