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CARFAX

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Is surgical intervention in acute cholecystitis in pregnancy justified?

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Summary

Over a three-year period 49 cases were admitted to our hospital with an acute abdomen in pregnancy due to cholecystitis. In this article we compare surgical treatment with medical treatment and consider the aetiology of the high prevalence. Out of the 49 cases admitted, 15 cases (31%) had emergency cholecystectomy within the first week and 34 cases (69%) were treated conservatively of whom 24 relapsed many times and had to be readmitted to the hospital (mean number of admissions was $4 \pm 1{\cdot}4$ and the mean hospital stay was $8 \pm 2{\cdot}3$ days) and of the remaining 10 on conservative management, three had emergency cholecystectomy and seven reached term safely. The maternal morbidity is significantly less in the surgically treated group ($P < 0{\cdot}0001$) but the perinatal outcome failed to show any significant difference. The frequency of acute cholecystitis in pregnancy (0·33%) is high in comparison with other studies. Although tocolytics were used in 13 cases they did not improve the fetal outcome significantly and had maternal and fetal side effects. In conclusion early surgical intervention is recommended and the use of tocolytics did not improve the perinatal outcome.

Introduction

Few studies have addressed the issue of acute cholecystitis in pregnancy because of the relative rarity of the disease. The reported incidence in pregnancy is very low and varies between 0·01% (Friley and Douglas, 1972) and 0·05% (Swisher *et al.*, 1994). It carries with it a high incidence of maternal morbidity (Landers *et al.*, 1987) and a poor perinatal outcome (Child and Douglas, 1944; Sparkman, 1957). The poor prognosis is not only related to the disease process but also to the adoption of conservative medical treatment and fear of surgical intervention. Ironically, the conservative attitude adopted might dictate repeated emergency admissions and may necessitate ill-timed surgical intervention. Many authorities advocate immediate surgical intervention (Dixon, 1989; Swisher *et al.*, 1994). Tocolytics were used by some to 'calm' the uterus during the operation with variable success rates (Landers *et al.*, 1987; Major *et al*, 1991). Because gall bladder disease is common in Saudi Arabia (Ahmed *et al.*, 1992; Bakhotma, *et al.*, 1994), it is our intention in this retrospective study to find out the reasons for the high frequency of the disease in pregnancy, to compare the effect of early surgical intervention with conservative management on the maternal health and fetal outcome, to adopt a protocol for case management and to find out whether tocolytics play any role in improving the perinatal outcome.

Subjects and methods

This is a retrospective descriptive study of 49 cases of acute cholecystitis during pregnancy who were admitted to the surgical ward between 1 January 1991 and 31 December 1995. Criteria for study recruitment were pregnancy, living baby and having acute cholecystitis diagnosed clinically and confirmed by ultrasound.

The following data were collected; the gestational age, time symptoms started, admission time, tocolytic used; (dose, duration, maternal and fetal side effects), the case management whether conservative or surgery and reasons for that specific management, fetal outcome (whether abortion, pre-term labour or term labour), maternal health (including number of readmissions) and hospital stay in days, fever or any other side effect and postnatal follow-up of the newborn and the mother for any complications.

Using Statistical Package for Social Sciences (SPSS) Software under Windows in an IBM compatible computer all data were entered and results were computed using Fisher's exact test and unpaired Student's *t*-test as tests of significance at the 5% level.

Results

Out of 14 023 women who delivered in our hospital during the period of the study, 49 patients presented with acute cholecystitis with a frequency of 0·33%. Thirty-nine patients had gallstones proven by ultrasound scan and the rest had an inflamed gallbladder. Fifteen patients had cholecystectomy within the first week, 10 cases immediately and five later in the week as they had persistent vomiting, intractable pain and a high temperature and no response to medical management. The remaining 34 patients had improved on medical treatment and were eventually discharged. Twenty-four of these relapsed many times and had to be admitted to the hospital repeatedly (mean admissions $4 \pm 1{\cdot}3$) with a mean hospital stay of $8 \pm 2{\cdot}3$ days. The remaining 10 included three who had an

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Table I. Comparison of maternal and perinatal outcome after early surgical intervention and initial successful medical treatment of acute cholecystitis in pregnancy

Complication	*Surgery* n = *15*	*Conservative* n = *34*	*Significance*
Perinatal outcome			
Preterm labour	3 (20%)	6 (17·6%)	$P = 0.57$
Abortion	1 (6·7%)	4 (11·8%)	$P = 0.51$
Neonatal death	—	2 (5·9%)	$P = 0.48$
Subtotal	4 (26·7%)	12 (35.3%)	$P = 0.40$
Maternal morbidity			
Relapse with emergency surgery	—	3	
Average no. of relapse with hospitalisation	—	4 ± 1·3	
Average hospital stay (days)	1 ± 2·1	8 ± 2·3	$t = 10.07$ $P < 0.001$

Table II. Comparison of perinatal outcome and use of tocolytics for cases of acute cholecystitis in pregnancy

Perinatal outcome	*Tocolytic (n = 13)* n	%	*No tocolytic (n = 36)* n	%	P *value*
Premature labour	3	23·1	6	16·7	0·45
Abortion	2	15·4	3	8·3	0·40
Neonatal death	—	0	2	5·6	0·54
Total	5	38·5	11	30·6	0·42

emergency cholecystectomy and seven continued uneventually with delivery. Postnatally mothers and babies were followed until the end of the puerperium no adverse complications were detected.

Acute cholecystitis in pregnancy ($n = 15$) when managed by early surgery had maternal morbidity which is significantly less than the cases managed conservatively ($P < 0.0001$). There was no significant difference in perinatal outcome between the two treatment methods (Table I). Tocolytics were given to 13 patients, five received ritodrine, four received indomethacin and the same number received nifedipine. The allocation of treatment was not randomised. Those who received ritodrine suffered tachycardia, nausea and vomiting and those who received indomethacin developed epigastric pain while none of the four who took nifidipine developed any adverse reaction. Out of the 36 who did not receive any tocolytic, six had preterm labour, three had abortions and two had a neonatal death. Out of the 13 patients who received tocolytics, two had abortions and three had preterm labour. Tocolytics did not show any significant improvement on the fetal outcome (Table II).

Although the cases reported were at different gestational ages, the fetal outcome was dependent on severity of the biliary diseases and the gestational age. The very severe cases tend to have abortion or preterm delivery and fetal survival depends on the gestational age.

Discussion

The reported frequency of acute cholecystitis recorded during pregnancy varies between 0·01% and 0·05% (Friley and Douglas, 1972; Swisher *et al.*, 1994) and the cholecystectomy rate among all women admitted to the hospital is estimated as 0·006% (Sparkman, 1957). In this study the biliary disease frequency is 0·33% and the cholecystectomy rate during pregnancy is 0·07%. These figures are among the highest reported in the literature. In this community the prevalence of silent gallstones in pregnancy is 7.5% (Bakhotma *et al.*, 1994) in comparison with 3·5% in the West (Honore, 1980) and many studies reported a high prevalence of gallstones in this population even at a very early age (Ahmed *et al.*, 1992; Mofti *et al.*, 1992).

The high incidence of gallstones could be due to factors which are unique to this community. Women are married at a very young age, they get pregnant soon and repeatedly until the menopause (Jabbar and Wong, 1988). Pregnancy favours formation of gallstones by changing the bile chemistry (Bravermann *et al.*, 1980) and causes a delay in gall bladder emptying (Honore, 1980; Kern *et al.*, 1981). Women in this society tend to be obese and have a higher body mass index (Khalid and Ali, 1994) due to a sedentary lifestyle. Few women work and even those give the priority to rearing children and family life. The obesity is perpetuated by the high calorie food intake (mainly very fat meat and rice cooked in oil). The higher incidence could also be genetic and this genetic propensity is perpetuated by consanguinity (Ahmed *et al.*, 1992). Women here continue childbearing until late in their reproductive life. It is at this late age that gall bladder disease is more common. Because of the repeated pregnancies, attacks of cholecystitis are more likely to occur during a pregnancy rather than the short periods in between.

In this study the attitude adopted in the management of acute cholecystitis in pregnancy is the aggressive one where surgery is performed if the symptoms did not start to improve rapidly. The problem of acute cholecystitis in pregnancy is the problem of infection and the peritonitis that ensues (Anderson and Priestley, 1951; Hogman *et al.*, 1971). This is being perpetuated by the conservative attitude adopted by some who hope for spontaneous remission to occur. It has been reported previously that patients who did not undergo surgery at the initial admission were at high risk of a relapse during the remaining period of pregnancy (Dixon *et al.*, 1987; Swisher *et al.*, 1994). In one series there were between two to six relapses during pregnancy and hospitalisation was required in 90% of the cases (Krejs, 1983). In the cases managed conservatively hospital readmission was required on two to five occasions, and the average hospital stay was $8 \pm 2{\cdot}3$ days. The reason for remissions is the fact that the gall bladder acts as a nidus for infection as the bile is infected in 30% of the cases (Hogman *et al.*, 1971; Mofti *et al.*, 1992) which might predispose to higher incidence of peritonitis and infection during pregnancy. Krejs and his colleagues (1982) advocated conservative management of all cases after 36 weeks of pregnancy, others (Dixon *et al.*, 1987; Swisher *et al.*, 1994) adopted an aggressive policy of intervention. The early surgical management adopted in our series yielded less maternal morbidity and a good fetal outcome in comparison with other studies where a more conservative policy was followed (Dixon *et al.*, 1987; Landers *et al.*, 1987). Also, the surgical management is more cost-effective when compared with conservative management. With safe anaesthesia, judicious use of antibiotics and the possibility of using laparoscopic cholecystectomy in selected cases during early pregnancy (Elerding, 1993) the complications of surgery will be minimal.

As the attitude in this series is surgical intervention, tocolytics were used in some cases to reduce uterine activity. The fetal outcome was not improved by the use of tocolytics ($P < 0{\cdot}05$). This seems to be in agreement with Toth and his colleagues (1988) who expressed similar views. Allen and his colleagues (1989) however have different experience and appear to have found a beneficial role for tocolytics. The use of tocolytics like ritodrine in suspected cases of peritonitis may be unsafe (Kupkerminc *et al.*, 1993). It tends to aggravate the nausea, vomiting and the tachycardia that the patient already suffers from. Indomethacin on the other hand can cause transient renal failure in the fetus and may lead to serious complications such as necrotising enterocolitis (Niebyl, 1981; Major *et al.*, 1994).

Conclusion

In this study the frequency of acute cholecystitis in pregnancy proved to be high due to the high prevalence of gall bladder disease, early marriage and repeated pregnancies. We suggest early surgical intervention together with a broad spectrum antibiotic cover in cases of acute cholecystitis in pregnancy. This will not only decrease the maternal morbidity but will also improve the perinatal outcome and is cost effective. The use of tocolytics did not improve the perinatal outcome and may even mask the symptoms of acute abdomen. The fetal outcome is directly related to the case morbidity and the gestational age.

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