Original Articles

Ectopic pregnancy in Abha, Saudi Arabia

A continuing conundrum

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ABSTRACT

Objectives: To determine the incidence of ectopic pregnancy in Abha, in the south-western region of Saudi Arabia and to evaluate the relevance of the known risk factors.

Methods: Eighty-two women with histologically confirmed ectopic pregnancies, managed in Abha Maternity Hospital over a three-and-a-half year period, were retrospectively studied.

Results: The incidence of ectopic pregnancy was 0.74 per 100 live births. Most (56%) of our patients were within the 21-30 age group. Parous women constituted 56% and nulliparous patients constituted 21% of the study group. No previous history of abortion was found in 60% of the patients. Fourteen (17%) had used the intra uterine contraceptive device and 5% had a history of previous ectopic pregnancy. There were 3 cases of heterotopic pregnancies in the series. The right and left fallopian tubes were equally affected. Salpingectomy (90%) was the most frequent definitive surgical procedure performed, and 15% of the patients required blood transfusion. There was no obvious seasonal variation and no maternal death was reported.

Conclusions: The incidence of ectopic pregnancy appears to be comparatively low in our community and the risk factors do not seem to be clearly defined. A nation-wide multicenter survey to determine the effect of climatic factors and to check, as routine, *Chlamydia trachomatis* serology in suspected cases of ectopic pregnancy, may be desirable. Without these determinations, ectopic pregnancy and possible preventive measures may continue to remain a conundrum.

Keywords: Ectopic pregnancy, incidence, risk factors, *Chlamydia trachomatis*, seasonal variation.

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Ever since Lawson Tait reported on the successful operation of 5 cases of ruptured tubal ectopic pregnancies over a century ago,[1] the diagnosis and prompt management of this condition has remained illusive to a lot of clinicians. Its diagnostic challenge has been posed by the fact that it mimics a lot of other intra abdominal conditions; it is non-specific and thereby easily missed. Only 50% of the patients with ectopic pregnancy can be accurately diagnosed based on clinical features alone.[2] However, with the progress in the fields of medical biochemistry and medical biophysics, clinicians have improved a lot on their diagnostic accuracies.[3-6] This in effect has contributed to the reduction of related morbidity and mortality.

In the last 2 decades, the incidence of ectopic pregnancy has either doubled or tripled in most industrialized countries of the world.[7] In spite of the tremendous improvement in the diagnostic techniques and methods of treatment over the years, it is still a major cause of maternal morbidity and mortality. In the confidential enquiries into maternal deaths in the United Kingdom (1991-1993), it was the 4th most common cause of maternal mortality[8] while in the United States of America in 1992, it constituted 9% of all pregnancy related deaths.[9] It is

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believed that 25-50% of patients with ectopic pregnancy have predisposing risk factors.[10] These risk factors include previous pelvic inflammatory disease, previous ectopic pregnancy, assisted reproductive technique, a progesterone intrauterine contraceptive device and exposure to Diethylstilbestrol in utero.[10,11] Most of these predisposing factors do not seem to be common in our patients and consequently, one would expect a low incidence of ectopic pregnancy in our environment. The aim of this study was to determine the incidence of ectopic pregnancy in our hospital and compare figures from other centers, and to evaluate the relevance of the known risk factors.

Methods. This was a retrospective study involving patients managed in Abha Maternity Hospital (AMH), Abha, a tertiary obstetrics and gynecology referral center for the Asir region in the south-western part of Saudi Arabia. We reviewed the hospital records of all suspected and operated cases of ectopic pregnancy between 1st January 1996 and 31st June 1999. Only the patients with histologically confirmed ectopic pregnancy qualified for final analysis. From the records of these patients, relevant data on date of admission, age, parity, possible risk factors, clinical presentation, laboratory reports and treatment measures were extracted for analysis. The diagnosis of ectopic pregnancy was based on a combination of presenting symptoms, findings on clinical examination, pregnancy tests (urine or blood) results, ultrasonographic or laparoscopic findings. Definitive surgical treatment was carried out and the surgical specimen was sent for histopathological examination. The presence of trophoblastic tissue in the surgical specimen was accepted as the gold standard in confirming ectopic pregnancy. The total number of live births conducted in the hospital during the study period was noted and used in calculating the incidence of the condition.

Results. During the period under review, there were 89 suspected cases of ectopic pregnancy operated upon, out of which 82 were histologically confirmed. There were 11,061 live births in the hospital during the period hence this constituted an ectopic pregnancy incidence of 0.74 per 100 live births. As shown in Table 1, most of our patients (56%) were of the 21-30 age group, followed by 36% in the 31-40 age bracket. While 17 (21%) of the patients (Table 2) were nulliparous, the peak incidence (56%) was among the patients who had delivered 1-4 children. The majority of the patients (60%) had no history of abortion before the ectopic pregnancy, while 40% had previous history of one or more abortions (Table 3). The presenting symptoms in the order of frequency were: abdominal pains 76 (93%), vaginal bleeding 61 (74%), amenorrhoea 46

Table 1 - Age distribution of patients with ectopic pregnancy.

Age (years)	Number	Percentage
< 20	6	7
21 - 30	46	56
31 - 40	29	36
> 40	1	1
TOTAL	**82**	**100**

Table 2 - Parity of patients with ectopic pregnancy.

Parity	Number	Percentage
0	17	21
1 - 4	46	56
5 - 9	16	20
10 - 13	2	2
> 13	1	1
TOTAL	**82**	**100**

Table 3 - Abortion status of patients with ectopic pregnancy.

Previous abortions	Number	Percentage
0	49	60
1	20	24
2	7	9
3	4	5
4	1	1
7	1	1
TOTAL	**82**	**100**

(56%), fainting attack 5 (5%) and shock 2 (2%). The positive clinical signs on examination were: abdominal tenderness 66 (81%), cervical excitation tenderness 46 (56%), pallor 11 (13%), fluid thrill 4 (5%) and palpable lower abdominal mass 2 (2%). The risk factors for ectopic pregnancy were as follows; 14 (17%) of our patients had used intra uterine contraceptive device (IUCD) prior to or in situ at the time they presented with ectopic pregnancy, 4 (5%) had previous history of ectopic pregnancy and 4 (5%) had been treated for infertility. Three patients (4%) had previous history of pelvic surgery. None of our patients had serology screening for *Chlamydia trachomatis*. All the patients had tubal ectopic pregnancies: 42 (51%) involved the left fallopian tube and 40 (49%), the right.

There were 3 cases of heterotopic pregnancies of which one was twin pregnancy co-existing with an ectopic pregnancy. One of these patients became pregnant following induction of ovulation, while the other two including the twin pregnancy had spontaneous conception. The definitive surgical treatment performed revealed that 74 patients (90%) had salpingectomy while 3 (4%) had linear salpingostomy and 4 (5%) milking of the fallopian tube. One of the patients with a long-standing slow leaking tubal ectopic pregnancy with organized tubo-ovarian mass had salpingo-ophorectomy. The mean pre-operative hemoglobin concentration of the 82 patients was 11.3g/dl and 12 (15%) of the patients received blood transfusion.

Table 4 shows the monthly occurrence of ectopic pregnancy during the study period. There did not seem to be any clear monthly or seasonal variation. There was no mortality from ectopic pregnancy during the study period.

Discussion. Circumstances leading to the delay and 'choice' of site of implantation of a fertilized ovum in ectopic pregnancy are not very clear. The precise way in which it is brought about varies in different races and communities at different times.[12] Though risk factors are present in 25% - 50% of patients with ectopic pregnancies,[10] the risk of ectopic pregnancy is 6 times higher following clinical salpingitis.[13] Several case control studies have reported a strong association between ectopic pregnancy and *Chlamydia trachomatis* infection, calculating a two-to eightfold increased risk.[14,15]

The present study has brought into focus, unusual patterns in our cases of ectopic pregnancy. The incidence of 0.74 per 100 live births is low, compared to figures from France (2.19 per 100 live births), Finland (2.8 per 100 live births) and the United States of America (2.2 per 100 live births).[16] The high moral values among our female population and the apparently low incidence of Pelvic Inflammatory Disease (PID) in our clinical practice in Abha probably have a very positive role to play in this low incidence. It is also true that *Chlamydia trachomatis*, an obligate intracellular organism which infects and damages the fallopian tube with resultant ectopic pregnancy, can be asymptomatic in 75% of infected women.[17] Unfortunately, our patients were not routinely screened for this organism. The highest

Table 4 - Monthly statistics of the cases of ectopic pregnancy.

Months	1996	1997	1998	1999	Monthly Total
January	0	1	2	3	6
February	0	2	0	2	4
March	2	1	4	1	8
April	0	8	5	2	15
May	1	2	0	3	6
June	1	1	0	3	5
July	1	4	2	-	7
August	2	2	2	-	6
September	3	2	0	-	5
October	2	2	1	-	5
November	3	4	2	-	9
December	2	3	1	-	6
TOTAL	**17**	**32**	**19**	**14**	**82**

risk factor (17%) among our women appears to be from IUCD use. It is worth noting from our study that the number of cases of ectopic pregnancy seemed to be inversely proportional to the number of spontaneous abortions a patient had, giving the impression that abortion confers some degree of protection against ectopic pregnancy. This assumption is not true. Chow et al noted that the number of children, pregnancies and spontaneous abortions do not appear to affect the risk of ectopic pregnancy.[7] However, in areas with a high incidence of illegal abortion, the risk of ectopic pregnancy is increased 10-fold. Presumably, this increase is secondary to post operative infection and improperly performed procedures.[18]

No maternal death was reported in our series. There is no doubt that delay in diagnosis and medical treatment contribute to a high morbidity and mortality rate in ectopic pregnancy. Our diagnostic accuracy has been greatly enhanced by applying a protocol based on the use of abdominal or transvaginal ultrasonography in the presence of a positive serum ß-hCG pregnancy test as recommended by some authors.[3,19] We based our diagnosis of ectopic pregnancy on clinical grounds, high index of suspicion, laboratory diagnosis and ultrasonography. Transabdominal ultrasound has a specificity of 77% and a sensitivity of 91%[3] while transvaginal ultrasonography may have specificity and sensitivity of 100%.[20] Transvaginal ultrasound was not carried out on some of our patients either because they rejected the procedure or because there was no experienced transvaginal ultrasonographer present at the time of admission when the decision on management needed to be taken. Patients with obvious diagnosis of ectopic pregnancy following abdominal ultrasonography were not as well rescanned transvaginally. Laparoscopy, which is a relatively invasive procedure, was used in confirming the diagnosis in 28 (34%) of the cases. The mean pre-operative hemoglobin level of our patients was 11.3g/dl and 12 (13%) of them had blood transfusion. This perhaps reflects on prompt surgical intervention and our policy of not transfusing blood unless it is absolutely necessary.

In tubal ectopic pregnancy, the right fallopian tube is more often affected than the left.[21] It is interesting to note in our series that both tubes were almost equally affected. There were 3 cases of heterotopic pregnancies with no apparent predisposing factors in 2 cases. The intriguing one in particular was the case of twin pregnancy in a young primigravida, co-existing with tubal pregnancy following a normal conception 2 months after marriage. There was no obvious explanation for this. Some workers have recently shown an influence of the seasons on the rate of ectopic pregnancy, which may have implications for both the understanding of ectopic pregnancy's causative mechanisms and its prevention.[22] This does not seem to be our experience. Perhaps this study on seasonal variation should be conducted over 5 or more years, to draw any meaningful conclusion.

We conclude that the incidence of ectopic pregnancy appears to be comparatively low in our community and that the risk factors among the cases do not seem to be clearly defined. A nation-wide multicenter survey may therefore be desirable. It might be necessary to incorporate *Chlamydia trachomatis* serology as an investigation protocol in all cases of ectopic pregnancies and also look into climatic influence as a possible risk factor. Without these determinations, ectopic pregnancy and possible preventive measures may continue to remain a conundrum.

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