Ectopic Pregnancy – A Study of 77 Cases

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ECTOPIC PREGNANCY includes all extrauterine pregnancies, the commonest being tubal pregnancy. It can mimic almost any acute intra-abdominal condition and is one of diagnostic surprises, as the clinical picture is so varied. On the one hand, the diagnosis is obvious, while on the other, it may only be diagnosed at an exploratory laparotomy. In spite of considerable emphasis, it is often ignored in the differential diagnosis of abdominal pain. However, those who are orientated to look out for this condition in a woman of child-bearing age, will rarely fail to diagnose it when it exists.

The material presented in this study was derived from the records of 77 consecutive cases of ectopic pregnancy admitted to the University Hospital Medical Centre during the period from March 1968 to December 1971.

Incidence

During the same period of $3\frac{3}{4}$ years, there were 8,592 deliveries, giving an incidence of 1 case of ectopic pregnancy to 112 deliveries. Beacham et al (1956) quoted a ratio of 1 case to 139 deliveries and Chan (1965) 1 in 98 deliveries.

There were no maternal deaths in this series.

Age

55.8% of the cases in this series were in the 20-29 years age group and 42.9% were over the age of 30 years. This is similar to the 51.1% and 45.6% respectively quoted by Sandmire and Randall (1959).

Parity

In this study, 58 (75.3%) were multiparous and 19 (24.7%) nulliparous. Among these patients, there was a history of relative infertility. 72.4% of the multiparous patients had a time interval of 2 or more years between the last pregnancy and the ectopic pregnancy. In many cases this was as long as 6-7 years. In the nulliparous patients, an interval of 2 or more years between marriage and ectopic pregnancy was present in 44.4% of the cases.

Aetiology

Pelvic infection was the most important aetiological factor in this series and was usually puerperal or post-abortal. In 15 cases (19.5%) a history of sepsis was present, 7 puerperal, 4 post-abortal and 3 pelvic inflammatory disease. In 1 case, genital tuberculosis was discovered during investigation of infertility prior to the ectopic pregnancy. A further 10 cases had evidence of previous pelvic infection at operation though a history of sepsis was not available.

There were 2 cases of pelvic endometriosis, 1 involving the fallopian tube. Haralek and Bilek (1957) emphasized the frequency of pelvic endometriosis in cases of ectopic pregnancy. In 3 cases, an ovarian cyst was found on the side of the ectopic pregnancy and in 2 cases, there were associated uterine myoma. One patient had a tubal ligation by the Pomeroy's method 5 years previously. Another patient had an intrauterine device (IUD) in situ at the time of ectopic pregnancy. Hans Lehfeldt et al (1970) reported an incidence of 1 ectopic pregnancy to every 23 pregnancies with an IUD in situ.

Previous Ectopic Pregnancy

There were 9 previous tubal pregnancies in this study. Eight of the initial tubal pregnancies occured in the left tube with 7 of the repeat tubal pregnancies in the opposite tube and 1 in the same tube.

Symptoms

The main symptoms are listed in Table I and are compared with other series in the order of frequency.

Table I

Symptoms	Present Series	Chan (1965)	Armstrong (1969)
Abdominal Pain	75(97.4%)	97.6%	96.4%
Amenorrhoea	71(92.2%)	96.0%	—
Vaginal Bleeding	57(74.0%)	78.6%	87.9%
Vomiting/Nausea	16(20.8%)	36.4%	—
Fainting	15(19.5%)	23.8%	37.8%
Shoulder Pain	7(9.1%)	1.8%	—
Passage of Tissue	6(7.8%)	11.1%	—

Table II

	Present series	Chan (1965)	Armstrong (1959)
Bleeding preceeding pain	32(56.1%)	42.8%	34.0%
Bleeding with pain	14(24.6%)	29.6%	27.0%
Bleeding following pain	11(19.3%)	27.6%	31.0%

Abdominal pain was the commonest and most constant symptom, being present in 97.4% of the cases. This was also the finding of Armstrong et al (1959), Chan (1965) and Sandmire and Randall (1959). One must therefore consider ectopic pregnancy in any woman in the child-bearing age who presents with an abdominal pain. In 69 cases (92.0%) the abdominal pain was confined to the lower abdomen. Of these, unilateral pain or pain being more severe on one side than the other was present in 26 patients (34.6%). It was felt on the same side of the ectopic pregnancy in 22 cases (84.6%) and on the other side in 4 cases (15.4%). Unilateral pain is a useful guide in differentiating from acute salpingitis which tends to be bilateral. In 6 patients (8.0%) the abdominal pain extended to the hypogastrium or was confined to the upper abdomen. In these cases, an initial diagnosis of acute gastritis or acute pancreatitis was often made by the Accident & Emergency doctor.

Amenorrhoea was the next commonest and was present in 71 cases (92.2%). The period of amenorrhoea was less than 8 weeks in 66.2% and less than 12 weeks in 90.1% of the cases. It was extremely useful symptom in that it drew the attention of the examining doctor to the possibility of a pregnancy state. However, in 6 patients (7.8%) no history of amenorrhoea was obtained despite retrospective questioning.

Vaginal bleeding was seen in 74.0% of the cases. It was usually scanty and prolonged. In some cases the bleeding was continuous and in others intermittent. But the bleeding can be severe with clots. Contrary to the teaching of most gynaecological text-books, pain had been preceeded by vaginal bleeding in 56.1% of the cases, occuring at the same time as bleeding in 24.6% and followed by bleeding in only 19.3%.

Other symptoms like fainting and shoulder pain were useful in diagnosing ectopic pregnancy. Shoulder pain was present in 7 patients (9.1%) and in all these patients, blood loss into the peritoneal cavity exceeded 1 litre. Vomiting and nausea was present in 20.8% of the patients and was due to tubal colic and intra-peritoneal haemorrhage. It should be differentiated from the vomiting and morning sickness of early pregnancy. The history of passage of tissue was often misleading but fortunately was present in only 7.8% of the cases.

Signs

The main physical signs are listed in Table III.

Table III

Sign		No. of cases	Percentage
Temperature:	Above 100°F	1	1.3%
	Above 99°F.	8	10.4%
	Afebrile	68	88.3%
Systolic B.P.:	Below 60 mmHg.	1	1.3%
	Below 80 mmHg.	6	7.8%
	Below 100 mmHg.	18	23.6%
	100 mmHg. & above	52	67.3%
Pulse Rate:	120/min. or more	6	7.8%
	100/min or more	25	32.5%
	Below 100/min	46	59.7%
Abdominal Examination	Tenderness	72	94.7%
	Shifting Dullness	28	36.4%
	Abdominal mass	8	10.4%
Vaginal Examination	Tender Fornix	58	75.3%
	Mass in Fornix	47	61.4%
	Tender Cervix	36	46.8%
	Enlarged Uterus	30	38.9%

Table IV

		No.	Percentage
Ectopic Pregnancy correctly diagnosed		71	92.2%
Incorrect Diagnosis:		6	7.8%
Ovarian cyst	4		
Appendicitis	1		
Myoma	1		

On examination, half of the patients looked pale and one-third had a tachycardia. When this was associated with hypotension, there was usually blood loss of at least 1 litre. Seven patients were admitted in shock despite the fact that in 19 patients, blood loss was more than 2 litres. This is not surprising as the general condition of the patient, the blood pressure and the pulse rate did not depend on the amount of blood loss alone but on the rate of blood loss and the previous haemoglobin level of the patient. Love (1962) had drawn attention to the unreliability of the pulse rate and blood pressure as an indication of the degree of shock present.

Only 1 patient had a temperature higher than 100°F. This was found to be quite useful in differentiating between ectopic pregnancy and pelvic infection.

Abdominal tenderness was the commonest and most constant sign, being present in 94.7% of the cases. When it was localised to the right iliac fossa, it may be misdiagnosed as acute appendicitis. However, syncope is absent in acute appendicitis and the patient is usually flushed rather than pale. In this series, 1 patient was diagnosed as acute appendicitis but on laparotomy an ectopic pregnancy was found. On the other hand, no cases of appendicitis were seen when laporotomy was performed for ectopic pregnancy.

Shifting dullness was demonstrated in 28 patients (36.4%). When the amount of blood in the peritoneal cavity was less than 500 ml., it was only occasionally present, but was almost invariably present when the amount exceeded 1.5 litres.

In acute cases, the most helpful pelvic findings were tenderness in the fornix and pain on rocking the cervix. In other cases, the finding of a tender adnexeal mass or a pelvic haematocoele was also helpful. Sometimes, difficulty may arise in differentiating between ectopic pregnancy and haemorrhage into or rupture of a follicular cyst. A useful guide is that in the case of a follicular cyst, there is no period of amenorrhea, the cervix is firm and there is no enlargement of the uterus.

Accessory Aids to Diagnosis

1. *Laboratory Investigations*

   Haemolgobin: In 46.8% of the patients in this series, the haemoglobin was less than 10 gm. per cent.

   Total White Count: A leucocytosis of more than 10,000/ul was present in 48.0% of the patients.

   Gravindex: In the 31 patients in whom a pregnancy test was performed, 18 (58.1%) was positive. This is of little diagnostic value.

2. *Colpocentesis*

   This was performed in 8 cases in this series. In all the cases, blood was obtained. Characteristically, the blood did not clot on standing.

3. *Examination under anaesthesia*

   It revealed or confirmed the presence of a mass in the pelvis which could not be definitely palpated before the patient was put unde anaesthesia.

4. *Curettage*

   Curettage was of limited value as decidual reaction was only occasionally found and then also the diagnosis was inconclusive.

5. *Laparoscopy*

   Laparoscopy was performed in 4 cases and was found to be a useful diagnostic aid. The tubal pregnancy or pelvic haematocoele was easily visualised and ectopic pregnancy confirmed or excluded.

Diagnosis

In the present series, 71 patients (92.2%) were correctly diagnosed as ectopic pregnancy prior to surgery. Most of the cases were diagnosed early on admission, however there was a delay in 5 cases. Three cases were initially admitted as threatened abortion, but on reviewing them the following day, a diagnosis of ectopic pregnancy was made. One patient was admitted to the Medical wards and investigated as a case of anaemia with ascites. Abdominal paracentesis revealed frank blood and the patient referred for a gynaecological opinion when the diagnosis of ectopic pregnancy was made. The other patient was admitted to the Surgical wards with the diagnosis of bleeding haemorrhoids. When the bleeding was found to arise from higher up on proctoscopy, a sigmoidoscopy was perfromed. The rectal wall was seen to be eroded by what the

surgeon felt was the placenta. Abdominal examination revealed a 28 weeks' size abdominal mass and a secondary abdominal pregnancy was confirmed at laparotomy.

The other 6 cases were wrongly diagnosed and ectopic pregnancy was only apparent at laparotomy.

Management

1. *Resuscitation*

In the acute cases, prompt resuscitation of the patient is essential. Blood loss should be replaced by blood transfusion. In most centres, Blood-Bank blood is readily available and in the time taken between diagnosis and surgery, the blood can be grouped, cross-matched and transfusion begun. Williams and Corbit (1944) in analysing 101 deaths from ectopic pregnancy found that blood was given in only a little more than 55% of the patients.

When donor blood is not readily available, (Pathak and Stewart, 1970) auto-transfusion is a useful method of restoring blood volume during an emergency. The blood in the peritoneal cavity must not only appear fresh but should be free of clots before it is used. In the present series, auto-transfusion was given in 3 patients. All of them made an uneventful recovery.

2. *Surgical Procedure*

The surgical procedures are summarised in Table V.

Table V

Surgical Procedures	No.	Percentage
Primary Operation :		
Salpingectomy	58	75.3%
Salpingo-oophorectomy	9	11.7%
Preservation of affected tube	4	5.2%
Hysterectomy	6	7.8%
Incidental Operation :		
Removal of other tube/ tubal ligation	15	
Salpingolysis	2	
Ovarian cystectomy	2	
Colostomy	1	

Salpingectomy was by far the most common surgical procedure. It is a safe, simple and effective means of controlling bleeding and removing the tubal pregnancy. Total salpingectomy was usually performed unless conservative procedures had been decided upon.

Salpingo-oophorectomy was performed when there was associated ovarian pathology or if the surgeon felt that he was unable to conserve the ovary. It was also performed in one case of tubo-ovarian ectopic pregnancy. In general, the ovary should be conserved as removal of a healthy ovary is unnecessary. However, Jeffcoate (1955) and Bender (1956) advocated salpingo-oophorectomy so that all subsequent ova originated from the ovary adjacent to the fallopian tube left behind and thus increasing the chances of conception.

Hysterectomy was performed in 6 cases in this series. All the patients were multiparous with one or more children. In 2 patients, hysterectomy was performed for rupture of an interstitial ectopic pregnancy. Two other patients had hysterectomy because of a clinical suspicion of choriocarcinoma at operation. One of the two patients turned out to be a ruptured interstitial pregnancy and the other a secondary abdominal pregnancy in the posterior vaginal wall. The last case was the patient who had a 28 week secondary abdominal pregnancy. The uterus had ruptured posteriorly and the placenta implanted in the pouch of Douglas and the rectum. The uterus and the foetus were removed and a temporary colostomy performed.

In 50% of ectopic pregnancy, the patient is anaemic and cannot stand prolonged anaesthesia and surgery. Therefore, the fundamental principle is to control bleeding by the simplest, safest and most effective method possible. Elaborate surgical procedures should be confined to those patients who are fit or in whom no other alternative is possible.

Operative Finding :

These are summarised in Table VI and are self-explanatory. The commonest site of ectopic pregnancy is in the fallopain tube. There is an equal chance of the right or left tube being the site of the ectopic pregnancy. The commonest sites of tubal pregnancy are in the ampulla, the isthmus and the fimbrial end, in a descending order of frequency. In 66.2% of the cases, the other tube was normal. The corpus luteum was noted in 12 cases and in 50% of them it was on the opposite side of the tubal pregnancy.

Table VI

Operative findings		No.	Percentage
Tubal Pregnancy:	Side: Right	39	52.0%
	Left	36	48.0%
	Site: Ampulla	36	48.0%
	Isthums	18	24.0%
	Fimbrial	16	21.3%
	Interstitial	3	4.0%
	Tubo-ovarian	2	2.7%
Other Sites:	Abdominal (secondary)	2	
Condition of other Tube:	Normal	51	66.2%
	Chronic Salpingitis	14	
	Hydrosalpinx	3	
	Tube absent	8	
	Tube partly removed	1	
	Evidence of ligation	1	
Pelvic Pathology:	Ovarian cyst	3	
	Endometriosis	2	
	Uterine myoma	2	
Corpus Luteum	Same side as ectopic	6	
	Other side	6	
	Not stated	60	

Summary

An acute sense of suspicion of ectopic pregnancy will help a great deal in arriving at an early diagnosis of this condition. Accurate history and physical examination are the most important considerations. The patient who presents with shock, abdominal pain, bulging cul-de sac and tender pelvic mass should be easily diagnosed and quickly treated. When the history is atypical and physical examination inconclusive, colpocentesis, examination under anaesthesia and laparoscopy will often provide the answer. A small number of patients will still require exploratory laparotomy before the diagnosis is apparent. These are usually in whom laparotomy would in any case be indicated because of an intra-abdominal mass or intra-peritoneal haemorrhage.

Prompt resuscitation and judicious surgical intervention will practically eliminate death as a result of ectopic pregnancy. The importance of blood transfusion is stressed. Where donor blood is not available or is insufficient auto-transfusion is a safe and life-saving measure. Operative measures should be aimed at controlling bleeding by the simplest, safest and most effective method. Incidental operative procedures should not be performed if the patient is in a poor condition or if there is a large quantity of free blood in the abdomen.

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