

Symptoms Related to the Anatomical Situation in Fifty Cases of Ectopic Pregnancy*

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SUMMARY

A prospective study of the symptomatology of 50 consecutive cases of tubal ectopic pregnancy was made. This was related to the site of the pregnancy in the tube. Of the pregnancies 54% were located in the ampulla of the tube, 30% were fimbrial in position, 6% interstitial and 10% were in the isthmus. Accurate and careful history-taking will help to decrease the margin of about 20% of cases where an incorrect diagnosis is made. The duration of amenorrhoea and of symptoms experienced varied with the site in the tube. Vaginal bleeding is greatest if the pregnancy is distal in the tube. A previous history of pelvic inflammatory disease is important.

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In spite of the use of antibiotics in the treatment of pelvic infection, ectopic pregnancies continue to occur.¹ The quoted incidence varies from 1 : 30 to 1 : 200 live births and accounts for up to 10% of the total maternal mortality in some countries.

Tubal pregnancy has been recognized for 3 centuries yet the problems of accurate and early diagnosis have not been solved.² Diagnostic techniques including colpopuncture, colpotomy, laparoscopy, radiography, ultrasonics, biological pregnancy tests, cytological examination of the blood and histological examination of the endometrium have a limited usefulness in selected cases. These tests lose their value if the importance of recognizing the symptoms of early pregnancy is ignored and it must be remembered that these symptoms may vary with the position in the tube. Most studies in the literature are retrospective. For these reasons a prospective study of the presentation of ectopic pregnancy was undertaken.

MATERIAL AND METHODS

In view of the wide social spectrum in Cape Town, we have a high incidence of ectopic pregnancy which probably reflects socio-economic rather than biologic factors.

During the 6-month period 1 February - 31 July 1969, 50 cases of proved ectopic pregnancy were treated in Groote Schuur Hospital. These patients were personally interviewed pre-operatively and a very detailed history of the symptoms was elicited. The site of the pregnancy in the tube was then accurately recorded at operation.

*Date received: 10 August 1971.

RESULTS

Table I shows the distribution of patients with respect to average age, parity, duration of amenorrhoea and symptoms related to the location of the pregnancy in the tube.

TABLE I. AGE, PARITY, AMENORRHOEA, DURATION OF SYMPTOMS

| | Site in tube | | | |
|-----------------------------|--------------|---------|-----------|----------|
| | Interstitial | Isthmic | Ampullary | Fimbrial |
| Average age (years) | 34 | 36 | 29 | 30 |
| Parity | 3 | 6 | 3 | 5 |
| Amenorrhoea (days) | 14 | 35 | 56 | 28 |
| Duration of symptoms (days) | 2 | 7 | 14 | 5 |

The average age of the patients studied was 32 years, and 16% were nulliparous. The duration of amenorrhoea was calculated as the interval between the last menstrual period and the onset of symptoms. This varied from 10 days to 140 days, with an average of 33 days. Those patients who apparently did not miss a period, all had some change in their last period. From the table it can be seen that the patients with ampullary pregnancies were symptomatic for the longest period of time.

Tables II and III show how the nature and situation of the pain varied with the site of the pregnancy. Ninety per cent of patients described the pain as being sudden in onset and Table II shows that 80% experienced the pain as being colicky in character. In 58% of the series the pain was felt in the midline and when radiation occurred it did so to the whole abdomen, the anus or the opposite iliac fossa. A search for aggravating and relieving factors was disappointing and did not follow a pattern.

The pain preceded vaginal bleeding in all the isthmic pregnancies, in 80% of the fimbrial, in 33% of the interstitial and in 60% of the ampullary ectopics.

TABLE II. NATURE OF THE PAIN

| | Site in tube | | | |
|----------------|--------------|---------|-----------|----------|
| | Interstitial | Isthmic | Ampullary | Fimbrial |
| Colicky | 2 | 4 | 21 | 13 |
| Sharp/stabbing | 1 | — | 4 | 1 |
| Uncertain | — | — | 2 | 1 |

TABLE III. SITUATION OF THE PAIN

| | Site in tube | | | |
|----------------------|--------------|---------|-----------|----------|
| | Interstitial | Isthmic | Ampullary | Fimbrial |
| Subumbilical midline | 1 | 2 | 16 | 10 |
| Either iliac fossa | 1 | 3 | 8 | 5 |
| Peri-umbilical | 1 | — | 1 | — |

Pain over the spine of the scapula was experienced by 12 of the patients. In all these cases the tube was found to be ruptured at laparotomy.

Vaginal bleeding occurred in 72% of cases and Table IV shows the distribution of the amount of bleeding. Decidual casts were identified in 3 patients.

TABLE IV. AMOUNT OF BLEEDING

| | Site in tube | | | |
|---------------------|--------------|---------|-----------|----------|
| | Interstitial | Isthmic | Ampullary | Fimbrial |
| None | 2 | 3 | 4 | 5 |
| Minimal | — | 1 | 3 | 1 |
| Spotting | 1 | — | 11 | 6 |
| Profuse, with clots | — | 1 | 9 | 3 |

The associated symptoms seen in Table V were specifically asked for and related to the site of the tubal ectopic. Nausea and/or vomiting occurred in 66% of cases, 'feeling faint' in 56%, bowel and urinary symptoms in 40%, and 3 patients had acute retention of urine.

TABLE V. ASSOCIATED SYMPTOMS

| | Site in tube | | | |
|---------------------------|--------------|---------|-----------|----------|
| | Interstitial | Isthmic | Ampullary | Fimbrial |
| Nausea | 1 | 2 | 10 | 7 |
| Vomiting | 2 | 1 | 6 | 4 |
| Fainting or 'dizziness' | 1 | 3 | 14 | 10 |
| Bowel or urinary symptoms | 1 | 2 | 14 | 6 |

Past History

Ten per cent of cases had had a previous tubal pregnancy and 3 patients had undergone tubal ligation in the past. One of these patients was experiencing a second ectopic pregnancy since the procedure. Thirty per cent of the patients gave a history of having been treated for pelvic infection.

The condition was most often confused with salpingitis, appendicitis and urinary infection, before a definite diagnosis was made.

DISCUSSION

The present study provided an opportunity for accurately recording prospectively the symptoms of ectopic pregnancies, a point which has been omitted in other large retrospective studies.³ The site of the pregnancy in the tube was recorded in an attempt to relate the symptoms to the anatomy.

The acute presentation of an ectopic pregnancy with sudden pain and collapse presents no diagnostic difficulties. However, this presentation does not exceed 25-30% in most series³ and accounted for only 10% in this series. The remainder have only minimal suggestive symptoms and may give rise to confusion.

In this study 54% of the pregnancies were located in the ampulla, 30% in the fimbrial portion, 6% in the interstitial portion and 10% in the isthmic portion. These results agree with other studies.^{4,5} The fact that approximately 80% of the pregnancies were found in the dilated outer half of the tube and about 10% in the isthmus is reasonable anatomically, physiologically and pathologically. The initial anatomic impediment occurs where the dilated terminal portion of the tube meets the narrower isthmus, causing the fertilized egg to implant distal to the initial area of narrowing.⁶ Physiologically the 'sphincter action' of the isthmus produces temporary arrest of the fertilized egg and pathologically the most complex forms of follicular salpingitis, with resultant diverticula, are noted here.

The average period of amenorrhoea before the onset of symptoms was 33 days. It thus requires approximately 3 weeks for the pregnancy to develop sufficiently to produce changes resulting in symptoms. The longest period of amenorrhoea occurred when the pregnancy was in the ampullary portion of the tube, which suggests a greater distensibility and capacity to contain a pregnancy than the narrower portions of the tube. This has been demonstrated experimentally.⁶ This may also account for the duration of symptoms being greater when the pregnancy is situated in the more distensible distal portion of the tube.

Pain was described as sudden in onset and preceded vaginal bleeding in nearly all cases, except when the ectopic was ampullary in situation. It may be that in the latter situation the embryo dies, resulting in vaginal bleeding before tubal rupture or tension of the peritoneal covering occurs. All the cases of isthmic pregnancy had pain as the first and most prominent symptom which further substantiates this reasoning. Also, the isthmic mucosa has been noted to have the richest nervous network.⁷

In another series⁸ less than half the patients described the nature of their pain as colicky, whereas 80% of our cases did so, and this was felt to be most helpful in making a diagnosis. In all cases the pain was in the lower abdomen and in the midline in over 50% of these. The localization of the pain did not appear to have any relationship with the site of the pregnancy in the tube.

One quarter of the patients complained of shoulder-tip pain, which is in keeping with findings in other series. Douglas⁹ commented that, as haemoperitoneum is not found in all such cases at operation, some other factor

must contribute to this symptom. However, in all our cases with this symptom the tube was found to be ruptured.

Vaginal bleeding occurred in 80% of our patients, which is in agreement with other series.^{6,8,9} Bleeding was more profuse when the pregnancy was situated towards the fimbrial end of the tube. This could be a reflection of the length of survival of the pregnancy, as it is believed that vaginal bleeding is endometrial in origin and does not occur while the embryo is alive.¹⁰

Fainting was noted in 56% of the histories in this series which agrees with another study.¹¹ However, other authors describe this symptom in only 20% of their patients.¹² The explanation of this variation is obscure.

Nausea, vomiting, urinary and bowel symptoms are factors which, although not diagnostic, point to the diagnosis and occurred in approximately 50% of our cases. They did not bear any relation to the site of the pregnancy in the tube.

The very high incidence of ectopic pregnancy in Cape Town could be a reflection of the high incidence of pelvic inflammatory disease in the community. In this series 30% of the patients gave a history of previous pelvic infection, and 1 patient had suffered from abdominal tuberculosis. It has been fairly well established that pelvic inflammatory disease predisposes to ectopic pregnancy.¹³ Tubal ligation has been accused of causing ectopic pregnancy, and in this series 3 patients had previously undergone this procedure. However, in the majority of cases of ectopic pregnancy, there are no obvious predisposing causes, and factors such as internal and external transmigration of the ovum, tubal spasm, delay in the transport of the fertilized ovum, irregularities of ovulation, endometriosis and congenital tubal anomalies must all play a part.

CONCLUSION

It can be seen from this study that accurate and careful history-taking in patients with acute pelvic pathology is most important in diagnosing ectopic pregnancy.

A history of the sudden onset of colicky, midline, lower abdominal pain is highly suggestive of tubal pregnancy. The variability regarding the period of amenorrhoea and length of symptoms is related to the site of the pregnancy. Vaginal bleeding occurred in 80% of cases and was greater in the distal portion of the tube. Fainting, nausea, vomiting, bowel and urinary symptoms are pointers to the diagnosis and past history of pelvic inflammatory disease or of a previous ectopic pregnancy is important.

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