

THE VALUE OF SONOGRAPHY IN THE DIAGNOSIS OF ECTOPIC PREGNANCY

By

K. BUCKSHEE, D. DEKA AND U. R. SHARMA

SUMMARY

Ectopic pregnancy (EP) continues to remain a diagnostic challenge despite recent technological advances in this field. In a series of 84 surgically managed patients of EP, abdominal pain was noted in all cases (100%), irregular vaginal bleeding in 68 (80.3%) and ammenorrhoea in 66 (80%). Adnexal tenderness and adnexal mass or fullness in the culdesac in 53 (63%) were the common findings.

Ultrasound was performed in 25 cases where the diagnosis was in doubt. It revealed an empty uterus in all cases (100%); Adnexal mass in 24 (96%), out of which 3 cases (12%) also had fluid in the pouch of Douglas.

Thus ultrasound could clinch the diagnosis of EP in 24 cases (96%). In only 1 case diagnosis of EP was inconclusive and laparoscopy done subsequently revealed an EP.

This study revealed the usefulness of ultrasound in early diagnosis of ectopic pregnancy so that prompt and appropriate treatment could be instituted. Routine and careful sonographic evaluation of candidates at risk for ectopic pregnancy will either exclude or diagnose an ectopic pregnancy. Diagnostic accuracy could be maximized and errors minimized if sonographic evaluation is complemented by the clinical data.

Introduction

Despite several diagnostic advances made during recent years, ectopic pregnancy still remains a dramatic surgical emergency in clinical practice. In the developing and underdeveloped countries it is considered as a major public health problem with its resultant varying maternal mortality and morbidity rates (Bhatnagar *et al*, 1982;

Jabbar, 1980; Beral, 1975; Breen, 1976). The key to successful management of ectopic pregnancy lies in early diagnosis and prompt institution of appropriate therapy.

The use of high resolution ultrasound, sensitive HCG assays and laparoscopy provide effective assistance in establishing an early accurate diagnosis of ectopic pregnancy, besides the clinical assessment. The aim of this communication is to analyse the reliability of ultrasound (u/s) as an aid in the early diagnosis of ectopic pregnancy.

From: Deptt. of Obstet. Gynec. AIIMS, New Delhi.

Accepted for publication on 2-6-89.

Material and Methods

A careful, detailed history was taken and physical examination was done in 84 cases of ectopic pregnancy. Ultrasound was performed in patients in whom the diagnosis was in doubt, in the deptt of Obstetric and Gynaecology, AIIMS. The findings were then correlated with the laparotomy findings.

pregnancy was suspected. The findings on ultrasound were as follows:

1. an empty uterus in all 25 cases (100%),
2. a complex adnexal mass in 21 cases (84%),
3. an adnexal mass and fluid in the cul-de-sac in 3 cases (12%).

TABLE I
Correlation of Diagnosis of Ectopic Pregnancy on Ultrasound with Laparotomy Findings

U/S findings	No. of cases	U/S Diagnosis	Laparotomy findings
1. Empty uterus, adnexal mass fluid in POD	3	EP	EP
2. Empty uterus, adnexal mass	21	EP	EP
3. Empty uterus only	1	?EP	EP

EP—Ectopic pregnancy.

If ultrasound was inconclusive, laparoscopy was done to confirm the diagnosis of ectopic pregnancy prior to laparotomy.

In 1 case the patient had an empty uterus with no adnexal mass or fluid in the cul-de-sac. A diagnosis of ectopic pregnancy was confirmed by laparoscopy. Ectopic pregnancy was finally diagnosed on laparotomy in all the cases. Thus U/S clinched the diagnosis of ectopic pregnancy in 24 out of 25 cases (96%).

Results

In this series of 84 cases of ectopic pregnancy, abdominal pain was noted in all 84 cases (100%), while 68 (80.3%) had irregular vaginal bleeding and 66 (80%) had history of amenorrhoea. Adnexal tenderness and adnexal mass or fullness of the cul-de-sac was found in 53 (63%) cases.

In 25 patients ultrasound was performed as an aid to diagnosis, since the clinical findings were inconclusive, but ectopic

Discussion

Careful history taking and physical examination can diagnose ectopic pregnancy in only 50% cases according to Weckstien (1987). Final diagnosis often requires use of newer diagnostic modalities such as ultrasound, human chorionic gonadotrophin assays and laparoscopy.

The diagnosis of ectopic pregnancy in our study, was based on strong clinical features like pain, amenorrhoea, irregular vaginal bleeding, adnexal mass and cervical tenderness. But in doubtful cases final diagnosis depended on ultrasound or laparoscopy. Thus ultrasound provided excellent assistance in this series in confirming the diagnosis in 24 out of 25 cases (96%). The presence of a complex adnexal mass with fluid in the cul-de-sac with no intra-uterine gestation sac was diagnostic of ectopic pregnancy in 3/3 cases (100%). The presence of a complex adnexal mass and an empty uterus was also consistent with

the diagnosis of ectopic pregnancy in 21/21 cases (100%).

Therefore, ultrasound in conjunction with clinical findings can be used to distinguish between the presence of an ectopic pregnancy and intra-uterine pregnancy in 96% of cases. DeCherney *et al* (1985) and Crespigny *et al* (1987), stated that when ultrasound reveals the presence of an intra-uterine gestation sac, ectopic pregnancy is for all practical purposes excluded, as the simultaneous occurrence of an intrauterine pregnancy and ectopic pregnancy is very rare—1:30,000. High resolution gray scale ultrasound is capable of detecting a gestational sac between 5-6 weeks after the last menstrual period. In our series, 80% cases had amenorrhoea more than 5-6 weeks. A sonolucent area surrounded by a well-defined echogenic ring was indicative of an intrauterine pregnancy. A complex adnexal mass or adnexal ring, fluid collection behind the uterus and cul-de-sac, empty uterine cavity and poor decidual reaction are the various sonographic land-marks for diagnosis of ectopic pregnancy. In the series of Romero *et al* (1988), a positive pregnancy test with: (a) an empty uterus, was diagnostic of ectopic pregnancy, in 65%, (b) an empty uterus and complex adnexal mass in 83% cases, and (c) an empty uterus, a complex adnexal mass and fluid in POD in 94-95% cases.

Kader, 1981, Romero *et al*, 1986; found that a serum HCG of 6,500 mIU/ml with no intrauterine gestation sac on ultrasound was also suggestive of ectopic pregnancy in 86-87% of cases. But only 40% of ectopic pregnancies have HCG more than 6,500 mIU/ml (Romero, 1988). A fetal mass and

sac can be noted within the uterine tube in only 4%. DeCherney, (1985) states that early diagnosis permits scheduled surgery with optimal facilities so that the surgeon's attention in the stable patient may then be focussed on proper handling and surgical technique to preserve fertility, and is not limited to life saving measures only.

Thus, this study emphasizes that early utilization of definite diagnostic procedures, of which ultrasound demonstration of an empty uterus, a complex adnexal mass or fluid in the POD are consistent with the diagnosis of an ectopic pregnancy in a clinically suspect case. This has enabled a certain number of ectopic pregnancies to be treated with conservative surgery in women desiring fertility; and also considerably lowered the maternal mortality and morbidity rates.

References

1. Bhatnagar, S.: *Ind. J. Med. Resh.* 75: 47, 1982.
2. Beral, V.: *Brit. J. Obstet. Gynec.* 85: 755, 1975.
3. Breen, J. L.: *Am. J. Obstet. Gynec.* 106: 1004, 1976.
4. Crespigny, L. C.: *Lin. Obstet. Gynec.* 30: 136, 1987.
5. DeCherney, A. H. and Jones, E. E.: *Clin. Obstet. Gynec.* 28: 365, 1985.
6. Jabbar, F. A.: *Int. J. Obstet. Gynec.* 18: 214, 1980.
7. Kader, N., Caldwell, B. V. and Romero, R.: *Obstet. Gynec.* 58: 162, 1981.
8. Romero, R., Kader, N., Copel, J. A., Jeanty, P. and DeCherney, A. H.: *Am. J. Obstet. Gynec.* 155: 392, 1986.
9. Romero, R., Kader, N., Castro, D., Jeanty, P., Hobberis, J. and DeCherney, A.: *Am. Obstet. Gynec.* 52, 1988.
10. Weckstein, L. N.: *Clin. Obstet. Gynec.* 30: 236, 1987.