ROLE OF ULTRASOUND IN THE DIAGNOSIS OF ECTOPIC PREGNANCY

By

MINA S. BHATTACHARYYA AND MAHENDRA SHRESTHA

SUMMARY

It is suggested that USG be performed in all suspected ectopic pregnancies prior to laparoscopy, the advantage being the diagnosis of early intra-uterine pregnancy and unexpected pathologies like incomplete abortion, tuberculous abdomen, haemorrhagic corpus luteum and cystic ovaries. If the USG is normal and the clinical suspicious is high (including positive beta HCG estimation) laparoscopy should be performed as a normal ultrasound finding does not exclude a small ectopic.

Material, Method and Results

In all, 76 patients were admitted and operated in a large teaching hospital for ectopic pregnancy during a period of 27 months from January, 1985 to March, 1987. All these patients were between 20-40 years age except 2, who were less than 20 years. Fourteen were above 30 years. It was surprising to observe that 58 (76.3%) were parous women. In the remaining 18 nulliparous women, only 8 gave a previous history of infertility. Two patients had previously been operated for ectopic pregnancy, 3 had undergone tubal ligation, 3 had intra-uterine contraceptive device at the time of operation and 2 had history of recent removal of IUCD. Five patients had undergone dilatation and curettage prior to presenting with ectopic pregnancy.

Among these 76 patients, 46 were admitted with a clinical picture of an acute ruptured ectopic pregnancy. All were confirmed either by colpo-puncture or abdominal tap; and were explored. In one case exploratory laparotomy was negative. In this case a prior ultrasound examination would have been helpful in avoiding a laparotomy. All the rest underwent surgery for ectopic pregnancy. The remaining 30 patients were diagnosed clinically on admission as shown in Table I.

TABLE I

Distribution of the Referral Diagnosis in 30 Patients Available for Follow up with U.S.G.

Clinical diagnosis	No.
Chronic ectopic pregnancy	17
Chronic P.I.D.	8
Ruptured uterus	1
I.U.F.D.	1
Pregnancy with fibroid	1
Tubal ligation	1
Missed abortion	1

One patient who had an unruptured ectopic had come voluntarily for tubal ligation and diagnosis of ectopic preg-

From: Departments of Obstetrics & Gynaecology and Radiology Seth G. S. Medical College and K. E. M. Hospital, Parel, Bombay-400 012.

Accepted for publication on 30-10-87.

nancy was made during laparoscopy. Another patient presented with 32 weeks of amenorrhoea and a ruptured uterus. This was a case of advanced abdominal pregnancy and death occurred due to uncontrolled post-operative haemorrhage. Barring these two cases, 28 patients were subjected for ultrasound scans. These proved to be confirmatory in 17 cases, diagnostic in 7 cases and misleading in 4.

In 17 cases the referral diagnosis of chronic ectopic pregnancy was confirmed. In these on ultrasound scans the uterus was either bulky or normal in size. Decidual reaction was noted in only 10 of the 17 cases. The adnexa showed complex masses in varying sizes and shapes with predominently solid components. Free fluid in the cul-de-sac was noted in 6 cases of ruptured ectopic pregnancy. Unruptured live ectopic gestation was detected in one patient who had subsequent rupture before exploratory laparotomy. Among the 7 diagnostic cases, 8 were referred with a clinical suspicion of chronic pelvic inflammatory disease. Of these 4 were diagnosed as ruptured ectopic pregnancy on ultrasound. These patients were hospitalised a couple of days prior to ultrasound examination. Fortunately scanning was done before they became haemodynamically unstable. The other 2 patients had unruptured ectopic pregnancies which on ultrasound showed complex adnexal masses with midline shift of the bulky uterus. One of these patients also showed an I.U.C.D. in the uterine cavity alongwith an adnexal mass. One patient was referred with 20 weeks of amenorrhoea and fibroid of the uterus. On scanning she was diagnosed as a secondary abdominal pregnancy with a dead fetus. The gestational sac was found lying posterior to the uterus. Among the 4 misleading cases, one patient was diagnosed to be a case of I.U.F.D. both clinically and ultrasonically. She failed to abort and a subsequent exploration showed a broad ligamentary ectopic pregnancy of 12-14 weeks gestation and a normal retroverted uterus with swollen adnexa. In another patient the ultrasound diagnosis was that of an incomplete abortion with a retention cyst, due to the uterine cavity showing an irregular gestational sac. On laparoscopy a diagnosis of unruptured tubal pregnancy was arrived at. The other two patients were thought to be tubo-ovarian masses on scans, but later proved to be tubal ectopic pregnancies on laparoscopy.

Discussion

It is reported that incidence of ectopic pregnancy is on an increase. Concern has been expressed by various authors over maternal deaths due to it. George L. Rubin *et al* (1983) have reported an increase in the maternal mortality rate from 7.8% to 11.5% between 1970 and 1978. Tancer *et al* (1981) have also reported 6-13% of maternal death occurring in U.S.A. due to ectopic pregnancy. In our series of 76 patients during a period of 27 months there was one death due to advanced secondary abdominal pregnancy. Thus attempts at early diagnosis with the help of ultrasound examination could be helpful in reducing maternal mortality.

History of infertility, tubal surgery, recent D & C or IUCD removal and a history of previous ectopic pregnancy form a significant diagnostic clue and increase the index of clinical suspicion. Such patients should promptly undergo ultrasound examination. Diagnostic problems arise in patients with a low clinical index of suspicion. An active effort should be made to confirm or refute the diagnosis of

ectopic pregnancy by ultrasound examination. Since ultrasonography is a non-invasive procedure, it is preferred over the invasive procedure of laparoscopy. It is found to be very useful in clinically questionable cases, where unexpected pathological lesions are detected or an unsuspected intrauterine pregnancy is found. USG is specifically useful in diagnosing secondary abdominal or live ectopic pregnancy. It is of great help in diagnosing acute rupture where considerable free fluid may be noted in the pouch of Douglas or in the abdomen. In chronic ectopic pregnancy with the formation of a T.O. mass and absence of free fluid in the cul-de-sac, it becomes difficult to distinguish this from an inflammatory T.O. mass. Kadar *et al* (1981), have suggested quantitative estimation of HCG in addition to USG for the diagnosis of ectopic pregnancy. HCG levels alongwith USG are far superior in differentiating intra-uterine normal and abnormal pregnancies as well as ectopic pregnancies at an early gestational period. In order to prevent procrastination under observation in doubtful cases, laparoscopy should follow USG screening to confirm the diagnosis and further reduce the chances of negative explorations. In a series of 43 cases of ectopic pregnancy of Wade *et al* (1985), USG was found to be confirmatory in 24, diagnostic in 10 and misleading in 9 cases. This group of misleading diagnosis was thought to be primarily with very early pregnancy when the gestational sac could not be visualised. In our series, 4 reports did not reveal actual status of the patients. In two of the cases, adnexal masses were thought to be inflammatory in origin. In one case, decidual reaction was misinterpreted as a crumpled gestational sac. No adnexal mass was detecetd in this case because of early ectopic pregnancy (less than 7 weeks of gestation). In one case, a broad ligament ectopic pregnancy of 12-14 weeks was misinterpreted as an I.U.F.D., probably due to retroversion of the uterus and inadequate technical skill of the sonographer. Rest of the clinically stable women suspected of an ectopic pregnancy were confirmed to be having ectopic pregnancy on ultrasound and unsuspected cases too were diagnosed. Thus timely USG examination in all questionable cases can be of great help in reducing the morbidity and mortality due to ectopic pregnancy. Negative explorations are minimised due to diagnosis of an ectopic pregnancy by USG.

Acknowledgements

We thank Dr. G. B. Parulkar, the Dean, Seth G.S. Medical College and K.E.M. Hospital, Bombay, for allowing us to publish the Hospital data.

References

1. George, L. Rubin, Herbert, B. Peterson, Sally Faith Dorfman, Peter, M. Layde, Joyce, M. Maze, Howard, W. Ory and Willard, Cates Jr.: Ectopic Pregnancy in United States, JAMA, 249: 13, 1725, 1983. 1983.
2. Kadar, N., DeVore, G. and Romero, R.: The discriminatory HCG Zone: Its uses in the sonographic evaluation of ectopic pregnancy. Obstet. Gynec. 58: 156, 1981.
3. Tancer, M. L., Deke, I. and Veridiano, N. P.: Surgery Gynec. Obstet. 152: 197, 1981.
4. Wade, V. R., Smythe, A. R., Watt, G. M., Dennis, E. J. and Benett, A. H.: Reliability of Gynaecologic Sonographic diagnosis. Am. J. Obstet. Gynec. 153: 2, 186, 1985.