ORIGINAL ARTICLE

ULTRASONOGRAPHY & CLINICAL ANALYSIS PLAYS CRUCIAL ROLE IN DIAGNOSIS AND MANAGEMENT OF ECTOPIC PREGNANCY: STUDY IN TERTIARY CARE HOSPITAL KIMS, KARAD

Manisha M. Laddad¹, Nitin Khirsagar², Sanjaykumar Patil³, Gauri Shinde⁴, Nikunj Shenay⁵

HOW TO CITE THIS ARTICLE:

Manisha M. Laddad, Nitin Khirsagar, Sanjaykumar Patil, Gauri Shinde, Nikunj Shenay. "Ultrasonography & Clinical Analysis Plays Crucial Role in Diagnosis and Management of Ectopic Pregnancy: Study in Tertiary Care Hospital Kims, Karad". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 25, March 26; Page: 4270-4276, DOI: 10.14260/jemds/2015/617

ABSTRACT: PURPOSE OF THE STUDY: This study is undertaken to emphasize the role of ultrasonography in the diagnosis of ectopic pregnancy and clinical analysis of the same in a tertiary care referral hospital. **METHODOLOGY:** Fifty patients with provisional diagnosis of ectopic pregnancy were studied. Physical examination, urine pregnancy test, transabdominal scan using 5 MHz transducer or transvaginal ultrasonography of 7 MHz was done. The diagnosis of ectopic pregnancy was confirmed by direct observation by laparotomy or laparoscopy (which was taken as gold standard). **RESULTS:** The study showed ectopic pregnancy was most common in multigravida and in age group 26-35 years with most of them having married life <10 years. One or more risk factors were found in 72% of cases. 88% of cases presented with acute symptoms, 16% of cases in shock. Among clinical presentation pain abdomen, history of amenorrhea, bleeding per vaginum, abdominal tenderness, and cervical motion tenderness was most common. In ultrasonography, complex mass in adnexa was present in 64% of cases and hemoperitoneum in 56%. 94% of cases were tubal pregnancy with most of them tubal rupture. In 96 % of cases, radical surgery was done. Salpingectomy was the most common surgery done (90%). There was two negative laparotomy in this study where we diagnose ruptured corpus luteal cyst in one case. There was no maternal mortality in this series. **CONCLUSIONS:** In all the 50 cases of ectopic pregnancy studied, the ultrasonography provided definitive diagnosis resulting in 100% sensitivity and 100% specificity, predictive value of positive test being 100%. Ultrasonography done in earlier weeks of gestation had sensitivity of 96% and false negative 4%.

KEYWORDS: Ectopic pregnancy, Laparotomy, Laparoscopy, Ultrasonography.

INTRODUCTION: Although maternal mortality associated with ectopic pregnancy has declined, it still accounts for substantial mortality and morbidity. Ectopic pregnancy is defined as implantation of the blastocyst outside the endometrial lining of uterus. The incidence varies from 1 in 300 to 1 in 100 deliveries.^[1] Although overall incidence of ectopic pregnancy has increased, the risk of death from ectopic pregnancy has declined by 98%.

Ectopic pregnancy is often proclaimed as "the great masquerader," as the diagnosis is complicated by a wide spectrum of clinical presentation varying from asymptomatic cases to hemoperitoneum and shock. The classical triad of amenorrhoea, abdominal pain, and vaginal bleeding is seen in 60% of patients with ectopic pregnancy. A more common complication is the poor reproductive potential after an ectopic pregnancy. Physicians should maintain a high index of suspicion for ectopic pregnancy and should be cognizant of the importance of early diagnosis and early intervention. Hence, early diagnosis and treatment decrease both morbidity and mortality related to ectopic pregnancy.

ORIGINAL ARTICLE

Women who present with pain and bleeding in the first trimester, the differential diagnosis include normal early pregnancy, abortion, molar pregnancy, and ectopic pregnancy and ruptured corpus luteal cyst. The exact diagnosis can be made out with ultrasonography.^[1] Women with damaged fallopian tubes, pelvic infection, smoking, assisted reproductive techniques are at higher risk for ectopic pregnancy. Even many women can develop an ectopic without any of the risk factors.^[2] Increasingly, the ectopic pregnancy is diagnosed before the appearance of symptoms and signs due to wider availability of Trans vaginal sonography and serum β hcg estimation.^[3]

Pelvic ultrasound has revolutionized the diagnostic process of ectopic pregnancy and is now considered the gold standard for the diagnosis of ectopic pregnancy.^[4] Transvaginal ultrasonography, in particular, may identify masses in the adnexa as small as 10 mm in diameter and can provide more detail about the character of the mass. At the same time, evaluate the contents of the endometrial cavity and assessment for the presence of free peritoneal fluid. In adnexa, a live embryo seen in up to a quarter of patients, gestational sac in 66%, as complex mass in 64% of patients with an ectopic pregnancy. Free intraperitoneal fluid is reported in 60% of cases in transvaginal sonography. Echogenic or particulate fluid correlates with hemoperitoneum.^[5] Multiple parameters have sensitivity and specificity of 100% in the diagnosis.^[6]

There is a correlation between threshold levels of hcg above which an intrauterine gestational sac is expected by ultrasonography in a normal pregnancy (Discriminatory zone). β hcg concentration of 1 500 IU/l or higher, an empty uterus on transvaginal sonography identified an ectopic pregnancy with 100% accuracy. The coupling of hcg with transvaginal ultrasonographic findings has therefore greatly facilitated the early diagnosis of ectopic pregnancy. The advent of color flow Doppler technology may even further improve the accuracy of diagnosis.^[7] Ectopic pregnancies had a typical eccentric leash of vessels on color Doppler. Three-dimensional ultrasound is emerging as a possible additional diagnostic tool for ectopic pregnancy.

In most cases, medical line of management with methotrexate is successful. Those who require surgical approach are women who are not suitable to or have failed medical treatment with methotrexate, heterotopic pregnancy, or hemodynamically unstable. Salpingostomy is preferred in women of reproductive age whereas salpingectomy is done in severely damaged tube, recurrent ectopic pregnancy in the same tube, uncontrolled bleeding after salpingostomy, large tubal pregnancy (>5 cm), or who have completed their family.^[8]

This study analyzes the various ultrasonography findings in ectopic pregnancy and management of the same in tertiary referral hospital.

METHODOLOGY: The present study was carried out in patients with ectopic pregnancy attending Krishna institute of medical sciences, Karad in Obstetrics and Gynae department, from October 2012 to September 2013.

Inclusion Criteria: all patients suspected of having ectopic pregnancy by history and clinical examination and ultrasonography were included.

Exclusion Criteria: intrauterine gestation and Ectopic pregnancy managed by expectant or medical line of treatment were excluded.

Fifty patients with provisional diagnosis of ectopic pregnancy were studied. Clinical examination, urine pregnancy test, transabdominal or transvaginal ultrasonography was done.

ORIGINAL ARTICLE

The diagnosis of ectopic pregnancy was confirmed by direct observation by laparotomy/laparoscopy, which was taken as gold standard. The different surgical methods of treatment were noted and post-operative follow-up was done.

RESULTS AND ANALYSIS: During the study period from October 2012 to September 2013, 50 patients suspected of ectopic pregnancy were studied. Peak age of incidence was 26-35 years (56%), followed by patients in age group of 21-25(26%). 16% patients were above 30 years and 10% below 22 years. 2nd gravid were the most sufferers (38%). Primi and 3rd gravida were 24 and 28 %, respectively. Least incidence was found in 4th and above (10%) of the cases had married life <10 years.

Risk factors	No. of cases	%
Tubectomy	10	20
Tuboplasty	03	06
H/O prev ectopic pregnancy	03	6
Intrauterine contraceptive device	04	8
Infertility	10	20
History suggestive of PID	03	6
Previous LSCS	08	16
H/O abortion	04	8
Conceived after ovulation induction	03	6
No identifiable risk factors	05	10
Table 1: Distribution of cases by risk (n=50)		

Some patients had more than one risk factors.

90% of cases were referred with 58% belonging to lower socioeconomic status. One or more risk factors were identified in 33 patients (66%). The most common cause being post tubectomy. In post tubal sterilization procedures, most of them were following abdominal tubectomy (10 cases). In this study, all cases of ectopic pregnancy were following 3 years of sterilization. 3 cases were with consecutive ectopic pregnancy. Among 3 cases following IUCD, 8 had previous LSCS. In infertile patients, secondary infertility was common (10 cases) compared to primary infertility (Table 1).

Most of the cases in our study presented with acute symptoms (58%) and 28(56%) of them had hemoperitoneum more than 1000 ml. 8(16%) cases presented with shock. The most common presentation being pain abdomen followed by amenorrhea and bleeding per vaginum. On examination, 24(48%) cases presented with pallor and 8(16%) of cases with shock. Most common clinical finding being abdominal tenderness and cervical motion tenderness (Table 2) 86% and 80% respectively. 58% of the cases had positive culdocentesis suggesting blood in the pelvic cavity. All the 50 cases had urine pregnancy test positive.

Most common ultrasonography finding was complex mass in the adnexa in 64% of the cases; the complex adnexal mass was present with hemoperitoneum in 60%. In 4 cases, the adnexal mass was on the opposite side as confirmed by laparotomy (Table 3).

Out of 50 cases studied, in 48 cases ultrasonography provided the definitive diagnosis resulting in 96 % sensitivity and specificity. Predictive value of positive test being 100%.

ORIGINAL ARTICLE

In 2 cases, the previous scan done 15 days prior had shown complete abortion with no evidence of extra uterine pregnancy. As the symptoms persisted, the repeat scan showed hemoperitoneum with adnexal mass. Hence, the earlier scan had sensitivity of 96%, specificity 100%, and false negative being 4%. 96% were tubal pregnancy.

	No. of cases	%
Symptoms		
Pain abdomen	45	90
Amenorrhea	43	86
Bleeding PV	30	60
Vomiting/nausea	11	22
Fever	03	6
Fainting attacks	01	2
Signs		
Pallor	24	48
Hypotension and shock	08	16
Abdominal tenderness	43	86
Guarding	07	14
Distension	12	24
Cervical motion tenderness	40	80
Fornicial tenderness	36	72
Mass in the fornix	16	32

Table 2: Clinical presentation analysis (n=50)

Some patients had more than one clinical signs and symptoms.

Ultrasonographic Findings	No. of cases	%
Complex mass in adnexa (mixed echogenecity)	32	60
Cardiac activity in adnexa	08	16
Gestational sac in adnexa	04	8
Hemoperitoneum	28	50
Intrauterine pseudogestational sac	08	16
Negative laprotomy	02	04

Table 3: Ultrasonographic findings (n=50)

Some patients had more than one finding.

Right being the most common site. Among tubal pregnancies, 48% were tubal rupture (Table 4).

In 98% of cases, radical surgery was done. Salpingo ophorectomy was done in 3(6%) cases. 1 case was of ovarian pregnancy. In 24% of cases, salpingectomy was done in opposite tube (Table 5). 8% of cases had prior history of dilatation and evacuation as a result of faulty diagnosis. 2 cases were following failed medical line of treatment. There was no maternal death in this series. Two negative laparotomy in this series.

ORIGINAL ARTICLE

DISCUSSION: Incidence of ectopic pregnancy in this study was 1 in 148 which is comparable to other Indian studies of Arora et al. (1 in 160)^[10] and Arup et al. (1 in 161).^[3] The peak age of incidence was 26-35 years and majority was gravid 2 or less; it is consistent with study by Arup et al. 66% of cases had one or more risk factors similar to study by Arup et al.

Laparotomy findings	No. of cases	%
Site		
Tubal	47	94
Ampulla	38	76
Isthmus	06	12
Interstitial	02	4
Fimbrial	02	4
Ovary	01	2
Secondary abdominal	01	2
Side		
Right	30	60
Left	20	40
Mode of termination of tubal pregnancy (n = 48)		
Unruptured	04	8
Tubal abortion	22	44
Tubal rupture	23	48
Pelvic pathology		
Adhesions	05	10
Hydrosalpinx	06	12
Corpus luteum	03	6
Pelvic haematocele	02	4

Table 4: Laparotomy findings

Treatment	No. of cases	%
Treatment for ectopic		
Milking	01	2
Fimbriectomy	01	2
Salpingectomy	45	90
Salpingo-oophorectomy	03	6
Treatment for other tube		
Tubectomy	04	8
Salpingectomy	07	14
Salpingo-oophorectomy	02	4
Anesthesia		
General	19	38
Spinal	31	62

Table 5: Treatment modalities

ORIGINAL ARTICLE

In their study, most common was tubal pregnancy, and salpingectomy was the treatment in majority (81.9%) which is comparable with our study (90%). Study by Adhikari et al.^[11] shows similar findings with our study. Most common ultrasonography finding being complex adnexal mass (61%), with our study showing 60%. But in our study, half of these cases had echogenic fluid in the cul de sac. Study done by Naseem et al.^[6] showed sensitivity and specificity of 100 % in the diagnosis of ectopic pregnancy by ultrasonography.

CONCLUSION: Ectopic pregnancy is one of the obstetric emergencies with long-term morbidity and mortality. Hence, high degree of suspicion, early diagnosis, and treatment improves the future reproductive potential. Ultrasonography helps in early diagnosis. Hence, all early pregnancies should undergo Ultrasonography for viability and site of pregnancy. It can be considered as the gold standard in the diagnosis of ectopic pregnancy. It serves as single most, non-invasive, diagnostic test. It can be even used as single alone test.

ACKNOWLEDGEMENT: We thank Medical Director, KIMSUDU, Karad and head of our department for allowing us to use and publish the data related to patient.

REFERENCES:

1. Levine D. Ectopic pregnancy. Radiology. 2007; 245 (2): 385-97.
2. Seeber BE Barnhart KT. Suspected Ectopic Pregnancy. Obstet Gynecol. 2006; 107 (2 Pt 1): 399-413.
3. Majhi AK, Roy N, Karmakar KS, et al. Ectopic pregnancy: an analysis of 180 cases. J Indian Med Assoc. 2007; 105 (6): 308-14.
4. Bhatla N (ed), Jeffcats Principle of Gynaecology. New Delhi. Arnold. 2001: 208-24.
5. Bignardi T, Alhamdan D, Condous G. Is ultrasound the new gold standard for the diagnosis of ectopic pregnancy? Semin Ultra sound CT MR. 2008; 29 (2): 114-20.
6. David AN, Lyndon MH. Transvaginal ultrasound. Mosby. 105-132.
7. Naseem I, Bari V, Nadeem N. Multiple parameters in the diagnosis of ectopic pregnancy. J Pak Med Assoc. 2005; 55 (2): 74-6.
8. Ramanam RV, Gajaraj J. Ectopic pregnancy: the leash sign. A new sign on transvaginal Doppler ultrasound. Acta Radiol. 2006; 47 (5): 529-35.
9. Al-Sunaidi M, Tulandi T. Surgical treatment of ectopic pregnancy. Semin Reprod Med. 2007; 25 (2): 117-22.
10. Arora R, Rathore AM, Habeebullah S, et al. Ectopic pregnancy: changing trends. J Indian Med Assoc. 1998; 96 (2): 53-7.
11. Adhikari S, Blaivas M, Lyon M. Diagnosis and management of ectopic pregnancy using bedside transvaginal ultrasonography in the ED: a 2 year experience. Am J Emerg Med. 2007; 25 (6): 591-6.

ORIGINAL ARTICLE

AUTHORS:

1. Manisha M. Laddad
2. Nitin Khirsagar
3. Sanjaykumar Patil
4. Gauri Shinde
5. Nikunj Shenay

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Obstetrics & Gynaecology, KIMS, Karad.
2. Professor, Department of Obstetrics & Gynaecology, KIMS, Karad.
3. Associate Professor, Department of Obstetrics & Gynaecology, KIMS, Karad.

FINANCIAL OR OTHER

COMPETING INTERESTS: None

4. Assistant Professor, Department of Obstetrics & Gynaecology, KIMS, Karad.
5. Resident, Department of Obstetrics & Gynaecology, KIMS, Karad.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Manisha M. Laddad,
Shri Sai Maternity Clinic,
75/A Block, Vital Housing Society,
Malkapur, Karad-415110,
Satara District, Maharashtra.
E-mail: drmanishald@gmail.com

Date of Submission: 26/02/2015.

Date of Peer Review: 27/02/2015.

Date of Acceptance: 14/03/2015.

Date of Publishing: 24/03/2015.