

THE EFFECTIVENESS OF TVS (TRANSVAGINAL ULTRASOUND) IN DIAGNOSIS OF ECTOPIC PREGNANCY

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ABSTRACT

BACKGROUND

Ectopic pregnancy is a serious disaster in the reproductive life of a woman and is a major gynaecological emergency associated with increased mortality, decreased reproductive potential and is recurrent. Timely diagnosis of the ectopic pregnancy is lifesaving and also decreases number of operative procedures including diagnostic laparoscopy. We wanted to assess the effectiveness of TVS in diagnosis of ectopic pregnancy.

METHODS

110 patients who were operated for ectopic tubal pregnancies were evaluated retrospectively by reviewing their medical records of TVS done preoperatively, for diagnosing ectopic pregnancy from April 2012 to March 2014. Ectopic pregnancy visualized at laparoscopy/laparotomy was used as the gold standard. Data recorded included intraoperative findings of 110 cases of operated ectopic pregnancies and TVS findings of all 110 cases, which were done preoperatively.

RESULTS

TVS done preoperatively in all these 110 cases showed that 60% had inhomogeneous mass adjacent to ovary, 20.8% had a mass with hyper echoic ring around gestational sac, 8% had G. Sac with foetal pole without cardiac activity, 4% had G. Sac with foetal pole with cardiac activity and 7.2% had inconclusive scan. The sensitivity and positive predictive value of TVS to detect ectopic pregnancy in our study was 90.7% and 93.3% respectively.

CONCLUSIONS

This study demonstrates the effectiveness of transvaginal ultrasound to positively identify an ectopic pregnancy. Therefore, TVS is effective in diagnosis of ectopic pregnancy.

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BACKGROUND

Ectopic pregnancy is a serious disaster in the reproductive life of a woman and is a major gynaecological emergency associated with increased mortality, decreased reproductive potential and is recurrent. The diagnosis of ectopic pregnancy is difficult. Sometimes findings are non-specific and can mimic variety of clinical conditions. Less than half of the patients with ectopic pregnancy can be accurately diagnosed based on clinical features alone.¹

Diagnostic accuracy has been improved by advances in medical biochemistry and medical biophysics which in turn has reduced morbidity and mortality.²

In the confidential enquiries into maternal deaths in United Kingdom (1991-1993), it was common cause of maternal mortality.³ while in US in 1992 it contributed 9% of all pregnancy related deaths.⁴

Those with ruptured ectopic with haemodynamic instability should undergo urgent surgery. However, in clinically stable women, transvaginal ultrasonography (TVS) is lifesaving and also reduces operative procedures like diagnostic laparoscopy. Besides TVS allows for consideration of conservative management options such as methotrexate or even an expectant approach by diagnosing ectopic early.^{5,6,7}

Aim of The Study

We wanted to assess the effectiveness of TVS in the diagnosis of ectopic pregnancy.

METHODS

This study was a retrospective review of 110 patients with a surgically documented diagnosis of ectopic pregnancy, conducted at Lalla Ded Hospital of Government Medical College, Srinagar between April 2012 to March 2013.

These 110 patients who were operated for ectopic tubal pregnancies were evaluated retrospectively by reviewing their medical records of TVS, done preoperatively for diagnosing ectopic pregnancy. Ectopic was diagnosed by TVS as on one of the following appearances-

1. An inhomogeneous mass adjacent to ovary.
2. A mass with hyper-echoic ring around gestational sac.
3. A gestational sac with a foetal pole with cardiac activity.
4. A gestational sac with a foetal pole without cardiac activity.

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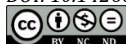
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Ectopic pregnancy visualized at laparoscopy / laparotomy was used as the gold standard. Data recorded included Intraoperative findings of 110 cases of operated ectopic pregnancies and TVS findings of all 110 cases, which were done preoperatively.

Statistical Analysis

Descriptive statistics was used to analyse the data. The data was expressed as mean \pm SD. Performance of TVS was expressed in terms of sensitivity, positive predictive value.

RESULTS

This study was carried in government LD Hospital Srinagar from April 2012 - March 2013. In present study 110 patients underwent surgery (Laparotomy or laparoscopy) for presumed ectopic pregnancy. The mean age of the patients was 30.62 ± 2.42 years. The baseline characteristics are shown in Table 1. Out of them, 105 were true ectopics and were managed accordingly. However out of rest 5 cases, 2 cases had ruptured ovarian haemorrhagic cysts, 2 cases had negative laparotomy and 1 had right chocolate cyst.

TVS done preoperatively in all these 110 cases showed 60% had inhomogeneous mass adjacent to ovary, 20.8% had a mass with hyper echoic ring around gestational sac, 8% had G. Sac with foetal pole without cardiac activity, 4% had G. Sac with foetal pole with cardiac activity and 7.2% had inconclusive scan as shown in table 2.

Baseline Characteristics	% Age of Cases
Age > 30 Years	56.4
Smoking	4.5
Parity 1	65.6
Abortions	22.7
PID	20
Tuberculosis	10

Table 1. Baseline Characteristics

Inhomogeneous mass adjacent to ovary	60%
A mass with hyper-echoic ring around G. Sac.	20.8%
G. Sac with foetal pole without cardiac activity	8%
With cardiac activity	4%
Inconclusive	7.2%

Table 2. TVS Findings in Ectopic Pregnancy

The sensitivity and positive predictive value of TVS to detect ectopic pregnancy in our study was 90.7% and 93.3% respectively

DISCUSSION

Transvaginal sonography has changed management options of ectopic pregnancy by timely diagnosis. Conservative options, such as methotrexate, can be offered to haemodynamically stable patients and those with small ectopic.^{8,9} It has also reduced the associated mortality, morbidity and subsequent emergency laparotomy.¹⁰ TVS enables for laparoscopy to be reserved for its treatment only rather than diagnosis.¹¹

Ectopic pregnancy is diagnosed by the positive visualization of an adnexal mass using 2D TVS.¹⁰ Ectopic can be diagnosed in 87 to 93% using TVS^{12,13}

In our study sensitivity and positive predictive value of TVS were 90.7% and 93.3% respectively which is analogous

to the observation of Condous G, Khalid A et al (2005).¹⁴ In their study sensitivity and positive predictive value was 90.2% and 95.2% respectively. Cacciatore et al (1990)¹² demonstrated sensitivity of 93% and positive predictive value of 98% of TVS alone while as it increased to 97% when combined with serum beta hCG, with equivalent specificity and positive predictive value. Hopp H, Schaar P, Entezami M et al (1995)¹⁵ gave sensitivity of TVS in diagnosing ectopic pregnancy as 96% and positive predictive value as 89%. Our observations matched well with the observations made by these authors.

CONCLUSIONS

Our study clearly demonstrates the ability of transvaginal ultrasound when used as a single test, to positively identify an ectopic pregnancy. TVS is an effective diagnostic tool in the diagnosis of ectopic pregnancy.

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