In The Name Of God

Islamic Azad University

College of Medicine

Thesis:

For Doctorate of Medicine

Subject:

Accuracy of transabdominal sonography in ectopic pregnancy, Tehran 2007-8

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Year : **1387** No. **4060**

دانشگاه آزاد اسلامی

واحد پزشکی تهران

پایان نامه :

جهت دریافت دکترای پزشکی

موضوع :

بررسی میزان دقت یافته های سونوگرافی ترانس ابدومینال در تشخیص موارد حاملگی خارج رحمی در زنان مراجعه کننده به بیمارستان شهر تهران از تاریخ اردیبهشت ۸۶ لغایت اردیبهشت ۸۷

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سال تحصیلی : ۱۳۸۷ **شماره پایان نامه :** ۴۰۶۰

LIST

Accuracy of transabdominal sonography in ectopic pregnancy, Tehran 2007-8

Current study was performed as a descriptive-analytical cross-sectional survey to evaluate the accuracy of transabdominal sonography in ectopic pregnancy, Tehran 2007-8. Forty women suspected to have ectopic pregnancy who respected the inclusion criteria were enrolled. Their mean age was 30.9±4.7 years. Of 40 patients, 36 subjects had sonographic diagnosis of ectopic pregnancy which was true in 35 (true positive) and false in 1 case (false positive). Among other remaining patients three subjects were truly negative and one case was false negative. The calculated accuracy was 95 percent for transabdominal sonography in diagnosis of ectopic pregnancy.

Keywords: Accuracy, Ectopic Pregnancy, Sonography

INTRODUCTION

Introduction

Ectopic pregnancy presents a major health problem for women of childbearing age. It is the result of a flaw in human reproductive physiology that allows the conceptus to implant and mature outside the endometrial cavity, which ultimately ends in death of the fetus. Without timely diagnosis and treatment, ectopic pregnancy can become a life-threatening situation.

Ectopic pregnancy currently is the leading cause of pregnancy-related death during the first trimester in the United States, accounting for 9% of all pregnancy-related deaths. In addition to the immediate morbidity caused by ectopic pregnancy, the woman's future ability to reproduce may be adversely affected as well. So, the definite and at time diagnosis of this problem is necessary.

Nowadays, the most common diagnostic tool is sonography. It may be used with both transabdominal and transvaginal method. However the transabdominal route is not as invasive as transvaginal type, its accuracy may be lower in comparison with it. Hence, current study was performed

to evaluate the accuracy of transabdominal sonography in ectopic pregnancy, Tehran 2007-8

REVIEW OF LITERATURES

Review of Literatures

Background

An ectopic pregnancy occurs when a fertilized ovum implants at a site other than the endometrial lining of the uterus. Ectopic pregnancies occur in the fallopian tube in 97% of cases, with 55% in the ampulla; 25% in the isthmus; 17% in the fimbria; and 3% of cases within the abdomen, ovary, and cervix.

Pathophysiology

Ectopic pregnancies are primarily due to prior tubal/genital infection or surgery, fallopian anatomic abnormalities, or endometrial abnormalities. Abnormal implantation sites include the fallopian tube, interstitium (formerly cornu), ovary, cervix, and peritoneum.

Frequency

United States

The incidence of ectopic pregnancy in 1992 based on aggregated inpatient and outpatient data was 108,800, or 19.7 per 1000 reported

pregnancies. Females taking fertility drugs have a higher risk of ectopic pregnancy than that of females not taking such drugs.

Mortality/Morbidity

- Ectopic pregnancy is the leading cause of pregnancy-related death in the first trimester, and it is a cause of significant morbidity. It is responsible for 10% of maternal deaths.
- Surveillance data for pregnancy-related deaths in the United States for 1987-1990 revealed 1,459 deaths. Ectopic pregnancy accounted for 10.8% of these deaths.

Race

African American teenagers and teenagers of other minority races have a mortality rate that was almost 5 times higher than that of white teenagers.

Age

Most ectopic pregnancies occur in women aged 25-34 years.

- Surveillance data of pregnancy-related deaths (from all causes) in 1987-1990 demonstrated that women aged 30 years or older had a

higher risk for pregnancy related death than that of younger women.

- Women aged 35-39 years had a 2.6-fold higher risk for death than that of women aged 25-29 years; the risk was 5.9-fold higher for women aged 40 years or older.

CLINICAL

History

The history of patients with an ectopic pregnancy may include the following features:

- History of late or delayed menses
- Abdominal and/or pelvic pain and cramping
- Vaginal bleeding (may be absent)
- Shoulder pain
- Faintness
- Marked or painful fetal movements

Physical

Physical examination is unreliable for clinicians who face this significant diagnostic challenge. Abbott et al and Stovall et al reported an alarming rate of missed and/or delayed diagnoses in the ED. Although findings at physical examination may be variable, they may include the following:

- Vaginal bleeding may be mild or absent. Up to 30% of patients with ectopic pregnancies have no vaginal bleeding.
- Abdominal pain may be minimal or severe.
- Shoulder pain is suggestive of peritoneal free fluid (significant hemorrhage).
- Ectopic pregnancies can be accompanied by sloughing material, which is suggestive of a miscarriage.
- Adnexal masses may be palpable in only 60% of patients (under anesthesia).
- Tenesmus or syncope may occur.
- Decidual cast may be passed.
- Clinical shock may occur after rupture.

- No combination of physical findings may reliably exclude the diagnosis of ectopic pregnancy.

Causes

Causes of ectopic pregnancy may include the following:

- Previous tubal pregnancy or surgery
- Pelvic inflammatory disease (PID)
- Endometriosis
- Salpingitis isthmica nodosa
- Pelvic adhesions
- Pelvic tumors
- Atrophic endometrium
- Septate uterus
- Presence of an intrauterine device (IUD)
- Oral contraceptive use

DIFFERENTIALS

Abortion, Complete

Abortion, Incomplete

Abortion, Inevitable

Abortion, Missed

Abortion, Threatened

Appendicitis, Acute

Dysmenorrhea

Pediatrics, Appendicitis

Placenta Previa

Pregnancy, Ectopic

Shock, Hemorrhagic

Shock, Hypovolemic

Abortion, postabortion bleeding

Abortion, retained products

Ruptured corpus luteum cyst

Cornual myoma or abscess

Ovarian tumor

Endometrioma

Cervical cancer

Cervical phase of uterine abortion

WORKUP

Lab Studies

- Human chorionic gonadotropin (HCG) levels may be analyzed quantitatively.
    - The quantitative level of beta-HCG varies in ectopic pregnancy; low levels of beta-HCG can occur.
    - Serum beta-HCG levels correlate with the size and gestational age in normal embryonic growth.
    - The discriminatory zone of beta-HCG levels is the level above which a normal intrauterine pregnancy reliably is visualized.
    - The absence of an intrauterine pregnancy when the HCG level is above the level in the discriminatory zone represents an ectopic pregnancy or a recent abortion.

- Serial blood cell counts should be determined to quantify blood loss.
- A serum progesterone level may be useful in identifying patients with a miscarriage.
- The serum creatine kinase level has been proposed as a marker of ectopic pregnancy.

Imaging Studies

- The use of bedside ultrasonography in the ED is fast, feasible, and accurate; it is associated with improved patient outcome. Endovaginal ultrasonography may be used at the bedside to rule-in an intrauterine pregnancy.
    - A definite intrauterine pregnancy is present when a gestational sac with a sonolucent center (>5 mm in diameter) is surrounded by a thick, concentric, echogenic ring located within the endometrium and contains a fetal pole, yolk sac, or both.

- A probable abnormal intrauterine pregnancy occurs when a gestational sac larger than 10 mm in diameter is present without a fetal pole or when a definite fetal pole is present without cardiac activity.
- A definite ectopic pregnancy is characterized by the presence of a thick, brightly echogenic, ringlike structure outside the uterus, with a gestational sac containing an obvious fetal pole, yolk sac, or both.
- Pregnancy of unknown location occurs with an empty uterus on endovaginal sonograms in patients with serum beta-HCG levels greater than the discriminatory cutoff value. In this case, an ectopic pregnancy is considered present until proven otherwise. An empty uterus may also represent a recent abortion.
- Other ultrasonographic findings include an adnexal mass, free cul-de-sac fluid, and/or severe adnexal tenderness upon palpation with the probe. Patients with no definite

intrauterine pregnancy and the aforementioned findings are thought to have a high risk for ectopic pregnancy.

- An appreciation for the spectrum of ultrasonographic findings in ectopic pregnancy may enable recognition of an early ectopic pregnancy. Findings include the following:
    - Tubal ring: This is an echogenic ringlike structure outside of the uterus. This finding represents an early ectopic pregnancy.
    - Extrauterine mass: The presence of a tender adnexal mass at ultrasonography suggests an ectopic pregnancy. The findings of one study suggest that the presence of any adnexal mass other than a simple cyst is the most significant ultrasonographic finding in the diagnosis of ectopic pregnancy.
    - Interstitial ectopic pregnancy: An interstitial ectopic pregnancy is one that implants at the highly vascular region of the uterus near the insertion of the fallopian tube. These

types can grow larger than can those within the fallopian tube because the endometrial tissue is more expandable. Because of the increased size and partial endometrial implantation, these advanced ectopic pregnancies can be misdiagnosed as an intrauterine pregnancy. A clue to the diagnosis of an interstitial ectopic pregnancy is the eccentric location of the gestational sac. It is important to evaluate the amount of uterine myometrium surrounding the gestational sac and echogenic decidual layer. This thickness is called the myometrial mantle. At least 5 mm of myometrium should be present. A finding of less than 5 mm suggests the diagnosis. Another sonographic finding is the interstitial line sign.

- Heterotopic pregnancy: This is a combined intrauterine and ectopic pregnancy. It is thought to occur in approximately 1 in 3000 pregnancies and is more common in patients taking fertility agents.