

Role of Ultrasonography in Evaluation of Various Causes of Pelvic Pain in First Trimester of Pregnancy

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ABSTRACT

Background and Aim: Acute pelvic pain during pregnancy can be challenging to identify and manage. Ultrasound is still the most often utilized imaging modality for pregnant and postpartum women. The present study aimed to evaluate the ultrasonography role in various causes of pelvic pain in first trimester of pregnancy.

Patients and Methods: This descriptive cross-sectional study was carried out on 286 pelvic pain pregnant women of first trimester. It was conducted in the department of Radiology in collaboration with Obstetrics and Gynecology department of Jinnah Hospital, Lahore from March 2022 to November 2022. Pregnant women with pelvic pain during early pregnancy were enrolled. Patient's demographic details i.e. age, gestational age, HC, molar pregnancy, CRL, Fibroid, FHR, and bleeding on ultrasound were recorded. Data analysis was done using SPSS version 27. .

Results: The overall mean age of participants was 26.84±2.86 years (18 to 45 years). Patients distribution based on age were as follows: 76 (26.6%) in 18-25 years, 156 (54.5%) in 26-35 years, and 54 (18.9%) in 36-45 years. Out of the total 286 pregnant women, the prevalence of bleeding, fibroids, cyst, and ectopic pregnancy was 92 (32.2%), 42 (14.7%), 56 (19.6%), and 18 (6.3%) respectively. The prevalence of pelvic pain causes such as Corpus luteal cyst, Dermoid Cyst, Ectopic pregnancy, Intramural Fibroid, Submucosal Fibroid, and sub serosal fibroid was 38/54 (70.4%), 26/34 (76.5%), 22/28 (78.6%), 1/20 (5%), 4/10 (40%), and 1/22 (4.5%) respectively.

Conclusion: Bleeding was the most dominant finding followed by cyst and fibroids in pregnant women with chronic pelvic pain during early pregnancy. Pelvic pain in the early pregnancy can be difficult to treat. In assessing these individuals, ultrasound is a critical imaging modality.

Keywords: Pelvic pain, ultrasonography, causes, first trimester, pregnancy

INTRODUCTION

Pelvic or lower abdominal pain in pregnant women is a regular occurrence in emergency departments, urgent care centres, and outpatient office practices during the first trimester. Due to hormonal changes, fast uterine development, and increased blood flow, "cramps" pelvic discomfort is common in early pregnancy [1]. This soreness may be quite worrisome for primipara pregnant women in their first trimester, since women usually complain of pain and typical sonographic results [2]. Lower abdomen pain that is cramping at first and then becomes intense or stabbing. Vaginal bleeding is frequently associated with unilateral bleeding. If the vessel is burst, symptoms of shock include an increase in pulse/heart rate, an increase in breathing rate, extremities coldness, sweating, pallor, and hypotension [3]. The patient may reveal a history of amenorrhea that lasted 6 to 10 weeks of pregnancy. Following a paracentesis, blood would be detected in the abdomen. In severe abortions, such as septic or incomplete abortions, the patient will have intense pain in the lower abdomen, profuse vaginal bleeding, elevated fever, and hypotension [4]. The uterus may be palpable suprapubically on pelvic examination, and vaginal bleeding may be apparent with or without obvious conception products in the vaginal or cervical os[5].

The first sonographic characteristic of early pregnancy is the chorionic cavity, often known as the amniotic sac. The echogenic ring of the gestational sac is an important ultrasonography diagnostic for differentiating GS from a deposit of fluid and blood in the uterine cavity. The amniotic sac has a spherical shape at first, but it becomes more oval as the embryo and yolk sac develop. A significant hypoechoic fluid buildup with an eccentrically positioned echogenic rim in the cavity of endometrial deviates the endometrial line [6]. This can be seen between 4.5 and 5 weeks of pregnancy [7]. The majority of women who have spontaneous abortions have vaginal bleeding [8]. All pregnant women have up to 25% bleeding at some time throughout their pregnancy, with half likely having a miscarriage [9]. Because of the fast change in uterine size, the development of associated theca lutein cysts, or ovarian torsion

caused by theca lutein cysts, a molar pregnancy can induce pelvic pain [10]. Imaging has come to play a critical role in clinical presentation of evidence for timely treatment and diagnosis, which is perilous to the welfare of the foetus and mother [11, 12]. Based on the incidence of chronic pelvic pain, several causes had been identified during early pregnancy. These causes includes ectopic pregnancy, bleeding, cyst, and fibroids [13].

METHODOLOGY

This descriptive cross-sectional study was carried out on 286 pelvic pain pregnant women of first trimester in the department of Radiology in collaboration with Obstetrics and Gynecology department of Jinnah Hospital, Lahore from March 2022 to November 2022. Pregnant women with pelvic pain during early pregnancy were enrolled. Patients' demographic details i.e. age, gestational age, HC, molar pregnancy, CRL, Fibroid, FHR, and bleeding on ultrasound were recorded. Ultrasound machine with convex probes of 3-5 MHz were employed, as well as the transabdominal scanning approach. All of the above-mentioned criteria are recorded on each patient's particular case record form (CRF). Data was collected at the specified time. Data analysis was done using the SPSS version 27.

RESULTS

The overall mean age of participants was 26.84±2.86 years (18 to 45 years). Patients distribution based on age were as follows: 76 (26.6%) in 18-25 years, 156 (54.5%) in 26-35 years, and 54 (18.9%) in 36-45 years. Out of the total 286 pregnant women, the prevalence of bleeding, fibroids, cyst, and ectopic pregnancy was 92 (32.2%), 42 (14.7%), 56 (19.6%), and 18 (6.3%) respectively. The prevalence of pelvic pain causes such as Corpus luteal cyst, Dermoid Cyst, Ectopic pregnancy, Intramural Fibroid, Submucosal Fibroid, and sub serosal fibroid was 38/54 (70.4%), 26/34 (76.5%), 22/28 (78.6%), 1/20 (5%), 4/10 (40%), and 1/22 (4.5%) respectively. Table-I represent the distribution of patients based on

their age. The incidence of bleeding, fibroids, cyst, and ectopic pregnancy are depicted in Figure-1. Bleeding cross tabulated with causes of pelvic pain are shown in Table-II.

Table-1: Patients distribution based on their age (N=286). Majority of pregnant women belonged to age group 26-35 years followed by 18-25 years.

Age group (yrs.)	Frequency N	Percentage %
18-25	76	26.6
26-35	156	54.5
36-45	54	18.9
Total	286	100

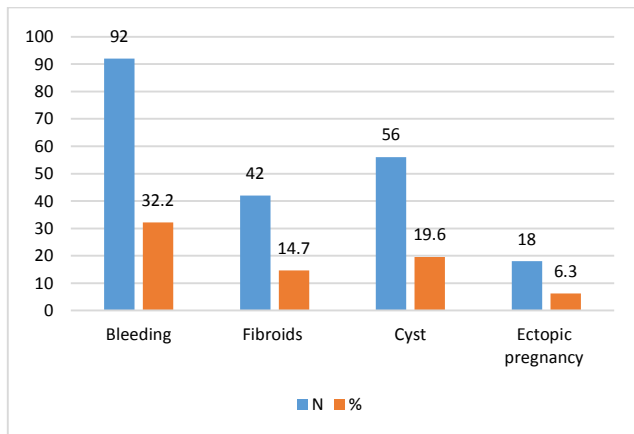


Figure-1: incidence of bleeding, fibroids, cyst, and ectopic pregnancy (N=286).

Table-2: Bleeding cross tabulated with causes of pelvic pain

Causes of pelvic pain	Bleeding N (%)	No bleeding N (%)	Total N (%)
Corpus luteal cyst	38/54 (70.4%)	16/54 (28.6%)	54 (100%)
Dermoid Cyst	26/34 (76.5%)	8/34 (22.5%)	34 (100%)
Ectopic pregnancy	22/28 (78.6%)	6/28 (21.4%)	28 (100)
Intramural Fibroid	1/20 (5%)	19/20 (95%)	20 (100)
Submucosal Fibroid	4/10 (40%)	6/10 (60%)	10 (100)
sub serosal fibroid	1/22 (4.5%)	21/22 (95.5%)	22 (100)
Total	194 (67.8)	92 (32.2)	286 (100)

DISCUSSION

The present study investigated the role of ultrasonography in the assessment of various causes of pelvic pain in first trimester of pregnancy and found that among pregnant women with persistent pelvic discomfort throughout early pregnancy, bleeding was the most common finding, followed by cysts and fibroids. Ultrasound has become a tool for examination based on the identification of causes of pelvic pain in first trimester of pregnancy. Data were gathered based on quantitative and qualitative variables such as age, ultrasound findings (Age, Gestational sac, Bleeding, CRL, Pain, FHR, Molar pregnancy, HC, and Fibroid) and patients aged 18 to 45 years. The research included 4539 women between the ages of 18 and 45. Time, heaviness, length, colour, and associated discomfort were all documented, as was the likelihood of recurrence in subsequent pregnancies. According to their findings, around a quarter of the people reported bleeding, although only 8% experienced serious bleeding. Pain was linked to 28% of spotting and light bleeding episodes (n=1555). Pain was associated with 54% of heavy occurrences (n=100) [14].

In another study, Ali et al., discovered that the most prevalent cause of vaginal bleeding in the first trimester was a normal early intrauterine pregnancy, while spontaneous termination and ectopic pregnancy were also possibilities. About 2% cases of first trimester pregnancy affected by ectopic pregnancy which is the prevalent cause of maternal mortality globally. Ultrasonic imaging was quite beneficial. This photo essay

illustrates sonographic markers and typical diagnostic errors in ectopic pregnancy [15].

Lee et al., investigated individuals who presented for a pregnancy. Vaginal ultrasound is the best way for confirming the presence of an intrauterine pregnancy, measuring pregnancy survival, gestational length, and multiplicity, diagnosing pregnancy-related disorders, and detecting ectopic pregnancy in the first trimester [16].

They examined the sonographic features of a normal intrauterine pregnancy as well as the most frequent pregnancy problems in the first trimester in the acute state in their study. In contrast to our findings, there were 108 individuals counted for bleeding status, with 6 (5.6%) having an ectopic pregnancy and 102 (94.4%) [17].

Lee et al., investigated another research. Adnexal masses are common throughout pregnancy. Ovarian cysts or masses should be carefully examined during pregnancy in order to identify the patients. Both ultrasound and magnetic resonance imaging (MRI) are safe diagnostic tools for distinguishing between benign and malignant lesions. Individual treatment choices (surgical therapies) should be explored with each patient [18].

Nadim et al., investigated the influence of foetal gender on the development of fibroids during pregnancy using -HCG blood levels discovered in previous investigation. They determined that 70 of the females were carrying a female foetus and 87 were carrying a male embryo. Both foetal genders had a continuous rise in fibroid diameter prior to becoming pregnant until the second trimester. Male foetuses' SD fibroid diameter rose in the third trimester, whereas female foetuses' decreased. Women bearing female babies exhibited bigger fibroid diameters, especially during the first pregnancy and later in the first and second trimesters [19].

About 10% to 12% of clinically diagnosed pregnancies have spontaneous abortion in the first trimester [20, 21]. Vaginal bleeding, asymptomatic patients, and postpartum persist the lower back pain [22]. In the previous fifty years, the incidence has progressively grown in proportion to the frequency of sexually transmitted infections and reproductive method related risk factors [23].

Adnexal masses or cyst are asymptomatic in majority of cases varies from 1% to 5.3% of all pregnancies [24]. The prevalence of cyst increased over the years due to ultrasound used during pregnancy. Majority cases of ovarian masses are simple cysts that will dissolve naturally throughout pregnancy [25, 26]. During pregnancy, the most frequent adnexal masses are corpus luteum (typically hemorrhagic). Other forms of cysts, such as cystic neoplasms, can also burst. Mature cystic teratomas are the most usually burst cystic neoplasms [27].

CONCLUSION

Bleeding was the most dominant finding followed by cyst and fibroids in pregnant women with chronic pelvic pain during early pregnancy. Pelvic pain in the early pregnancy can be difficult to treat. In assessing these individuals, ultrasound is a critical imaging modality.

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