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SONOGRAPHIC FINDINGS IN FEMALES OF REPRODUCTIVE AGE WITH ACUTE PELVIC PAIN

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Abstract
Background: Acute pelvic pain can result from the gynecological, urological systems and/or gastrointestinal. Ultrasound can be used as an initial imaging modality in the evaluation of acute pelvic pain. To determine sonographic findings in females of reproductive age coming with acute pelvic pain. **Objective:** To determine Sonographic findings in females of reproductive age with acute pelvic pain. **Methodology:** Toshiba Xario ultrasound machine with a standard gray scale and Doppler ultrasound convex probe of 3.5 MHz – 7.5 MHz or trans-vaginal probe of 5 MHz - 7.5MHz is used. Both transvaginal and trans-abdominal probes were used in this study. The study was conducted at Ultrasound University Clinic, Township, Lahore. Data of 163 patients was collected through convenient sampling. Statistical software for social sciences (SPSS version 22.0) is used for the analysis of data. **Results:** A total of 163 patients were examined in the study. The age incidence of the cases in this study varied between 15 years to 45 years. The mean age of the patients in the study was 29.8712 years. The uterine fibroid is most commonly involved in acute pelvic pain and is seen in 30.1% cases followed by simple ovarian cyst in 20.2% cases, hemorrhagic cyst in 14.1% cases. 8.6% cases with pelvic pain have no abnormal sonographic findings. Adenomyosis, PID and endometrial polyp in 4.3% each. Endometrial hyperplasia in 3.1%. Follicular cyst, simple adnexal cyst and complex adnexal cyst in 1.8% each, followed by ovarian endometrioma in 0.6% cases and dermoid cyst in 0.6%. In obstetric patients of acute pelvic pain; RPOCs are most common, constituting 1.8% of total acute pelvic pain, molar pregnancy in 1.2%, ectopic pregnancy in 0.6% patients, subchorionic bleed in 0.6% cases. **Conclusion:** Ultrasound is a very good modality for acute pelvic pain, as it can easily diagnose and characterize the causes of pelvic pain. The wide availability, radiation free and cost effectiveness makes it a first line investigation in acute pelvic pain. In the present study, the most common cause of pelvic pain is uterine fibroid.
Key words: Ultrasound (US), Pelvic inflammatory disease (PID), acute pelvic pain, retained products of contraceptives (RPOCs), pouch of Douglas (POD).
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INTRODUCTION:

Acute pelvic pain is defined as the sudden onset of lower abdominal or pelvic pain lasting less than 3 months(1). It is generally typical clinical presentation. Women often come to the emergency department after hours. More than a third of women of child-bearing age experience non-menstrual pelvic pain(2).

The ovaries are a pair of solid, oval shaped organs, 2 to 4 cm in diameter (21). The ovaries are easily identified because of the presence of multiple follicles. The hilum of the ovary is usually well-enhanced structure. Normal Fallopian tubes are not usually observed, and they are only identified in the background of massive ascites. Normally the fluid within the lumen is dispersed within countless folds or ridge of tissues and cannot be identified (22).

The uterus is a pear-shaped essential organ that is capable of controlling range of functions such as gestation (pregnancy), menstruation, labor and delivery. Uterus is located directly anterior to the rectum and posterior to the bladder, in the normal anatomy of female pelvis. The female uterus is divided into three main anatomic segments (from superior to inferior): the fundus, corpus (body), and cervix (which protrude into the vagina)(3).

Due to the fact that medical history, signs and results of physical examination are often non-specific, acute pelvic pain may pose a distinct challenge, and clinical manifestations of underlying gynecological, obstetric, urological

and gastrointestinal conditions also vary widely and often overlap. While few of the common situations, such as ruptured or hemorrhagic ovarian cysts, are self-limiting, urgent conditions that may require surgery or intervention, such as ovarian torsion, pelvic inflammatory disease (PID) and appendicitis, may be discussed when a pre-menopausal woman has acute pelvic pain[4].

Because of the etiology of acute pelvic pain in a woman of non-pregnant age of fertility, an effective, well-organized technique should be used, such as ultrasounds in gastrointestinal, gynecological, urological, vascular systems[5].

Ultrasound is a selection strategy for the examination of pelvic pain because several gynecological problems are identified accurately. This is because non-intrusive, non-ionizing, mobility radiation is easily accessible and moderately cheap in contrast with various cross-cut visualization approaches the same as magnetic contrast imaging and computed tomography [6].

Ultrasound (US) is, indeed, the most effective instrument of initial imaging; it is a profoundly administrator subordinate and requires patient coordination. Ultrasound is still the basic preference methodology for gynecological patients[7]. Ultrasound has evolved into a technique that can provide full – and often all – similar data that are relevant for evaluating or rejecting anatomical differences from the female reproductive tract standard[8]. The 3D and 4- number with dimensions ultrasound imaging, currently available, can produce images from female pelvis with virtually the same value and position as MRI and CT, but 3D ultrasound imaging is more convenient and less complex than MRI without any radiation and at a relatively low cost. Bowel peristalsis has no effect on ultrasound imaging like those of MRI. There are many people who have more access to this technique than MRI. The advantage of ultrasound real-time scanning is that the pelvic organ can be examined in order to evokes a person's complaints and therefore to relate symptoms with particular pelvic anatomical locations. As a result, the expert may increase substantial information on the magnitude and territory of pelvic pain and organ mobility in accordance with ultrasound results[9].

The value of pelvic sonography was well known in the assessment of acute pelvic pain. Where available TVS should be used due to its higher sensitivity to anatomical results, whereas TAS is preferred where uterine or adnexal structures do not fall within thee transvaginal field of view. Duplex and color or power Doppler imaging may also be used to identify ovarian vascularity, adnexa and uterine structures that may be helpful in narrowing the area of particular concern[4].

Acute pelvic pain involving gynecological causes can be further categorized as obstetrical and non-obstetric causes. Therefore, the necessary step taken in the examination of acute pelvic pain in premenopausal women is to evaluate the patient being pregnant; with b-human gonadotropin chorionic (hCG). Typical gynecological causes of pelvic pain in non-pregnant women include, large ovarian cysts, ruptured or hemorrhagic cysts, pelvic inflammatory disease (PID) ovarian or adnexal torsion and intrauterine mal positioned devices IUDs[10].

RESULTS

A total of one hundred and sixty three patients participated in this study. Among them, the minimum age was 15 and the maximum age was 45. The mean of the age came out to be ±29.8712 and standard deviation 7.41715. In table 2, out of 163 patients, 90 patients had vaginal bleeding and 73 patients came out without vaginal bleeding. In table 3, sonographic findings of the patients are illustrated. A detail description is given below

	N	Minimum	Maximum	Mean	Std. Deviation
Age	163	15.00	45.00	29.8712	7.41715

Table 1: Descriptive Statistics of age

Vaginal Bleeding	Frequency	Percent
No	73	44.8
Yes	90	55.2
Total	163	100.0

Table 2: Descriptive analysis Vaginal Bleeding

Sonographic findings	Frequency	Percent
Adenomyosis	7	4.3
complex adnexal cyst	3	1.8
dermoid cyst	1	.6
ectopic pregnancy	1	.6
Endometrial hyperplasia	5	3.1
endometrial polyp	7	4.3
follicular cyst	3	1.8
hemorrhagic cyst	23	14.1
molar pregnancy	2	1.2
Normal	14	8.6
ovarian endometrioma	1	.6
PID	7	4.3
RPOCs	3	1.8
simple adnexal cyst	3	1.8
simple ovarian cyst	33	20.2
subchorionic bleed	1	.6
uterine fibroid	49	30.1
Total	163	100.0

Table 3: Sonographic findings of the patients

DISCUSSION

Acute Pelvic Pain (APP) is one of the most common complaints that gynecologists, general surgeons and emergency service specialists encounter and for female patients to visit the emergency service. In general, APP is experienced in the lower abdomen or pelvis and lasts less than three months[15].

The current study evaluated 163 patients between the age group of 15 to 45 years of age, According to the table 1. The mean of the age came out to be 29.8712. This correlated well with previous study done by Sefa Kurt et al in 2013, showing the mean age of 29.9±6.01 years[15].

According to table 2, out of 163 patients, 55.2% patients had vaginal bleeding and 44.8% patients came out without vaginal bleeding. In our study, neither of the patients came with the symptoms of nausea or vomiting. In table 3, sonographic findings of the patients were illustrated. A total of 163 cases constitutes acute pelvic pain. The most common cause for acute pelvic pain was uterine fibroid. These constituted 49 cases, i.e. 30.1% of adnexal lesions in acute pelvic pain, followed by simple ovarian cyst in 33 (20.2%) cases. According to Kurt S et al, in 2013 the most common gynecological cause for acute pelvic pain was ovarian cysts in 41.18% cases[15].

In our study, total 122 cases of adnexal pathologies constitute acute pelvic pain cases. Hemorrhagic ovarian constitute 23 cases, i.e. 14.1% of cases. It correlated well with the study of Kaisuke Ishihara et al in 1997, which showed that hemorrhagic ovarian cyst (HOC) is often involved in acute pelvic pain[17]. It also correlates well with a previous study in 2002, in which salpingitis and hemorrhagic ovarian cysts are most commonly diagnosed gynecologic conditions presenting as an acute pelvic pain[18].

Three patients (1.8%) had complex adnexal cyst, 3 patients (1.8 %) had follicular cyst, 1 patient (.6%) had dermoid cyst, 3 patients (1.8%) had simple adnexal cyst. In this study 7 patients (4.3 %) out of 122 had PID, free fluid in POD was seen in five cases of all the PID. This correlates well with the I. E. Timor-Tritsch et al study in 1998, which states that cul-de-sac fluid is more commonly seen in the acute cases. Seven out of the 14 (50%) showed some fluid in the cul-de-sac in their study[20]. In another study done by Jain KA et al in 2008, pelvic inflammatory disease is one of the most common causes of acute pelvic pain in women[16].

Other gynecological causes include, adenomyosis in 7 patients (4.3%), endometrial polyp in 7 patients (4.3%), endometrial hyperplasia 5 patients (3.1%). Least common Adnexal pathology constituting acute pelvic pain in this study is ovarian endometrioma making up only 0.6% of cases (1 case). It also correlated well with the study of Sandra O. Allison et al in 2010, that Gynecologic disorders in the woman with a negative pregnancy test who presents with acute pelvic pain include acute Pelvic Inflammatory Disease (PID), functional ovarian cysts, ovarian endometriomas and adnexal torsion[19].

In 14 cases (8.6%) out of 163 patients, there were no abnormal sonographic findings.

In obstetric patients coming with acute pelvic pain; RPOCs are most common, constituting 1.8% (3 patients), one patient (.6%) had ectopic pregnancy, 2 patients (1.2%) had molar pregnancy and 1 patients (.6%) had subchorionic bleed.

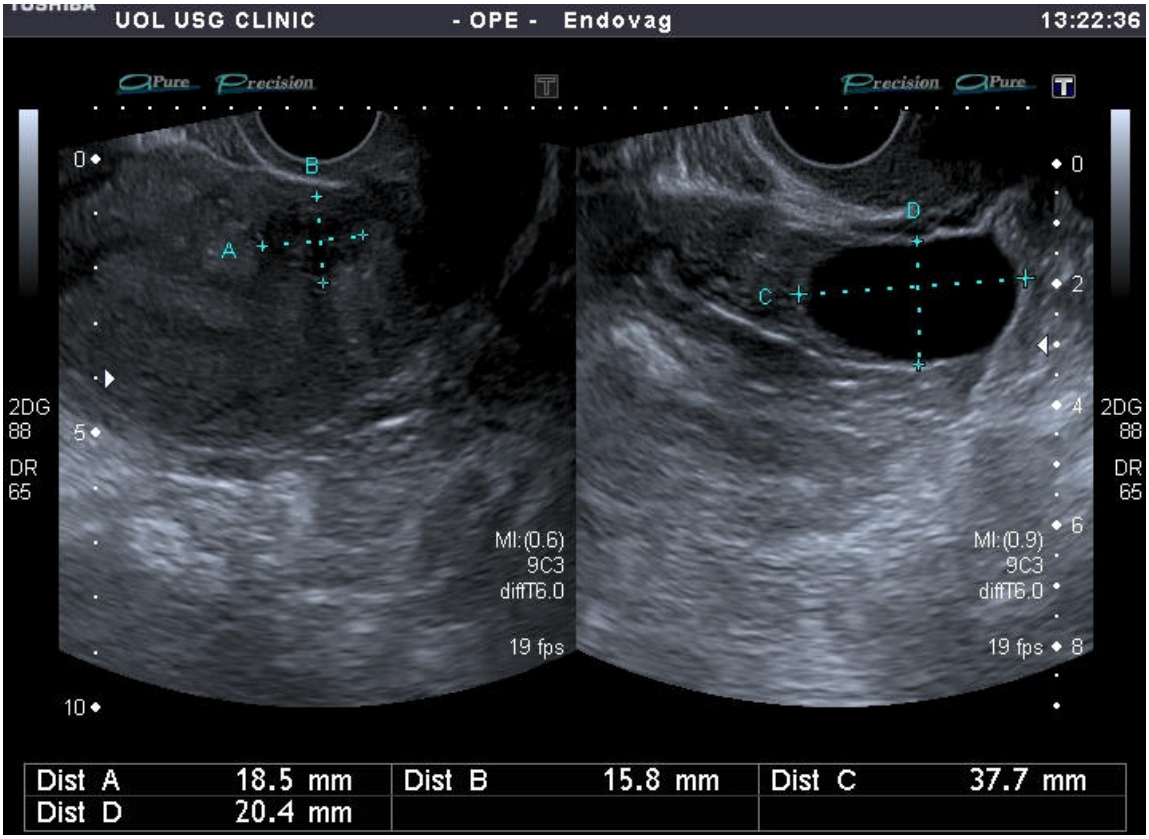

Fig 1: Transvaginal grey scale image showing, uterine fibroid measuring 18.5x 15.8mm and simple adnexal cyst measuring 37.7x 20.4mm.

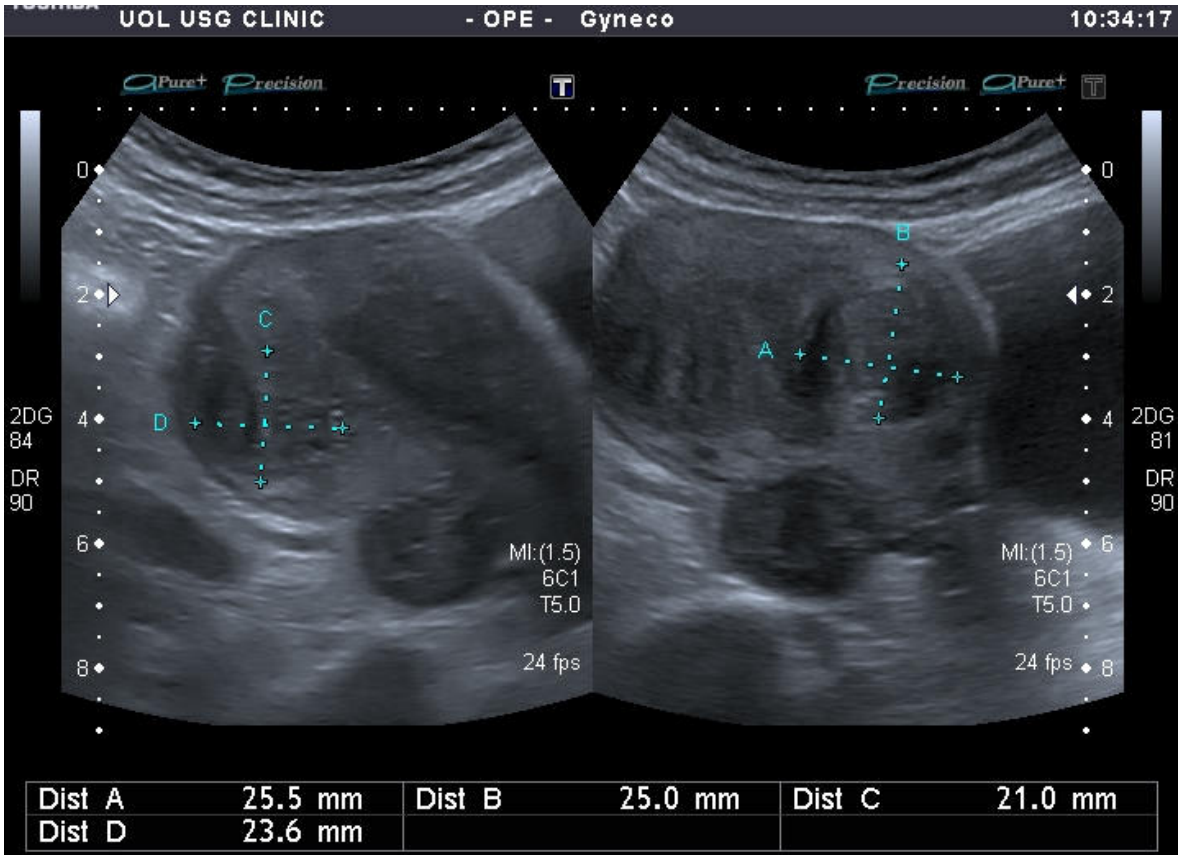

Fig 2: Trans-abdominal grey scale image showing, multiple uterine fibroid.

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