ACUTE PELVIC PAIN ASSESSMENT BY ULTRASOUND IN REPRODUCTIVE AGE FEMALES

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ABSTRACT

Background: Acute pelvic pain in reproductive age females perhaps attributed to gynecological, urological and gastrointestinal systems. The first and non-invasive imaging modality which used for assessment of acute pelvic pain is ultrasound which accounts for a great deal in acute pelvic pain diagnosis in childbearing age females.

Objective: To assess ultrasonographic features that seen in reproductive age female presented with acute pelvic pain.

Method: This prospective study included 225 women mean age of 29.76 SD± 6.65 (ranging between 18 and 45 years old) which had been enrolled outpatient clinic from January 2020 to February 2021. Samsung HS50 ultrasound device using a gray scale and Doppler ultrasound convex transducer of CA1-7AD or trans-vaginal probe of EVN 4-9 MHZ is used. In this study we used both trans-abdominal and transvaginal probes. The study attended at Ultrasound Clinic, Kerbala, Iraq. Information of patients was gathered through convenient sampling. Statistical software for social sciences (SPSS version 24) is utilized to study the information.

Result: All 225 patients were scanned in our study. The mean patients age in this work was 29.67 years with the age incidence of those patients ranged between 18 years to 45 years. The simple ovarian cyst is the most common lesion in acute pelvic pain which is got in 35.1% cases the second cause ishemorrhagic ovarian cyst in 27.1% cases, the third common cause uterine fibroid in 10.2% cases. Normal study was seen in 4.9% cases. Ovarian endometrioma seen in 4.0% of cases. PID in 3.6%. Adenomyosis and adnexal cyst in 2.2% each, followed by dermoid cyst in 1.3%. In obstetrical patients presented with acute pelvic pain; the frequent cause are RPOCs, represent 3.6% of acute pelvic pain. Subchorionic bleed in 2.7% cases. Ectopic pregnancy in 2.2% patients followed by molar pregnancy in 0.9%, the ultrasonographic finding evaluation of this study show how the utilization of with R2 =0.930 and p value=0.000

Conclusion: Ultrasound is the radiological procedure of choice in acute pelvic pain, which is simply make a diagnosis and assessment of the reasons for pelvic pain and is regarded as the first line in the investigation because it is non-invasive, available and without the effect of radiation. In this study, the most common cause of pelvic pain is simple ovarian cyst.

Key words: Pelvic inflammatory disease (PID), acute pelvic pain, retained products of contraceptives (RPOCs).

I. INTRODUCTION:

Acute pelvic pain is describe as abruptonset of lower abdominal or pelvic pain that remain less than three months(Kruszka and Kruszka 2010). Classically women would present to the ER after hours of onset. More than a third of women of child-bearing age experience non-menstrual pelvic pain(Waseem, Raad et al. 2020).

“The uterus is pear-shaped structure, which varies in size to the age and hormonal state of the patients, may lie straight or oblique within the pelvis “(sutton, 2002). It has a fundus, a body and a cervix. The cervix projecting into anterior wall of upper vagina.

Normal Fallopian tubes lies in free edge of broad ligament and are open into cornua of uterus, they not usually detected by ultrasound, and they can only recognized in case of sever ascites.
The ovaries are a paired oval shaped organs measuring approximately 3x2x2 cm. The ovaries are usually visualized easily by ultrasound because of the presence of multiple follicles. (Ryan, McNicholas et al. 2011).

Acute pelvic pain may be the clinical manifestations of many gynecological, obstetrical, urological and gastrointestinal diseases which may be overlap, some of the are self-limiting like hemorrhagic ovarian cysts, others are serious conditions which may need surgical intervention like ovarian torsion and appendicitis.

For the examination of pelvic pain, the imaging modality of choice is ultrasound for many reasons: non-invasive, non-ionizing, available and un expensive in comparison with cross-sectional modalities such as magnetic contrast imaging and computed tomography (Geofry, Chigozie et al. 2015).

Ultrasound is actually the first line diagnostic tests for obstetric and gynecologic patients for many reasons: * The use of the high resolution trans-vaginal transducers * The use of color Doppler for blood flow study * 3D /4- dimensional imaging . It remain the most effective tool in gynecological patients (Fahmy, Swamy et al. 2015).

As of now accessible 3D/4-dimensional volume ultrasound able to create images of female pelvis of equivalent quality and positioning to images of MRI and CT yet without radiation, easier and at moderately lesser cost. As we know MRI is a multiplanar imaging modality with good soft tissue resolutions but many people prefer to perform 3D ultrasound in diagnosis of female pelvis for many reasons: 1- less time-consuming and less expensive than MRI. 2- some people have claustrophobia or the anxiety of enclosed spaces, so they afraid to perform MRI, therefor ultrasound more comfortable than MRI. 3- people with metal prostheses and pacemakers that are contraindicated to perform MRI can perform 3D ultrasound which produced images of same quality. Since the initiation of volume imaging ultrasound have enormously enhanced our capacity to utilized ultrasound imaging to answer most clinical questions in gynecology. (Deutch and Abuhamad 2008, Minton and Abuhamad 2013, Sakhel, Benson et al. 2013)

Gynecological causes of acute pelvic pain can be grouped as obstetrical and non-obstetrical causes. In non-pregnant women the usual gynecological causes of pelvic pain involve large simple ovarian cysts, hemorrhagic cysts, ruptured cysts, pelvic inflammatory disease (PID) ovarian torsion and intrauterine misplacement devices (Burnett 1988)

II. SUBJECT AND METHOD
Two hundred and twenty five women included in this cross sectional study with mean age of 29.76 SD± 6.65 (ranging between 18 and 45 years old) had been enrolled outpatient clinic from January 2020 to February 2021. Ultrasound study done for all patients by Samsung HS50 (KOREA), with a typical gray scale and Doppler ultrasound convex transducer of CA1-7AD or trans-vaginal probe of EVN 4-9 MHZ by an expert radiologist and ethically permission was taken from all women which was attended to radiology clinic for collection data for research purpose. All ultrasound reports contain a description to the mass as site, size, shape, margin, their appearance.

By utilizing the SPSS software, version 24, we did the statistical study of the data collected. P value=0.000<0.05.

III. RESULT

The study included 225 women mean age of 29.76 ± SD 6.65 (ranging between 18 and 45 years old) as shown in table -1.

Table 1 Shows the Descriptive Statistics
In Fig 1, out of 225 patients, 203 (90.2%) patients are married and 22 (9.7%) patients are unmarried.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>225</td>
<td>18</td>
<td>45</td>
<td>29.76</td>
<td>6.653</td>
</tr>
<tr>
<td>Vaild N(listwise)</td>
<td>225</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Fig 1, out of 225 patients, 203 (90.2%) patients are married and 22 (9.7%) patients are unmarried.

In figure 2, out of 225 patients, 180 patients (80%) presented with vaginal bleeding and 45 patients (20%) presented without vaginal bleeding.

In table and figure 3, ultrasonographic findings of the lesions demonstrated with their frequencies analysis of the lesions in acute pelvic pain and we demonstrate that simple ovarian cyst is the most common cause which demonstrated in 35.1% cases, then hemorrhagic ovarian cyst in 27.1% cases, the third commonest cause is uterine fibroid in 10.2% cases. A full description is given below.
causes Of pelvic pain

<table>
<thead>
<tr>
<th>Valid</th>
<th>Frequency</th>
<th>Percen</th>
<th>Valid percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>simple ovarian cyst</td>
<td>79</td>
<td>35.1</td>
<td>35.1</td>
<td>35.1</td>
</tr>
<tr>
<td>hemorrhagic ovarian cyst</td>
<td>61</td>
<td>27.1</td>
<td>27.1</td>
<td>62.2</td>
</tr>
<tr>
<td>ovarian endometrioma</td>
<td>9</td>
<td>40</td>
<td>4</td>
<td>66.2</td>
</tr>
<tr>
<td>dermoid cyst</td>
<td>3</td>
<td>1.3</td>
<td>1.3</td>
<td>676</td>
</tr>
<tr>
<td>uterine fibroid</td>
<td>23</td>
<td>10.2</td>
<td>10.2</td>
<td>778</td>
</tr>
<tr>
<td>adenomyosis</td>
<td>5</td>
<td>22</td>
<td>22</td>
<td>80</td>
</tr>
<tr>
<td>ectopic gestation</td>
<td>5</td>
<td>2.2</td>
<td>22</td>
<td>82.2</td>
</tr>
<tr>
<td>molar pregnancy</td>
<td>2</td>
<td>9</td>
<td>0.9</td>
<td>83.1</td>
</tr>
<tr>
<td>subchorionic hematoma</td>
<td>6</td>
<td>2.7</td>
<td>2.7</td>
<td>858</td>
</tr>
<tr>
<td>RPOC</td>
<td>8</td>
<td>3.6</td>
<td>36</td>
<td>89.3</td>
</tr>
<tr>
<td>normal</td>
<td>11</td>
<td>4.9</td>
<td>4.9</td>
<td>94.2</td>
</tr>
<tr>
<td>R D</td>
<td>8</td>
<td>3.6</td>
<td>36</td>
<td>97.8</td>
</tr>
<tr>
<td>adrenl cyst</td>
<td>5</td>
<td>2.2</td>
<td>22</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100</td>
<td>100</td>
<td>None</td>
</tr>
</tbody>
</table>

Table 3: ultrasonographic detecting lesions in the patients

IV. DISCUSSION

Acute Pelvic Pain regarding one of the commonest conditions in females who come to emergency department. As a whole “acute pelvic pain is expert in the lower abdomen that are persist less than three months” (Kurt, Uyar et al. 2013)
In this study assessed 225 patients with age ranging between 18 to 45 years age, as shown in table 1. the mean age is 29.76. our result are correlated with a former work done by Waseem, Raad et al. 2020 (showing “the mean age of 29.8712 years”, another correlation with a former study that done by Sefa Kurt et al in 2013,” showing the mean age of 29.9±6.01 years”.

According to the result shown in figure 2, out of 225 patients, 80% patients had vaginal bleeding and 20% patients presented without vaginal bleeding.

In figure and table 3, ultrasonographic findings of the all cases were demonstrated. From 225 cases involved in our study; the commonest cause of acute pelvic pain was simple ovarian cyst, which constituted 79 cases, i.e. 35.1% of lesions that cause acute pelvic pain, followed by hemorrhagic ovarian cyst in 61 cases (27.1%) cases, compared to Kurt S et al, in 2013 the commonest gynecological lesion in acute pelvic pain was ovarian cysts in 41.18% cases. We also correlates our result with a study done in 2002, that showed salpingitis and hemorrhagic ovarian cysts are most common presenting condition in an acute pelvic pain(Kupesić, Aksamija et al. 2002).

The third common cause in our study was uterine fibroid which constitute 23 cases (10.2%) which compare with a study done by Waseem, S., et al. (2020) which showed that 49 cases (30.1%) of adnexal lesions in acute pelvic pain was uterine fibroid, then simple ovarian cyst in 33 (20.2%) cases and hemorrhagic ovarian constitute 23 cases (14.1%) of cases. correlation also done with prevalence of uterine fibroid which is 17.71% between aged 20-40 years old women in our city (Kasim Mahmood and Mahdi Abd Ali 2014).

In 11 cases (4.9%) out of 225 patients, there were no any abnormal findings by ultrasound which correlate with the study done by Waseem, S., et al. (2020) that showed 8.6% are normal cases.

Ovarian endometrioma seen in 9 cases (4%) of cases out of 225 patients, while in another study done by Waseen, S., et al. (2020) constitute only 0.6% of cases (1 case).

PID constitute 8 cases (3.6%) out 225 patients, other study done by Waseen, S., et al. (2020) PID constitute (4.3%) of cases. other work done by Jain KA et al in 2008, PID is one of commonest causative condition in females with acute pelvic pain (Jain 2008).

Both Adenomyosis and adnexal cyst seen in 5 cases (2.2%) out of 225 patients. Infrequent Adnexal cause in acute pelvic pain in our study is dermoid which is seen in 1.3% of cases (3 cases).

In pregnant women presented with acute pelvic pain; RPOCs are most common, demonstrating in 3.6% (8 patients), 6 patient (2.7%) had subchorionic hematoma, five patients (2.2%) had ectopic gestation, 2 patients (0.9%) had molar pregnancy.

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Fig 4: Transvaginal image demonstrate, left simple ovarian cyst measuring 39.8x21.1mm.
Fig 5: Transvabdominal image demonstrate , left simple ovarian cyst measuring 40.8x 32.7mm.

Fig 6: Transvaginal image demonstrate , left hemorrhagic ovarian cyst measuring 38 x 30 mm.

Fig 7: Transabdominal image demonstrate , right hemorrhagic ovarian cyst measuring 45 x 37mm.

V. REFERENCES