Sonographic Co-relation Between Adnexal Masses And Endometrial Thickness In Infertile Females

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Abstract
Infertility is very common social, economic and medical problem. There are various cause of infertility, adnexal masses and endometrial thickness play a vital role among them if we find out relation between adnexal mass, endometrial thickness and infertility so we will be able to overcome this problem to great cause.

Objective:
To determine the Sonographic co-relation between Adnexal Masses and Endometrial Thickness in Infertile Females.

Methods:
This Cross-sectional analytical study was conducted at Gilani Ultrasound Center, Lahore, Jamiat Hospital and Green town clinic The University of Lahore. Study duration was 9 months. Sample size was 150 patients. Sampling technique used was convenient sampling. All Infertile Females with adnexal mass, age of 18-45 were included in study. Male with infertility were excluded. Ultrasound machine Toshiba xerio with convex transducer frequency range 2.5 to 5 MHz was used.

Results:
Out of 150 patients the mean age was 32 ± 6.33, minimum age was 18 and maximum age was 45. The mean endometrial thickness was 0.78mm with standard deviation 0.29, minimum endometrial thickness was .10 cm, maximum endometrial thickness was 1.69 cm. Out of 150 patient's primary infertility was 30% with frequency of 45, and secondary infertility was 70% with frequency of 105. The chi-square test was used between adnexal mass and endometrial thickness shows that there is significant association because them.

Conclusion:
Study concluded that there was significant co-relation between adnexal masses and endometrial thickness in Infertile Females. Ovaries should not neglected in infertility treatment because they play important role with respect to endometrium. The removal of adnexal masses can improve infertility rate.

Key words:
Infertility, Endometrial thickness, Follicle-stimulating hormone, luteinizing hormone, Ultrasound.

Introduction:
Infertility is a debilitating disease that affects the reproductive capacity of its victims at a very basic level. The effect of infertility can be enormous. Infertility has many medical and social effects, and one of them is the emotional squeal. Patients affected and their families are suffering from loss of confidence, deceit, and depression. An immense burden of infertility on the family is mental, physical, cognitive, economic, and social and financial. Infertility is a couple’s failure to get pregnant after a year of normal, unprotected intercourse. Infertility is subjective the mechanism of reproduction is complex in both men and women. Infertility affects approximately 10-15% of all pairs. Equally affected are males and females. The doctor will consider the pair as a group. The initial
assessments are often viewed as a stressful experience. Together, the couple is seen. This technique is efficient and time-saving. Operating with female infertility is incomplete without ultrasonography (US) use. The name adnexa is derived from the Latin word "adnexus" meaning "annex." The uterus adnex comprises the ovaries, fallopian tubes, and large ligament structures. Adnexal masses known as ovarian masses or cysts, but they also include para tubal cysts, hydroosalpinx and other non-ovarian masses. The occurrence of adnexal masses in females is estimated to be between 3% and 18%. An adnexal mass (ovarian mass, fallopian tube, or surrounding connective tissue) is a common gynecological concern. Factors other than image findings should also be considered when assessing the likelihood of malignancy for an adnexal mass. Acute symptoms such as abdominal pain, nausea, vomiting and infection can occur in women with adnexal masses. Abnormally thickened endometrium on the picture can occur due to a number of causes that can be classified according to whether or not they are linked to childbirth. Transvaginal sonography is painless, quicker, cost-effective and can be done as a day care patient in the department. It can be used as a first-line diagnostic procedure for infertility. But it demands costly equipments, special TVS probe as well as expertise of the operator. Transvaginal sonography is the most useful procedure and they play an important role in the diagnosis of causes of infertility.

**Methods:**
This study was conducted at Gilani Ultrasound Center, Ferozpur Road, Lahore and Green town clinic The University of Lahore. Study duration was 9 months. Sample size was 150 patients. The sampling technique used in this study was convenient sampling. All Infertile Females with adnexal mass, age of 18-45 were included in this study. Male infertility was excluded. Ultrasound machine Toshiba xerio with convex transducer frequency range 2.5 to 5 MHz was used. The endometrium should be measured in the long axis or sagittal plane, with the entirety of the endometrial lining.

**Results:**
Out of 150 patients the minimum and maximum age was 18 and 45 years and the mean age was 32 ± 6.33 years.

According to Figure 1, Out of 150 patients primary infertility was 45(30%) and secondary infertility was 105(70%).

<table>
<thead>
<tr>
<th>Types of Fertility</th>
<th>Primary Fertility</th>
<th>Secondary Fertility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Fertility</td>
<td>45(30%)</td>
<td>105(70%)</td>
</tr>
</tbody>
</table>

Table 1: Association between Adnexal Mass and Endometrial Thickness

<table>
<thead>
<tr>
<th>Adnexal Mass</th>
<th>Endometrial Thickness</th>
<th>Total</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adnexal Cyst</td>
<td>&lt;0.7</td>
<td>0.7 or more</td>
<td>18(12.0%)</td>
</tr>
<tr>
<td>Normal</td>
<td>8(14.0%)</td>
<td>10(10.8%)</td>
<td>18(12.0%)</td>
</tr>
<tr>
<td>Ovarian Cyst</td>
<td>4(7.0%)</td>
<td>16(17.2%)</td>
<td>20(13.3%)</td>
</tr>
<tr>
<td>Endometrioma</td>
<td>4(7.0%)</td>
<td>7(7.5%)</td>
<td>11(7.3%)</td>
</tr>
<tr>
<td>Polycystic Varian Syndrome</td>
<td>28(49.1%)</td>
<td>9(9.7%)</td>
<td>37(24.7%)</td>
</tr>
<tr>
<td>Hemorrhagic Cyst</td>
<td>4(7.0%)</td>
<td>23(24.7%)</td>
<td>27(18.0%)</td>
</tr>
<tr>
<td>Follicular Cyst</td>
<td>9(15.8%)</td>
<td>28(30.1%)</td>
<td>37(24.7%)</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>93</td>
<td>150</td>
</tr>
</tbody>
</table>

Table 1: Frequency Distribution of Types of Infertility

Table 1 shows that polycystic ovarian syndrome effects endometrial thickness more as compared to other abnormalities. There was significant association between adnexal mass and endometrial thickness (P-value<0.05).
Images:

Figure 2: Left follicular Cyst, Size of 5.8 and 5.6 cm with endometrial thickness 0.6 cm

Figure 3: Detection of bilateral polycystic ovarian disease with volume of 30.7 cm³

Discussion
Present study was conducted in a Gilani Ultrasound Center, Ferozpur Road, Lahore and Jamiat Hospital, Mansoora Lahore. Among 150 cases of infertile females during this study period of nine months. Regarding variables among the study women mean ± SD of age was found 32.55 ± 6.33 years. Study conducted in 2013 by Hussein B, prevalence rate of PCOS was very high among infertile women. A Study conducted in 2018, at the same time, adnexal masses were found in 17.4% of the women included in the study, although 82.6% had no other gynecological pathology than increased endometrial thickness. For women with adnexal masses, the endometrial thickness was greater than in women without adnexal mass. Women with adnexal masses were more endometrial than women without adnexal mass and the difference between groups was statistically significant. While our study found adnexal masses in 132 patients out of 150, endometrial thickness in 39 patients was less than 7 mm and there was a significant correlation between adnexal mass and endometrial thickness.

Study conducted in 1992, concluded that patients with PCOS at a younger age has more chance of endometrial cancer than is typical for endometrial carcinoma in the general population, often developing at younger than 35 years. Our study revealed that the out of 37 patients of polycystic ovaries, in cases endometrial thickness was less than 0.7 cm which shows infertility and there was significant correlation between adnexal masses and endometrial thickness. Similar studies conducted in different years that PCO’s causes infertility their results also matched to our study. A study conducted in 2010 revealed that, Infertility affects 40% of women with PCOS, which is also, resemble with our study. Study conducted in 2017 by Iatrakis et al, revealed that among 100 patients gone through Trans vaginal ultrasound, PCO was found among 69% patients, in that study Polycystic Ovaries (PCO) is the major finding in women with infertility. In Our study we found maximum cases of polycystic ovaries rather than adnexal masses. Polycystic ovaries were found in 37 patients with thin endometrium which also causes infertility. A study conducted in 2015 by Joham et al discussed that, women with PCOS is have more reproductive complications importantly infertility which accounts for around 6% - 21% rather than other complications. A study conducted by Kandarakis in 1998 revealed that 20% of women with PCOS have been with infertility problems (early pregnancy loss). In another study it has been found 5.0 to 20.0% of women develop endometriosis who consults
with their physician for infertility\textsuperscript{17}. Ovarian volume were measured only in the PCOD cases. The average volume of right ovaries were found 15.98±5.32 ml and that of left ovaries were 14.99±5.25 ml. Ashley and Nathan (1997) found the main ovarian volume in patient with PCOD to be 13.29±8.76 ml, which was different statistically from the mean in controls, which was 10.04±8.76 ml. This was confirmed by another study in which the mean volume in PCOD patients was 13.8 ml compared with 7.5 ml in normal controls.\textsuperscript{18}

**Conclusion:**

Study concluded that there was significant co-relationship between adnexal masses and endometrial thickness in Infertile Females. Ovaries should not neglected in infertility treatment because they play important role with respect to endometrium. The removal of adnexal masses can improve infertility rate.

**References:**


14- Hussain NB, Das RR. Transvaginal


