Prevalence of Tubal Obstruction in the Hysterosalpingogram of Women with Primary and Secondary Infertility

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Abstract
Background: The purpose of this study was to evaluate the fallopian tube of women with infertility and to observe whether there are any significant differences in the Hysterosalpingogram findings with regard to prevalence of tubal block in women with primary and secondary infertility.

Methods: A retrospective study of unilateral and bilateral tubal obstruction in Hysterosalpingogram of women with primary and secondary infertility was carried out.

Results: The frequencies of tubal obstruction were about 19% in women with primary infertility and 29% in secondary infertility. Chlamydia antigen positivity rate was similar in both groups. Ectopic pregnancy (p<0.01) and previous pelvic surgery (p<0.001) were higher in women with secondary infertility.

Conclusion: Tubal obstruction is a cause of female infertility according to this study. Bilateral tubal obstruction was similar in primary and secondary infertility groups and previous pelvic surgery may be the cause of tubal obstruction in the secondary infertility group.

Keywords: Chlamydia, Fallopian tube blockage, Hysterosalpingography, Infertility.

Al Subhi T, et al.

Prevalence of Chlamydial infection or tubal obstruction from Oman and hence we decided to do this study.

**Methods**

The study was approved by local research and ethics committee. A retrospective study of the prevalence of tubal block in women who underwent HSG from June 2008 to June 2010 was undertaken in Sultan Qaboos University hospital, Sultanate of Oman. All women who presented to the subfertility clinic for primary or secondary infertility were included except those who declined to be evaluated by Hysterosalpingogram. There was one patient who gave history of her previous tubal ligation reversal. The information regarding the type of infertility, past obstetric history, gynecological history, any pelvic surgeries including myomectomy, ovarian cystectomy, surgery for endometriosis, Salpingostomy/Salpingectomy, appendicectomy was taken from electronic medical records. Testing for Chlamydia antigen was performed in the endocervical swabs with the IDEIA™ PCE Chlamydia assay (Oxoid, Cambridgeshire, UK).

The significance of the associated factors in the two groups was assessed by Chi-squared test. When the numbers were small, Yates correction was done to compare the groups e.g. bilateral block.

**Results**

Of the total number of women, 53% had primary infertility and the rest had secondary infertility. The patient characteristics for each group are given in table 1. The findings of Hysterosalpingogram in the primary and secondary groups are given in table 2. The prevalence of fallopian tubal obstruction was 19.1% in the primary infertility group and 28.7% in the secondary infertility group. Cornual block was observed in 11 women in the primary infertility group but only one woman with secondary infertility. Hydrosalpinx of the whole tube was observed in two women and peri-tubal adhesions were reported in four women. The prevalence of Chlamydia antigen positivity was similar in both primary and secondary infertility groups. In those women who tested positive for Chlamydia antigen, the HSG showed bilaterally patent tubes in 8 of 11 cases (73%) and unilateral block in the remaining three (27%).

**Discussion**

The overall prevalence of Chlamydia antigen positive cases were less than those reported in some of the European literature (7), but it was more than the one reported by Aswad et al, from the Middle East (9). This could be so because the sample studied were from a tertiary care and not a primary care. The prevalence of tubal block in the primary and secondary infertility groups is similar

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Number (n=218)</th>
<th>Primary infertility (n=115)</th>
<th>Secondary infertility (n=103)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age <em>(years)</em></td>
<td>218</td>
<td>28.6</td>
<td>31.4</td>
</tr>
<tr>
<td>Gravidity *</td>
<td>--</td>
<td>0</td>
<td>2.8</td>
</tr>
<tr>
<td>Parity *</td>
<td>--</td>
<td>0</td>
<td>1.4</td>
</tr>
<tr>
<td>History of PID</td>
<td>3</td>
<td>0</td>
<td>3%</td>
</tr>
<tr>
<td>History of ectopic</td>
<td>16</td>
<td>0</td>
<td>15.69%</td>
</tr>
<tr>
<td>Chlamydia antigen positivity</td>
<td>12</td>
<td>7.07%</td>
<td>5.49%</td>
</tr>
<tr>
<td>PCOS</td>
<td>18</td>
<td>7.83%</td>
<td>8.82%</td>
</tr>
<tr>
<td>Previous pelvic surgeries</td>
<td>85</td>
<td>17.7%</td>
<td>50%</td>
</tr>
</tbody>
</table>

* Mean, PID: Pelvic Inflammatory Disease; PCOS: Polycystic Ovarian Syndrome

<table>
<thead>
<tr>
<th>Finding</th>
<th>No (%)</th>
<th>Primary infertility</th>
<th>Secondary infertility</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilateral block</td>
<td>6(2.8)</td>
<td>2.6%</td>
<td>2.97%</td>
<td>0.122</td>
</tr>
<tr>
<td>Unilateral block</td>
<td>45(20.8)</td>
<td>16.52%</td>
<td>25.74%*</td>
<td>&lt;0.0001 **</td>
</tr>
</tbody>
</table>

* Including previous adnexal surgery for ectopic pregnancy; ** p<0.05, Chi-square
to that reported by Bello (2). Bilateral tubal obstruction was confirmed by laparoscopy in 4 of 6 cases and laparoscopy was not performed in the other two cases. One of the cases with bilateral tubal obstruction had an obvious bilateral hydro-salpinx on HSG and hence laparoscopy was not performed. Previous pelvic surgeries including surgery for ectopic pregnancies, myomectomy, cesarean section, appendectomy, cystectomy etc., were significantly higher in women with the secondary infertility compared to those in the primary group. Of the nine patients with cesarean section, eight had a normal HSG and only one had unilateral obstruction. In a systematic review by Luttjeboer et al., regarding the risk factors for tuboperitoneal pathology, previous pelvic surgery was found to be an important risk factor (10).

**Conclusion**

Tubal obstruction is a cause of female infertility according to this study. Bilateral tubal obstruction was similar in primary and secondary infertility groups and previous pelvic surgery may be the cause of tubal obstruction in the secondary infertility group.

**Conflict of Interest**

The authors declare that they have no conflict of interest.

**References**