CERVICAL CYTOLOGIC ABNORMALITIES IN INFERTILE WOMEN

NASRIN JALILIAN, FIROOZEH VEISI, NEGIN REZAVAND *
Maternity Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran

ABSTRACT

Background: Global estimates indicate that cervical cancer is the second most common cancer among women following breast cancer. Therefore, screening for cervical cancer is considered an effective method in early diagnosis and treatment of this condition. Here, we studied screening tests results to determine the frequency of abnormal cervical cytologic findings.

Methods: This study had two phases. The first phase was conducted from March 2007 to March 2008 (400 subjects). The second phase lasted from March 2011 to March 2012 (208 subjects). All infertile women (either primary causes or secondary ones) who presented to our university infertility clinic to receive treatments were included.

Results: Cervical cytology reports were unsatisfactory in 10 subjects (1.7%) and abnormal in three patients (0.5%). Most cases whose reports were unsatisfactory were documented in the first phase of the study (i.e., 9 patients, 90%).

Conclusion: Cervical screening with Pap smear enables early diagnosis and management of cervical abnormalities and consequently a decrease in the rate of invasive cervical cancers. It is suggested to conduct studies with larger sample sizes to ensure the beneficial effects of cervical screening.

Key words: Screening, cervical cancer, infertility.

Introduction

Sexually transmitted diseases (STDs) are considered a public health issue among 10-19 as well as 20-24 years age groups in females. Young females constitute only 25% of the general population of the US, but this group encompasses 65% of presentations to the STD clinics. Chlamydia trachoma is and human papilloma virus (HPV) are STDs and have direct association with infertility caused by such factors as tubal factors and cervical cancer[1].

Global estimates indicate that cervical cancer, following breast cancer, is one of the most common gynecologic malignancies. More than three-fourth of cervical cancer cases are reported from developing countries. According to the estimates made by the World Health Organization (WHO) in 2008, cervical cancer was recognized as the third most common malignancy among women. More than 530,000 women have been diagnosed by cervical cancer globally and more than 270,000 cases have died because of this disease[2, 3]. Mean 5-year survival reaches 100 percent. In developing countries, less than half of the patients survive over 5 years[4]. In Iran, the rate of cervical cancer, reported by the Iranian Ministry of Health and Medical Education using registries, is estimated to be 2 per 100,000 persons[5].

Early detection of cancer means detect in gcancer that is still confined and is small and the likelihood of its cure is high. Two general methods for early detection of cancer are screening and education. Design strategic planat the level of the National Committee of the Cancer Center for written action plan for early detection of cancer is con-
sidered as one of the Down staging program. In this program, the goal is to raise early stage cancer to all cancers ratio\textsuperscript{5,6}.

The early stages of cervical cancer are characterized by dysplasia or cells with changed shape, size, and their order. Early cervical cancer changes can be easily detected by Pap smear test. Pap tests collection and analysis of a small sample of cells of the cervix. Early detection of cervical abnormalities has decreased the risk of cervical cancer progress significantly\textsuperscript{7}. Over the past 50 years, morbidity and mortality from cervical cancer in high-income and middle-income countries has fallen sharply. This is related to organized or opportunistic screening with Pap cytology\textsuperscript{8}). HPV is the main cause of cervical cancer\textsuperscript{9}). HPV types 16 followed by subtype 18 have been recognized as the causative agent of cervical cancer\textsuperscript{10-11}.

On the other hand, age, number of pregnancies, younger age at first sexual intercourse, and smoking are the major risk factors for cervical cancer\textsuperscript{7}). Moloukar findings show that exposure to HPV human papillomavirus is a risk factor for cervical cancer and cervical intraepithelial neoplasia (CIN)\textsuperscript{12-14}.

There is evidence of increased prevalence of cytological abnormalities in infertile women compared to healthy individuals. The researchers believe that this could be due to the high prevalence of STDs in the so individuals\textsuperscript{15}). So, paying attention and continuous evaluation of screening tests results in this subgroup is particularly important in the design of health services. The aim of this study was to assess the effects of opportunistic screening in infertile women referring to the Infertility Clinic of Moatzedi Hospital in Kermanshah was designed. The screening results in two time points (2007 and 2011) were reviewed to estimate the prevalence of abnormal results of cervical cytology.

Materials and methods

This retrospective study had two phases. The first phase was conducted from March 2007 to March 2008 (400 subjects). The second phase lasted from March 2011 to March 2012 (208 subjects). The subjects were infertile women (either primary causes or secondary ones) who presented to our university infertility clinic. According to our policy, Pap smear test (traditional method) is done to screen for cervical cancer before implementing any treatment such as ovulation induction, intrauterine insemination, in vitro fertilization (IVF), or in tracy to plasmic sperm injection (ICSI). Smear tests were done by gynecologists and were interpreted by pathologists using the Bethesda II system. Women with age range of 19-42 years were eligible to enter into the study. The variables considered were Pap smear results, age, duration and cause of infertility, history of surgery or medical treatments and patient complaints upon presentation. Pap smear results included ASC (atypical squamous cells), LSIL (low-grade squamous intraepithelial lesions) and HSIL (high-grade squamous intraepithelial lesions). ASC was categorized as ASCUS (atypical cells of undetermined significance) or ASCH (Atypical squamous cells, a high-grade squamous intraepithelial lesion is not excluded as a possibility). Then, the relationship between frequency of abnormal Pap test result with the causes of primary or secondary infertility was assessed.

Results

Mean (SD) age of the patients was 28.7 (6.3) years. The youngest patient aged 16 years. About 70% of patients presented due to primary infertility. The most common cause of infertility was abnormal ovulation. In 278 cases (45.7%) of the patients, ovulation problem was the cause of infertility. This was true in both phases of the study. Table 1 presents the causes of infertility identified.

![Table 1: The cause of infertility in two phases of the study who presented to our university infertility center.](image)

Cervical cytology was normal in 569 cases (97.8%). There were 390 normal reports in 2007 (97.5%) and 179 normal cases (98.4%) in 2011. In 10 cases (1.7%), Pap smear result was unsatisfactory and only for 3 cases this was abnormal (0.5%). Most cases of unsatisfactory result were reported in 2007 (9 cases out of 10 cases). Abnormal epithelial cells were ASCUS (one patient) and LSIL (two cases). The only ASCUS report was reported in 2011 and one LSIL was reported in the same year (Table 2).

Mean age of patients with abnormal Pap test result was 28.7 (6.3) years and in normal group this
was 25.3 (0.5) years; P< 0.001. Tables 3 and 4 present distribution of cytology results according to the cause of infertility. As seen, one patient with ASCUS as well as one patient with LSIL was seen in those with abnormal ovulation.

### Table 2: Cervical cytology results in 2007 and 2011 years among infertile women who presented to our university infertility center.

<table>
<thead>
<tr>
<th>Year</th>
<th>Normal</th>
<th>Unsatisfied</th>
<th>ASCUS</th>
<th>SIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>390 (97.5%)</td>
<td>9 (2.2%)</td>
<td>0</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>2011</td>
<td>179 (98.4%)</td>
<td>1 (0.5%)</td>
<td>1 (0.5%)</td>
<td>1 (0.5%)</td>
</tr>
<tr>
<td>Total</td>
<td>596 (97.8%)</td>
<td>10 (1.7%)</td>
<td>1 (0.2%)</td>
<td>2 (0.3%)</td>
</tr>
</tbody>
</table>

### Table 3: Cervical cytology reports based on the cause of infertility.

<table>
<thead>
<tr>
<th>Cause of infertility</th>
<th>Normal</th>
<th>Unsatisfied</th>
<th>ASCUS</th>
<th>SIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubal</td>
<td>51 (98.1%)</td>
<td>1 (1.9%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ovulation</td>
<td>260 (97.7%)</td>
<td>4 (2.2%)</td>
<td>1 (0.3%)</td>
<td>1 (0.3%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>189 (97.4%)</td>
<td>4 (2.0%)</td>
<td>0</td>
<td>1 (0.5%)</td>
</tr>
<tr>
<td>Ovulation and tubal</td>
<td>42 (97.6%)</td>
<td>4 (2.3%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Male factor</td>
<td>19 (100%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>6 (100%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>597 (97.8%)</td>
<td>10 (1.7%)</td>
<td>1 (0.2%)</td>
<td>2 (0.3%)</td>
</tr>
</tbody>
</table>

### Table 4: Distribution of cervical cytology results according to age group of infertile patients.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Normal</th>
<th>Unsatisfied</th>
<th>ASCUS</th>
<th>LSIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 26 years</td>
<td>201 (99.2%)</td>
<td>6 (2.9%)</td>
<td>0</td>
<td>2 (1%)</td>
</tr>
<tr>
<td>26-31 years</td>
<td>188 (99.5%)</td>
<td>0</td>
<td>1 (0.5%)</td>
<td>0</td>
</tr>
<tr>
<td>≥ 32 years</td>
<td>175 (97.8%)</td>
<td>4 (2.2%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>597 (97.7%)</td>
<td>10 (1.7%)</td>
<td>1 (0.2%)</td>
<td>2 (0.3%)</td>
</tr>
</tbody>
</table>

### Discussion

Screening by Pap smear enables for early detection of cervical cell abnormalities and prompt action. Consequently, we observe a significant decrease in the incidence of invasive cervical cancer. This study was designed to evaluate the results of cytology Pap smear test in infertile women. The overall prevalence of cervical cancer, according to the latest reports made by the Iranian Ministry of Heal this estimated to be less than 2 in every 100 persons. So, from the outmost it was expected that the incidence of cancer in the studied population not to be very high. The results showed that the prevalence of cervical cytologic abnormalities in infertile women was 5 per 1000 persons.

In a previous study in Kermanshah, a using-pathology laboratory report on the prevalence of cervical cytology abnormalities in women was reported as 0.3%.[16] This figure slower than the prevalence we observed. Researchers believe that since infections transmitted through sexual contact, including infection with HPV, is more common in those with abnormal cervical cytology, the prevalence of cervical cancer is also more common accordingly[17].

Therefore, the prevalence of cytologic abnormalities in the normal population was much lower than the rates in infertile women. Other studies confirm these findings. In Almasi et al. study[16], the mean age at diagnosis of abnormal cytology was more than forty years, but in this study we observed abnormal findings in subjects who aged younger than 40 years. This may be due to the lower age of patients who receive infertility treatment. The findings demonstrate the importance of cervical cancer screening starting at a younger age in such population.

The prevalence of abnormal cytology in this study was lower than that reported from studies elsewhere[15, 18]. This could due to the lower prevalence of STDs[19, 20]. Also, cultural beliefs and customs in Iran cannot be ignored here. Regarding the etiology of cervical cancer, infection by HPV has been named as the necessary cause. In infertile women, the prevalence of HPV infection has been reported as 75%. Chlamydia trachoma is one of the factors that can cause in fertility problems a used by the tubal diseases[17]. This has also been noted as the third leading cause of infertility in developing countries[21]. Here, since we did not have access to the data about the infection rate in the studied sample, we were not able to study the effect of STDs on cervical cytology reports.

### Conclusion

Screening with pap smear has enabled the clinicians with early diagnosis of cervical cell abnormalities and prompt action. This has caused significant change in invasive cervical cancer occurrence. The results showed that the prevalence of abnormal cytologic findings was 5 in 1,000 persons. It is suggested to conduct studies with larger sample sizes and application of newer methods such as liquid-based pap smear.
References


5) Principles of prevention and surveillance of noncommunication disease Ministry of health and Medical educations; 2008.


Acknowledgment

We thank all personnel of the Infertility Clinic of Motazedi Hospital who helped us in this study.

Corresponding author
Neginrezavand
Email: nRezavand@kums.ac.ir
(Iran)