Laparoscopic Aspiration of Ovarian Cysts

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Abstract

In this study, we investigated the value of cytologic evaluation of ovarian cysts. In a prospective cross-sectional study, we compared cytologic results with pathologic findings in 55 patients with apparently benign ovarian cysts. For functional ovarian cysts, cytology had a sensitivity of 100% and specificity of 90.4%. In endometriosis, sensitivity and specificity of cytology were 66.3% and 100% respectively. In dermoid cyst, sensitivity and specificity of cytology were 100%. In mucinous cysts, we found sensitivity of 90.4% and specificity of 100%. Therefore, in patients with apparently benign ovarian cysts, especially in the centers without adequate equipment or trained personnel for laparoscopic ovarian cystectomy, we can evaluate the ovarian cysts by cytologic aspiration and avoid unnecessary laparotomy especially in fertile women.

Key words: Ovarian cysts, cytology, pathology, laparoscopy

Introduction

Ovarian masses are one of the most frequent findings in reproductive age. These masses include functional cysts, benign tumors, malignant tumors and endometriomas. Accurate diagnosis and treatment of ovarian masses prevent from complications like torsion, rupture, hemorrhage and metastasis in malignant forms. The most popular method for diagnosis of ovarian masses is biopsy or complete excision of mass.¹ But currently, vaginal ultrasound and Doppler has come to help the gynecologists. Homogenous echogenicity, size and mobility of mass are the signs of benign masses.² Heterogenic echo, hemorrhage and necrosis are signs of malignant ones.³ The blood flow and vascular pressure, or being warm or cold on Doppler ultrasound can help the physician to different benign and malignant masses.⁴ By ultrasound and Doppler in women in the reproductive age, ovarian masses can be evaluated, but in the case of an intractable mass which doesn’t respond to medical treatment, we need to evaluate it. If laparotomy is performed for the evaluation especially in young or fertile women, pelvic adhesion and future fertility problems could be induced and if laparoscopy is used, proper equipment and physician’s skill are mandatory.⁵ So if cytologic aspiration in the first step of evaluation of apparently benign ovarian masses (history, ultrasound, Doppler) is used in young or fertile women, a lot of complications would be avoided.⁶ In this study, it has been tried to compare sensitivity and specificity of cytologic ovarian aspiration with pathologic cyst wall evaluation. In cytologic aspiration some features are useful to diagnosis the nature of the cyst:

- In corpus luteum there is loose particles of granulose cells
- Follicular cyst has low cellularity and high estradiol level
- Acellular fluid is non-diagnostic and in most cases it’s a benign sign
- Endometriotic cyst shows hemocidrin filled macrophages and endometriial cells in cytology
- Serous and mucinous tumors include collagenous sheets and papillary epithelial cells
- Brenner tumor has cells with striated nuclei
- Benign teratoma has squamous mature cells and vacuolated sebaceous cells in cytology

Patients and Method

This was a prospective, cross-sectional and descriptive study. It has been done in 2 years from March 1997 to January 1999 on patients with ovarian masses who attended gynecologic clinics of Mahdi hospital in Tehran, Iran. In order to compare accuracy of cytology and pathology, we included all laparoscopies and laparatomies done for ovarian masses. In all patients we aspirated fluid before excision of the cyst wall and sent the cytology and pathology specimens separately to the laboratory. The pathologist who reported the pathology results was blind to cytologic results.

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Table 1: List of pathologic diagnosis of the patients

<table>
<thead>
<tr>
<th>Follicular cyst</th>
<th>Luteal cyst</th>
<th>Endometriosis</th>
<th>Dermoid</th>
<th>Benign serous</th>
<th>Benign mucinous</th>
<th>Borderline mucinous</th>
<th>Mixed seromucinous</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>13</td>
<td>11</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>1</td>
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Finally, cytology results were compared to pathology regarding sensitivity and specificity of the test. At the beginning we included 60 patients in the study. Their age range was between 22 years to 42 years and mean age was 32.7±4.

After history taking, performing physical exam and ultrasound, all patients with heterogeneous or solid mass were not included and with exclusion of 5 paratubal and paroovarian cysts and hydrosalpinces, we continued the study on 55 cases.

Results

Pathologic results were: 26 ovarian functional, 16 follicular and 13 corpus luteum cysts also 11 endometriosis, 4 dermoid cysts, 6 benign serous cysts, 2 benign mucinous cystadenoma and 2 borderline mucinous cystadenoma. In cytologies reports only 2 cases of luteal cysts were reported as follicular cysts, therefore the sensitivity of cytology for follicular cysts was 100% and specificity was 90.4%. For 11 cases of endometrioma, cytologic report confirmed 7 cases, therefore a sensitivity and specificity of test for endometrioma were 66.3% and 100%.

In 4 cases of dermoid cysts, cells were reported in cytology with 100% sensitivity and specificity.

6 benign serous cysts were reported acellular in cytology and all 4 mucinous cysts were confirmed by cytology, but one case of benign mixed seromucious cyst was not detected in cytology. Therefore sensitivity of cytology for mucinous cysts was 90.9% and its specificity was 100%.

Discussion

Adnexal tumors with or without signs and symptoms are very frequent in women. In reproductive age women, follicular and luteal cysts are the most frequent. In menopausal women, primary or secondary neoplasm, liomyoma and ovarian fibroma must be considered. Today FNA or aspiration biopsy of ovarian masses via ultrasound or laparoscopy is considered especially for young women who want to save their reproductive capability, or to undergo IVF. Accurate diagnosis of these cysts is valuable. Diagnosis of ovarian carcinoma in first stages has a great value in prognosis, but care should be taken on more accurate selection of these patients, because puncture of malignant ovarian tumors can lead to peritoneal dissemination. Diagnostic accuracy of puncture for benign tumors is 95%. For careful patient selection, we must score the tumor with ultrasound, because with higher ultrasound score, the probability of malignancy is higher and in these case FNA is should be avoided. In present study we selected the patients with cystic and homogenous masses without risk of malignancy. To avoid peritonitis caused by the rupture of dermoid cyst, we excluded these cases but in four patients, dermoid cysts didn’t have the criteria on ultrasound and were aspirated with no complication.

In laparoscopic aspiration there is no grave complication but 1.6% pelvic infection in transvaginal or transrectal aspiration has been reported. According to Swim study, accuracy of FNA in ovarian tumors is 90% but patient selection is very important and FNA is advised for young women, with reproductive desire, not for peri or post menopausal women.

Reliability and diagnostic accuracy of FNA could be 91% in benign and 84% in malignant tumors. In some studies diagnostic failure of cytology for ovarian cysts has been 15%. Therefore use of other diagnostic tools is mandatory. The color of cyst fluid is not a good diagnostic index. Measurement of estriol concentration in cyst fluid in differentiation of follicular cysts from neoplastic cysts is useful. Negative cytology plus low Ca 125 and high estradiol (>1000pg/ml) are criteria for functional cysts. High CEA is a sign of malignancy or mucinous tumors. Sometimes we can use DNA ploidy of cyst fluid cells to increase the accuracy for separating benign and malignant tumors, but this is not useful for borderline tumors. Cytology can not detect microscopic pattern of cancer but detect all kinds of teratoma and is indicated in patients with contraindications of laparoscopy.

In malignant ovarian tumors, biopsy added to cytology can increase the accuracy of diagnosis. Therefore, FNA can give useful information about ovarian cysts and reduce the rate of laparotomy and adhesion formation. By the way sometimes in IVF we can screen the follicular fluid.
pathologist, complete set-up or experience for laparoscopic ovarian cystectomy.

References