ROLE OF FINE NEEDLE ASPIRATION CYTOLOGY (FNAC) IN DIAGNOSIS OF UNI-LOCULAR OVARIAN CYSTS – A CYTOHISTOLOGICAL CORRELATION

FARRUKH KAMAL, ROBINA FARRUKH, FEHMEEDA NAHEED
IRAM NADEEM AND SOBIA GHAZAL
Department of Pathology, Allama Iqbal Medical College and
Department of Obstetrics and Gynaecology, F. J. Medical College, Lahore

This study was carried out to assess the ability of fine needle aspiration cytology (FNAC) in the diagnosis of ovarian cysts by comparing the results with histological findings of tissue biopsies. This study includes 48 cases by ovarian cysts reported to Pathology department, Allama Iqbal Medical College, Lahore and Author's Lab. mainly from Jinnah Hospital, Lahore, Sir Ganga Ram Hospital, Lahore and Services Hospital, Lahore. In 28 cases, aspiration was done per-operatively while in 20 cases preoperatively. These aspirates were examined cytologically by making the appropriate smears. The same cysts removed surgically were then examined histologically and results were compared. In a total of 48 cases, on FNAC, serous, follicular, luteal, mucinous and endometriotic cysts were diagnosed in 12, 8, 7, 5 and 5 cases respectively with inconclusive aspirate in 11 cases. When histology was done on excised specimens of these ovarian cysts, serous cysts were found in 17 patients, follicular cysts in 10, luteal cysts in 12, mucinous cysts in 6 and endometriotic cysts in 3 patients. On correlating the FNAC and histopathology results, a sensitivity of 58.34% to 100% and a specificity of 60% to 100% were calculated in different types of cysts. It is concluded that FNAC of ovarian cysts is a fairly useful diagnostic technique which can further improve by more experience and ancillary techniques.

INTRODUCTION

Ovaries, playing a key role in reproduction and being an important determinant of female sex, have always been the centre of interest for gynaecologists. A few, if any, organs exhibit the diversity of pathological entities to be found in the human ovaries. These lesions may be solid or cystic with latter being more common in gynaecological practice[1]. Finding of an ovarian cyst causes considerable anxiety for women because of the fear of malignancy[2]. Basic categorization of these ovarian cysts into functional and neoplastic and then neoplastic into benign and malignant is extremely useful for management point of view. Ultrasonography using morphological features has been used as one of the recommended technique for this distinction[3]. Fine needle aspiration cytology (FNAC) of the ovarian cysts is another favorite diagnostic and therapeutic modality at some centres[4]. This combined evaluation by using ultrasonography and FNAC may lead to a more limited surgical approach for this purpose[5]. In the present study role of FNAC is assessed in the diagnosis of unilocular ovarian cysts by correlation with histological findings.

The purpose of this study was to assess the role of fine needle aspiration cytology (FNAC) in the diagnosis of unilocular ovarian cysts and their correlation with histological diagnosis.

MATERIALS AND METHODS

This study includes 48 cases of ovarian cysts reported to Pathology department, Allama Iqbal Medical College, Lahore, from Jinnah Hospital, Lahore, Sir Ganga Ram Hospital, Lahore and Services Hospital, Lahore. The patients included in this study were based on ultrsound examination revealing unilocular cysts in different age groups. In 28 cases, aspiration was carried out per-operatively while in 20 cases preoperatively followed by surgery latter on. The aspirated fluid was physically examined and at-least four smears were prepared from each aspirate after centri-fugation. They were stained with H & E and Geimsa. The excised cysts were thoroughly examined and 4-6 representative sections were taken from each biopsy. They were processed in an automatic tissue processor through ascending grades of acetone, cleared in xyline and impregnated in paraffin wax. Tissue blocks were

Table-1: *Fine needle aspiration cytology (FNAC) of ovarian cysts.*

Types of cysts	No.	Percentage
Serous cysts	12	25.00%
Follicular cysts	8	16.67%
Luteal cysts	7	14.58%
Mucinous cysts	5	10.42%
Endometriotic cysts	5	10.42%
Inconclusive aspirates	11	22.91%
Total	48	100.00%

Table-2: *Histological diagnosis of ovarian cysts.*

Types of ovarian cysts	No.	Percentage
Serous cysta	17	35.42%
Follicular cysts	10	20.83%
Luteal cysta	12	25.00%
Mucinous Cysts	6	12.50%
Endometriotic cysts	3	6.25%
Total	48	100.00%

Table-3:-*Correlation of FNAC and histopathology in uniloculr ovarian cysts.*

Types of Cysts	Cytology	Histopathology	False Positive	False Negative	Sensitivity	Specificity
Serous cysts	12	17	-	29.41%	70.59%	100.00%
Folliculr cysts	8	10	-	20.00%	80.00%	100.00%
Luteal cysta	7	12	-	41.66%	58.34%	100.00%
Mucinous cysta	5	6	-	16.66%	83.34%	100.00%
Endometriotic cyst	5	3	40.00%	-	100.00%	60.00%

cut at 2-3 u and stained with H &E. The results of cytology and histology were correlated and sensitivity and specificity were calculated.

RESULTS

A total of 48 cases, on FNAC (Table-1), serous, follicular, luteal, mucinous and endometriotic cysts were diagnosed in 12, 8, 7, 5 and 5 cases respectively with inconclusive aspirate in 11 cases. When histological diagnosis on excised specimens of these ovarian cysts (Table-2), serous cysts were found in 17 patients, follicular cysts in 10, luteal cysts in 12, mucinous cysts in 6 and endometriotic cysts in 3 patients. On correlating the FNAC and histopathology results (Table-3), a sensitivity of 58.34% to 100% and a specificity of 60% to 100% were calculated in different types of cysts.

DISCUSSION

The most common lesions seen in the ovaries are cysts, functional as well as neoplastic[6]. The distinction between these two types is very important for their proper management[3]. This distinction is possible only on morphological examination. To avoid the surgical excision, fine needle aspiration of cyst contents and their cytological examination for discrimination between these two major categories, has been widely accepted[3,7].

In the present work FNAC of unilocular ovarian cysts was done and results were compared with histological diagnosis.

Serous cysts were the most common diagnosis in our patients i.e., twelve cases. When histology of surgical specimens was done, it was found in 17 patients giving false negative results of 29.11% and sensitivity of 70.59%. Several other studies also describe such results[8,9] and is mostly attributed to atrophic epithelial lining which on aspiration gives inconclusive results and can be minimized with multidisciplinary approach and adjunctive techniques[9]. The other common varieties in our study were follicular cysts, 8 cases while on histology follicular cysts were found in 10 cases giving a sensitivity of 80% (20% false negative). It was found that one case was labeled as inconclusive aspirate while other was diagnosed as serous cyst on FNAC. In such cases ancillary techniques are of great help such as anti-inhibin immunocytochemical staining where granulosa cells are

strongly positive while serous cells are not[10-12]. Assay of estradiol and progesterone levels in the cyst fluid further improves the diagnostic accuracy of FNAC[8,12]. As regards the luteal cysts, they were diagnosed in seven patients on aspiration cytology whereas on histology luteal cysts were found in twelve cases giving a sensitivity of 58.34%.This is mainly due to inconclusive aspirate in three cases and two were misdiagnosed as endometriotic cysts because of marked haemorrhage and haemosidrin laden macrophages. In case of mucinous cysts, on aspiration five cases were diagnosed which increased to six when histological sections were seen giving a sensitivity of 83.34% which is almost comparable with other such studies[13,14,8,9]. We diagnosed five of our cases as endometriotic cysts on FNAC whereas after seeing the histological sections, endometriotic cysts were seen in only three cases giving a false positivity of 40%. These two cases on histology were diagnosed as haemorrhagic luteal cysts and it is mainly due to many pigment containing macrophages and absence of definite endometrial cells which has led to the loose diagnosis of endometriotic cysts on FNAC. So on aspiration, in addition to haemosidrin laden macrophages and RBCs, definite presence of endometriotic cells should be considered as diagnostic criteria for diagnosing endometriotic cysts and aspirates with only blood and pigmented macrophages are acceptable as non-diagnostic[14].

In case of ovarian cysts, an inconclusive aspirate is a well-documented problem on FNAC which was seen in eleven of our cases (22.91%). This was due to acellular aspirates or there were only RBCs, inflammatory cells or macrophages. Many other studies also describe inconclusive aspirates from different types of ovarian cysts, ranging from 5.5% to 52%[11,14-18].

It is concluded that FNAC of ovarian cysts is a fairly useful diagnostic technique which can further be improved by using it more routinely as more experience and exposure to cyst aspirates will improve the pathologist's ability to distinguish various cyst types. In addition use of ancillary techniques will also improve the results and thus decreasing the role of surgery as a diagnostic procedure to diagnose ovarian cysts.

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