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Diagnostic Efficacy of FNAC for the Cystic Lesions of Ovary

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Abstract

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Introduction: The preoperative distinction between benign and malignant ovarian cysts could assist in defining two categaries of patients. Those with a high probability of a malignant neoplasm would obviously undergo appropriate preparation and prompt surgical exploration for definitive diagnostic, therapeutic and staging purposes.

Materials and Methods: For the material of our study we had selected 45 patients from gynecology ward during January 2014 –December 2014. The inclusion criteria were presence of cystic lesions in the ovary on ultrasound examination. Fine Needle Aspiration was carried out under ultrasound guidance in the radiology department. The cytological examination was later correlated with the histology of the same cyst removed during laparotomy.

Results: Forty five patients ranging in age between 20 and 58 years were included in this study. All had unilocular or multilocular cyst, Septate or non-septate, thin or thick walled ovarian cyst, on ultrasound examination. Nondiagnostic/acellular aspirate was obtained in 06/45 cases, maximum being in cases of follicular cysts (4/6). Highest cases of benign cysts (60%) were noted during this study which includes follicular cysts, leuteal cysts, mucus cysts and endometrioid cyst. In malignant cysts (15.56%) serous cystadenocarcinoma, mucinous cystadenocarcinoma and malignant teratoma were included.

Conclusion: Aspiration cytology definitely prove to be one of the most valuable tools in the diagnosis of cystic lesions of the ovary.

Keywords: FNAC; Fine Needle Aspiration Cytology; Cystic Lesions; Ovary; Diagnosis.

Introduction

The preoperative distinction between benign and malignant ovarian cysts could assist in defining two categaries of patients. Those with a high probability of a malignant neoplasm would obviously undergo appropriate preparation and prompt surgical exploration for definitive diagnostic, therapeutic and staging purposes. A prevalencerate of 6.6% has been reported for cystic ovarian masses on randomscreening through trans-vaginal ultrasound [1]. Ultrasonography is used as one of the recommended techniques for discriminating benign and malignant ovarian cysts [2]. The combination of sonography and needle aspiration cytology serves as a particularly valuable technique in differentiating these cyst types [3]. The preoperative distinction between benign and malignant ovarian cysts is of great clinical significance, and several diagnostic methods have been used for this purpose. Vaginal ultrasonography, color Doppler flow examination, and serum CA125 levels each

have limitations [4-6]. Hence, thediagnostic routine of clinical examination, ultrasound andlaparoscopic examination has now been expanded to include cytological screening of the fluid aspirated fromovarian cysts [7]. In the present study we had evaluated the diagnostic efficacy of cytological examination of ovarian cystfluid.

Material and Method

For the material of our study we had selected 45 patients from gynecology ward during January 2014–December 2014. The inclusion criteria were presence of cystic lesions in the ovary on ultrasound examination. Fine Needle Aspiration was carried out underultrasound guidance in the radiology department. Spinal aspiration needle of 20 gauges was used attached to a 50 ml disposable syringe. The aspirate was centrifuged at a speed of 1000 revolutions/min.for 10 minutes. The sedimented cell button was used for making smears which were air dried and stained with Giemsa stain. The cytological examination was later correlated with the histology of the same cyst removed during laparotomy. From the removed cyst wall 1 block/cm weretaken, processed with the recommended procedure forparaffin blocks preparation, 2-4/m thick sections were cut,stained with Haematoxylin and Eosin stain and examinedfor histological features. Meticulous examination of surgically removed cyst was done at histopathology section and the findings were compared with cytology findings. All these data were collected and analysis was done.

Results & Discussion

Forty five patients ranging in age between 20 and 58 years were included in this study. All had unilocular or multilocular cyst, Septate or non-septate, thin or thick walled ovarian cyst, on ultrasound examination. Nondiagnostic/acellular aspirate was obtained in 06/45 cases, maximum being in cases of follicular cysts (4/6).

In diagnostically adequate cellular aspirates from different cyst types, the cytological characteristics of exfoliatedcells were determined. The features used to determine the cytologic smears included nuclear enlargement, pleomorphism, nuclear cytoplasmic ratio, nuclear hyperchromaticity, irregularity of nuclear membranes, multinucleation, irregular chromatin distribution, nucleolar prominence and cell crowding. Many of the cytological smears were showing classical diagnostic morphology of different cyst types. Follicular cysts revealed loosely coherent sheets of polyhedral cells with majority of cell clusters showing uneven irregular boundary. Leuteal cysts revealed small groups of polyhedral cells, being larger with abundant cytoplasm showing microvesicles or granularity. Nuclei were eccentric with 1-2 nucleoli (Photograph 1). In neoplastic benign serous cyst adenomas the desquamated cells formed compact groups or monolayered sheets or rare papillary formations. These were small cells with small nuclei and inconspicuous nucleoli. In case of the Mucinous cyst there was the presence of columnar, mucus-containing cells with small, basally located nuclei, similar to endocervical cells. In endometriotic cysts, sheets of endometrial cells were seen as monolayered layout of epithelial cells. These were small cells with scanty cytoplasm. Background revealed plenty of degenerated RBCs, pigmented and non-pigmented macrophages.
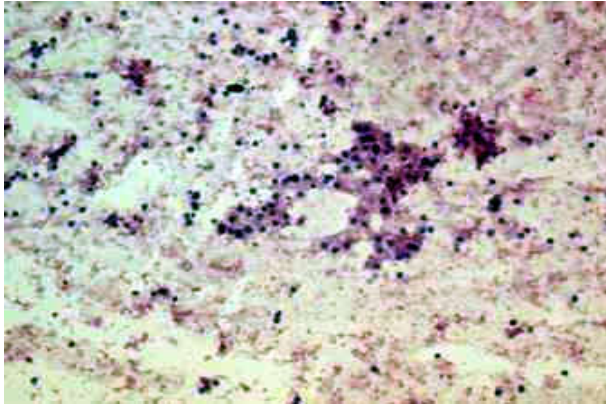
According to Table 1, the highest cases of benign cysts (60%) were noted during this study which includes follicular cysts, leuteal cysts, mucus cysts and endometrioid cyst. In malignant cysts (15.56%) serous cystadenocarcinoma, mucinous cystadenocarcinoma and malignant teratoma were included. Five cases were reported as borderline cysts and six were inconclusive because of acellularity. The other reasons for inconclusive smears the presence of diagnostically insignificant macrophages, R.B.Cs and inflammatory cells. Several studies have highlighted this pitfall of cytological diagnosis [8,9].

Table 1: Cyst Fluid Cytology Findings

Type of the cyst	No. of cases	%
Benign	27	60
Malignant	07	15.55
Borderline	05	11.12
Non diagnostic	06	13.33
Total	45	100

Table 2: Cytohistological correlation

Type of the cyst (Benign, Malignant, Borderline)	Histological diagnosis	Cytological diagnosis
Follicular	13	15
Leuteal	05	04
Serous	10	10
Mucinous	09	09
Endometriotic	03	01
Teratoma	02	00

Photograph 1: Aspirate of leuteal cyst (H&E Stain,20X)
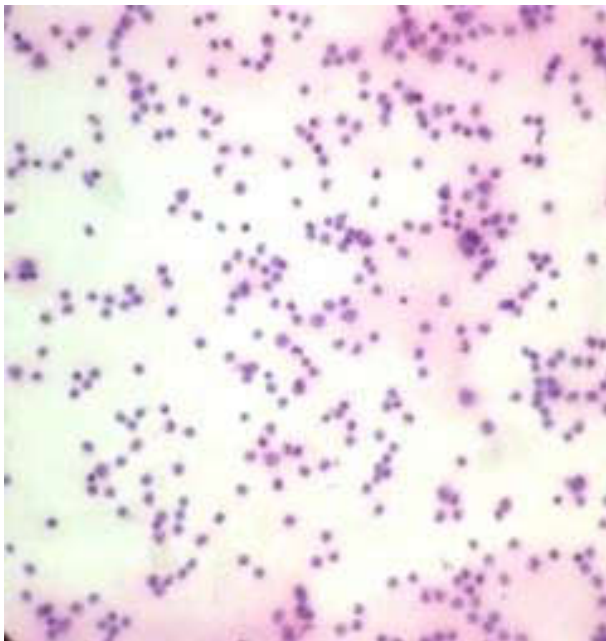
Photograph 2: Inconclusive smears because of the presence of diagnostically insignificant inflammatory cells(H&E Stain, 40X)

Photograph 3: Inconclusive smears because of the presence of diagnostically insignificant R.B.C.s (H&E Stain, 40X)

According to Table 2, all these findings were compared with the histopathological examination of the surgically removed ovarian cysts. Most of the cases were having the same findings as the cytological examination. In our study, 3 cases of inconclusive smears (Photograph 2, 3) were diagnosed as follicular cysts on histopathological examination. Similarly in the other studies too maximum incidence has been reported in cases of follicular cysts, in the range of 50-52% [8,10].

Endometriotic cysts are a greatdiagnostic challenge even on histological examination [11]. Accordingly the cytological diagnosis carries the same reputationwhere some studies report 63.6% false negativecytological diagnosis for this type of cyst [9]. Considering thehistologically high incidence of denuded lining of the cystand its replacement by pigmented macrophages and fibrin, frequent procurement of cytologically non-diagnostic aspiratesis an acceptable observation.

In the present study, Gold standard for verification ofour cytological diagnosis was histological examination ofthe removed cyst followed by cytohistological correlation. Our study has reported high sensitivity or specificity of cytological diagnosis with reported frequency ranging between 25-90%. The main confounding factor was procurement of acellular fluid orfluid with diagnostically irrelevant cells.

Conclusion

The cytological interpretation of aspirates fromovarian cysts represents one of the most challenging fields in diagnostic cytology. Pathologist's ability to distinguishvarious cysts type with Fine Needle Aspirate needs experience and ample exposure to aspirates. From the present study we can conclude that aspiration cytology definitely prove to be one of the most valuable tools in the diagnosis of cystic lesions of the ovary.

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