



ROLE OF SCRAPE CYTOLOGY IN THE DIAGNOSIS OF OVARIAN NEOPLASM AND CYTOHISTOLOGICAL CORRELATION OF OVARIAN NEOPLASM.

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ABSTRACT

AIM:To determine the role of scrape cytology in the diagnosis of ovarian neoplasm **MATERIAL AND METHOD:** This was a prospective study at jlnmc duration of study was from nov 2019 to march 2020 on

100 solid/solid-cystic ovarian neoplasms sent in 10% buffered formalin, then stained with hematoxylin and eosin or Papanicolaou stains. Cytological results were compared with the histological diagnosis taking the latter as the gold standard. **RESULT:** Among the 100 cases, the standard histopathological diagnosis confirmed 61 as benign, 5 as borderline and 34 as malignant lesion. The diagnostic concordance between cytological and histo pathological study was observed in 97 of the 100 cases. Characteristic cytological pattern was noted in various types of surface epithelial, sex cord stromal and germ cell tumors. The technique had limited value in mucinous tumors to distinguish borderline cases from invasive carcinoma. **CONCLUSIONS:** IOC is a good complement to histopathology in the study of ovarian neoplasms, particularly in developing countries like ours, where the facility of frozen sections is often not available. Adequate knowledge on cyto-histological correlation of ovarian scrape cytology may phase out the use of cryostat in intraoperative diagnosis of ovarian neoplasms.

KEYWORDS : Scrape Cytology, Histopathology, Ovarian Neoplasm, Cyto-histological Correlation.

INTRODUCTION

Ovarian cancer accounts for 3-4% of cancer in women. Ovarian mass for cytology can be approached by laparoscope and ultrasound-guided aspiration, however there are controversial views regarding their safety and has been discouraged since puncture of cystic carcinoma might cause intraperitoneal seeding of tumor cells. Here are two most commonly used **intraoperative diagnostic** procedure:- 1) Tissue smear technique i.e. imprint cytology, scrape cytology and squash cytology. 2) Frozen section. Rapid intra-operative diagnosis of the nature of ovarian tumors guides surgeons who has two management options: (1) Benign and borderline cases fertility conserving surgery/minimal access surgery is preferred in young patients. (2) Malignant cases complete surgical staging is done which involves total hysterectomy with bilateral salpingoophorectomy, partial omentectomy and retroperitoneal lymphnode sampling. Tumor debulking/cytoreduction Radiotherapy in Stage 3 and stage4 carcinoma.

METHOD AND MATERIAL

This was prospective study of 100 ovarian neoplasm which includes solid, solid-cystic and cystic neoplasm in study. Fresh gross specimen were examined for present of cyst, capsular breach, papillary growth and any solid growth. Scraping obtained from fresh cut surface of tumor preserved in 10% buffered formalin, smear uniformly on the glass slide. Smear was immediately in 90% ethyl alcohol and stained with H&E stain.

Various cytological techniques

- Imprint method
- FNAC method
- Scrape method

The results were examined with final diagnosis in each cases and cases with discordant diagnosis were reviewed.

RESULT

Total cases of ovarian neoplasm

| Bengin | Borderline | Malignant |
|--------|------------|-----------|
| 60% | 5% | 35% |

Benign cases of ovarian neoplasm

| Benign | No of cases |
|----------------------|-------------|
| Serous cystadenoma | 20 |
| Mucinous cystadenoma | 10 |
| Corpus luteal cyst | 15 |
| Mature teratoma | 10 |
| fibrothecoma | 4 |
| Struma ovarii | 1 |

Malignant cases of ovarian neoplasm

| Malignant | No of cases |
|-----------------------------|-------------|
| Serous cystadenocarcinoma | 17 |
| Mucinous cystadenocarcinoma | 10 |
| Germ cell tumor | 4 |
| Sex -cord tumor | 1 |
| Met | 3 |
| Borderline | 5 |

Cyto-histopathological correlation of ovarian neoplasm

| No of cases | Final Diagnosis | Cytological diagnosis | Cytological and histological cor -relation |
|-------------|---------------------------|---|--|
| 20 | Serous cystadenoma | Serous cystadenoma | 20/20 |
| 17 | Serous cystadenocarcinoma | Serous cystadenocarci noma(16) Serous cystadenoma(1) | 16/17 |

| | | | |
|----|-----------------------------|------------------------------------|-------|
| 10 | Mucinous cystadenoma | Mucinouscystadenoma(9) | 9/10 |
| | | Mucinous cystadenocarcinoma(1) | |
| 10 | Mucinous cystadenocarcinoma | Mucinous cystadenocarcinoma(9) | 9/10 |
| | | Mucinouscystadenoma(1) | |
| | Corpus luteal cyst | | 15/15 |
| | Mature teratoma | | 10/10 |
| | Fibrothecoma | | 4/4 |
| | Struma ovarii | | 1/1 |
| | Germ cell tumor | | 4/4 |
| | Sex -cord tumor | | 1/1 |
| 3 | Met | Borderline Mucinous cystadenoma(4) | 3 |
| | Borderline | Borderline serous cystadenoma(1) | 5/5 |

DISCUSSIONS

The intraoperative cytological examination was first introduced by Dudgeon and Patrick in 1927. Ovarian masses are frequently being subjected to SS and FS examination so as to determine the extent of surgery required, and complete resection along with removal of draining lymph nodes can be done in a single surgery.

There are several advantages of IOC over frozen sections which have been attested by different authors.

They are: rapidity of preparation which is not at the expense of accuracy; simple and inexpensive method; excellent preservation of cellular details without freezing artifacts; no loss of tissue as with the cryostat; (5) possibility of identifying focal, macroscopically undetectable neoplastic lesions in large tissue fragments; possibility of examining adipose, necrotic and calcified tissue; diagnosis of malignancy when the tissue is limited in quality, and avoidance of contamination and safe handling.

There were limitations of IOC in the diagnosis of tumors with low malignant potential borderline tumor and in mucinous tumors, which require histological architecture evaluation and adequate histological sampling.

In our study, we analysed the scrape cytology of ovarian neoplasms sent in formalin. In spite of utilizing formalin fixed specimens, architecture and cell morphology remained well preserved causing no interference in cytological interpretation.

Khunamornpong et al. studied role of scrape cytology of ovaries in intraoperative consultation of ovarian lesions and found it to be a useful rapid cytodagnostic tool. Similar to our findings, their study also revealed that it was the borderline group which showed inconsistent results especially mucinous tumors.

A more accurate diagnosis would require histologic architecture evaluation and extensive tissue sampling.

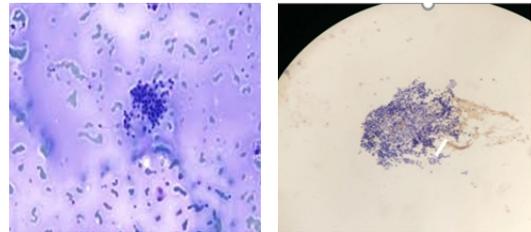
On examining 4 cases of the germ cell tumors, 1 cases of granulosa cell tumors, and 10 cases of mature teratoma was accurately diagnosed by cytological examination. Our findings were supported by Shahid et al.8 and Khunamornpong and

Siriakungull15, who also found 100% diagnostic accuracy of cytological examination in detecting germ cell tumor and sex cord tumor.

CONCLUSIONS

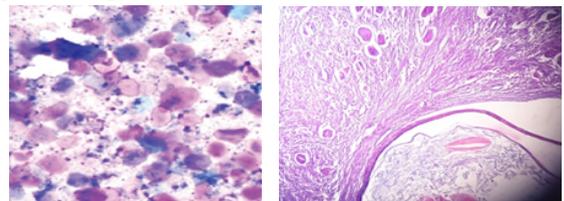
In this study, high specificity and PPV were observed on SS during intraoperative cytology for ovarian neoplasms although HPE remains the gold standard. Scrape cytology is a simple, quick, accurate, inexpensive adjunctive cytodagnostic technique and its routine utilization in ovarian lesions could aid in expanding the knowledge of cytology of ovarian neoplasms.

Photo



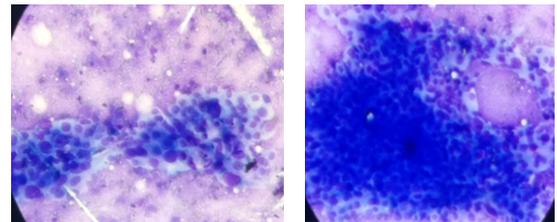
Scrapes smear showing benign thyroid follicular cells against a thin colloid background.

Epierrmoid cyst

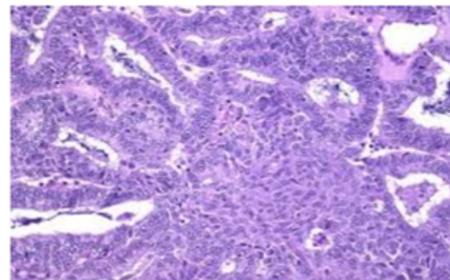


Scrape smear showing anucleated squames, cyst macrophages and few inflammatory cells

MUCINOUS CYSTADENOCARCINOMA



Highly cellular LG smear showing sheets of malignant cells and few scattered tumor cells having moderate to abundant vacuolated cytoplasm and nuclear overcrowing eccentric pleomorphic nuclei and occasional prominent nucleoli



HPE showing malignant cells having dense eosinophilic cytoplasm. The nuclei stratified, large with coarse chromatin, and some contain prominent nucleoli.

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