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RESEARCH ARTICLE

ROLE OF ENDOSCOPIC CRUSH SMEAR CYTOLOGY IN DIAGNOSIS OF GIT LESIONS

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ABSTRACT: **Introduction:** Neoplasm of gastrointestinal (GIT) is one of the leading causes of death**.** Early detection of malignancy greatly improves the survival rate of the patients. Along with histological study of biopsy specimens, cytological study also provides an accurate reflection of many pathological processes. The present study was conducted to evaluate and compare immediate crush smear cytodiagnosis with the histopathology diagnosis. **Materials and methods:** 18 cases were studied in present study. Crush smears prepared and stained with MGG &PAP stain. HPE was done in 14 cases. **Results:** On cytology 4/18 cases were non neoplastic. Rest 11/14 cases (79%) showed correlation between cytology and Histopathology. **Conclusion:** Crush smear cytology is highly sensitive, specific, cheap, easier and quick procedure for identification of GIT malignancy. It can be used as an adjunct to histopathology for diagnosis of GIT lesions.

KEYWORDS: GIT, endoscopic, crush smear, cytology, histopathology

INTRODUCTION:

Neoplasm of Gastrointestinal (GIT) is one of the leading causes of death. Worldwide gastric adenocarcinoma is the second most cancer and carcinoma esophagus is sixth leading cause of death. [1,2] Early detection of malignancy greatly improves the survival rate of the patients. The 5-year survival rate of early esophageal cancer is 83.5% and early gastric cancer is more than 90%. Alongwith histological study of biopsy specimens, cytological study also provides an accurate reflection of many pathological processes. Many workers have tried diagnosis of GIT malignancy based on cytology. [3,4] Crush smear cytology is simple, cheap, readily available and require minimum time. Most of the malignant lesions of GIT are advanced at the time of diagnosis [5]. The present study was conducted to evaluate and compare immediate crush smear cytodiagnosis with the histopathology diagnosis. And also, to establish the reliability of crush smear cytology alone for early diagnosis of GIT lesions.

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MATERIAL AND METHODS:

Present study was conducted at Global Healthcare Multispecialty Hospital, Bathinda. The study included 18 cases undergoing endoscopic examination where biopsy was required for further evaluation. In endoscopic suspected lesions 4-6 biopsies were taken. Crush smears were prepared by crushing the tissue between the slides. Slides were stained with May- Grunwald Giemsa (MGG) stain and Papanicolaou stain. Rest of the biopsies were sent for histopathological examination (HPE).

On cytology, lesions were categorized as

- Unsatisfactory: When cellularity was low or when cells were obscured by blood/ mucus.
- Negative for malignancy: When cells showed no atypia. Mild atypia in the presence of inflammatory cells was considered as negative for malignancy.
- Suspicious of malignancy: When smears showed borderline atypia in the presence of low cellularity.
- Positive for malignancy: When the following features were present: hypercellularity, irregular and abnormal shaped cells, nuclear irregularity, macro-nucleoli, high N:C ratio, signet ring cells, tumor cannibalism.

On histopathology, lesions were categorized as

- Negative for any pathology
- Unsatisfactory
- Dysplasia
- Positive for malignancy

The results of crush smear were then correlated with those of HPE.

RESULTS:

Out of 18 cases, 10 cases (56%) were males and 8 cases (44%) were females. According to age, 7 cases (39%) were more than 60 years old, 5 cases (28%) were in age group of 51-55 years, 4 cases (22%) were in the age group of 45-50 years and 2 cases (11%) were in the age group of 56-60 years.

Anatomical site of lesion was esophagus in 38.8%cases, large intestine in 27.8% cases, stomach and small intestine in 16.7% each (Table 1).

Table 1: Anatomical Distribution of cases

Site	No.	Percentage(%)
Esophagus	7	38.8
Stomach	3	16.7
Small Intestine	3	16.7
Large Intestine	5	27.8
Total	18	100

Endoscopic findings are shown in Table-2

Table 2: Endoscopic findings

Finding	No.	Percentage(%)
Growth?Polyp	12	67
Gastritis	2	11
White Patch	2	11
Ulcer	2	11
Total	18	100

Cytological examination of MGG and PAP stained smears was done. 4/18 cases were non neoplastic in nature where no endoscopic or clinical malignancy was suspected. These cases were sent to rule out inflammation. Cytological examination revealed hyphae and spores suggestive of fungal infection (Figure-1). 1/18 case was classified unsatisfactory due to low cellularity and bloody background. 3/18 cases were diagnosed as negative for malignancy. Another 3/18 cases were suspicious of malignancy. 7/18 cases were reported as positive for malignancy (Table -3). (Figure-2, 3)

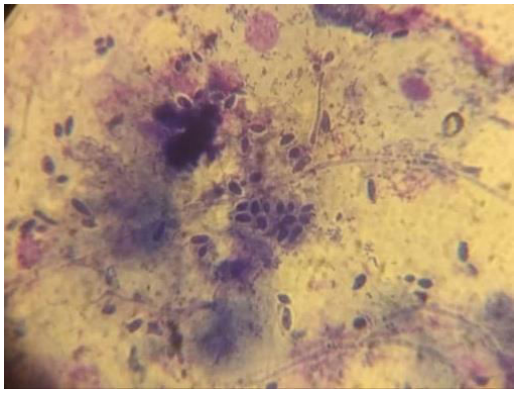

Figure 1: Microphotograph showing fungal hyphae (1000x)

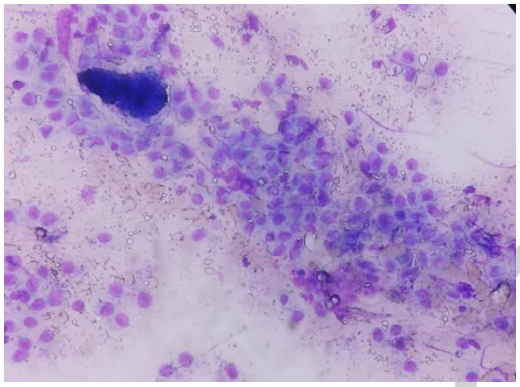

Figure 2: Microphotograph of well differentiated adenocarcinoma (400x).

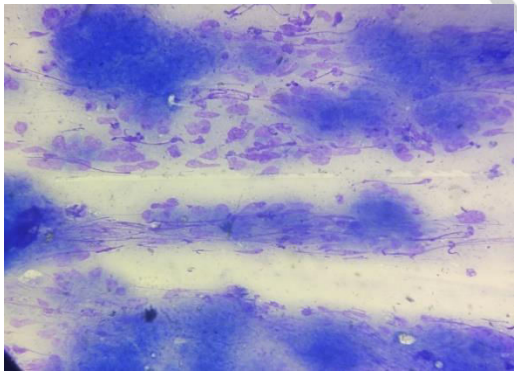

Figure 3: Microphotograph of poorly differentiated carcinoma (400x).

Table 3: Distribution of Crush smear cytology diagnosis

Crush smear cytology report	No. of cases	Percentage (%)
Non neoplastic	4	22
Unsatisfactory	1	5.6
Negative for malignancy	3	16.7
Suspicious of malignancy	3	16.7
Positive for malignancy	7	39
Total	18	100

HPE was done in 14 cases that were clinically suspected of malignancy. Microscopic examination was normal/benign in 3/14 cases, malignant in 10/14 cases and in 1/14 HPE was unsatisfactory for giving a definite opinion.

Table 4: Distribution of HPE diagnosis

HPE report	No.	Percentage (%)
Total non-neoplastic	4	29
Normal	3	22
Unsatisfactory	1	7
Total neoplastic	10	71
Squamous cell carcinoma	2	14
Adenocarcinoma	6	43
Poorly differentiated carcinoma	1	7
Dysplasia	1	7
Total	14	100

DISCUSSION:

In our study of 18 cases,56% cases were males and 44% cases were females with M: Fratio 1.25:1. It's comparable with study conducted by SA Keya et al[6] having M:F Ratio 1.3:1 while study conducted by Dutta G et al[7] show M:F Ratio 1:1.2. Maximum cases of this study were above 60 years which correlated well with the study conducted by SA Keyaet al[6] and study conducted by Dutta G et al[7].

In our study 38.8% cases was located at esophagus, 16.7 % stomach, 16.7% small intestine

and 27% large intestine. while study conducted by SA Keya et al[6] show 32% cases of esophagus, 63% cases stomach and 5% cases duodenum. Study conducted by Dutta et al[7] show 18 cases of esophagus, 18 cases of gastroesophageal junction, 216 cases gastric lesions, 3 cases intestinal lesion, 15 cases colonic and 18 cases of rectum. This discordance may be due to small number of cases in this study.

In our study 11 out of 14 cases (79%) show correlation between histopathology and cytology findings. While study conducted by Amulyajit et al[8] on 63 GIT cases show 94.2% sensitivity and 100 % specificity of procedure. Younget al[3] found sensitivity of crush smear cytology 100% when studied on 63 samples. Sharma et al[4] have obtained a sensitivity and specificity of procedure 96.3% and 95% respectively for esophageal lesions. Mahadevappa A[9]et al studied 45 cases show diagnostic accuracy of 95.56%. Batraet al[10] showed 81.25% of diagnostic correlation between crush cytology and histopathology.

Table 5: Comparison of cytology and histology diagnosis

	Histopathological report			
Cytology diagnosis and no. of cases	**Benign**	**Unsatisfactory**	**Dysplasia**	**Malignant**
Negative=3	3			
Unsatisfactory=1		1		
Suspicious=3				3
Positive =7			1	6

3 cases which were negative on cytology were also benign in nature on histopathology. The case which was categorized unsatisfactory at cytology it shows necrosis and a few atypical cells at histopathology and was advised for repeat biopsy as sample was considered non representative of lesion. 3 cases which were categorized suspicious on cytology, histopathology of those cases was reported as positive for malignancy. 7 cases were positive for malignancy at cytology. Histopathology of these 6 cases was reported as positive. One case was reported as dysplasia at histopathology.

CONCLUSION:

Crush smear cytology is highly sensitive, specific, cheap, easier and quick procedure for identification of GIT malignancy. It can replace the frozen sections for pre- op diagnosis of malignancies. It can be considered as a routine method in combination with endoscopy. Cases which showabundant necrosis or inflammation combined cytology and biopsy provides accurate diagnosis. Due to quick diagnosis by crush smear cytology surgeon can take treatment decision one week earlier.

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