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Histopathological spectrum of lesions of upper gastrointestinal tract endoscopic biopsies

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Abstract
Background: The upper gastrointestinal lesions, especially malignancies are most commonly encountered entity in clinical practice with high degree of mortality and morbidity. Introduction of flexible upper gastrointestinal fiber optic endoscope in 1968 proved to be major breakthrough for the diagnosis of lesions. The endoscopic evaluation followed by histopathological examination of the biopsy sample is currently the gold standard for accurate objective assessment of the patient. It not only helps to diagnose neoplastic and non-neoplastic lesions but also for monitoring the course, extent of the disease, response to therapy and early detection of complications.
Methods: A prospective cross sectional study of upper gastrointestinal tract endoscopic biopsies was carried out for one year period from August 2018 to July 2019. The present study included fifty nine (59) endoscopic biopsies of patients who underwent upper endoscopy procedure for various clinically diagnosed lesions demanding biopsy.
Results: In the present study fifty nine (59) upper endoscopic biopsies were studied which included 33 (55.94%) esophageal, 21 (35.59%) gastric, 4 (6.77%) GEJ and 1 (1.69%) duodenal biopsy, among which 35 (59.32%) were of females and 24 (40.68%) were of males, with female: male ratio of 1.46:1. Majority were malignant lesions both in esophagus and gastric biopsies.
Conclusion: The most common site for upper endoscopic biopsy was esophagus and the commonest lesion was malignancy. The upper gastrointestinal endoscopic evaluation followed by biopsy sampling of neoplastic and non-neoplastic lesions complement each other in management of patients.

Keywords: Endoscopic biopsies, upper gastrointestinal, endoscopic lesions

Introduction

The upper gastrointestinal lesions, especially malignancies are most commonly encountered entity in clinical practice with high degree of mortality and morbidity. [1, 2, 3] Globally gastric adenocarcinomas are second most common malignancy and esophageal malignancy is sixth leading cause of death. [2, 4, 5, 6] According to the National Cancer Registry, esophageal and gastric malignancies are the most common malignancies found in men, while esophageal malignancies ranks third among women after the malignancies of breast and cervix. [4, 7]
Introduction of flexible upper gastrointestinal fiber optic endoscope in 1968 proved to be major breakthrough for the diagnosis of lesions. [8, 9, 10, 11] It is regarded as the established modality of investigation as well as treatment for most patients with upper gastrointestinal symptoms. [9, 10] It is simple, safe and well tolerated procedure which not only allows direct visualization of the pathological site but also allows to extract tissue sample using biopsy forceps. [1, 8, 10] The endoscopic evaluation followed by histopathological examination of the biopsy sample is currently the gold standard for accurate objective assessment of the patient. It not only helps to diagnose neoplastic and non-neoplastic lesions but also for monitoring the course, extent of the disease, response to therapy and early detection of complications. [1, 8, 11]

More than 90% of esophageal malignancies are squamous cell carcinomas or adenocarcinomas while other rare types are melanomas, lymphomas, stromal tumors and neuroendocrine tumors. Duodenal biopsies are now commonly performed as a part of upper gastrointestinal endoscopic procedure. [8] Endoscopic practice is undergoing a revolution with the development of much more accurate video endoscopy, magnifying endoscopy and techniques such as chromo-endoscopy, autofluorescence imaging and narrow band imaging. [10, 12]

Aims and objectives

To study the spectrum of various neoplastic and non-neoplastic lesions of upper gastrointestinal tract biopsies in correlation with frequency, age, sex, histomorphological grading and to establish endoscopic biopsies as an effective tool in early diagnosis to aid in management of the patients.

Materials and Methods

A prospective cross sectional study of upper gastrointestinal tract endoscopic biopsies was carried out for one year period from August 2018 to July 2019. Patients of different age groups and both sex, who underwent upper gastrointestinal tract biopsies for various lesions were included in the study. Lesions of mouth, pharynx and all duodenal lesions below second part were excluded from the study. The present study included fifty nine (59) endoscopic biopsies of patients who underwent upper endoscopy procedure for various clinically diagnosed lesions demanding biopsy.

All the samples received in the laboratory were fixed in 10% formalin. The patient details like age, sex, clinical and endoscopic diagnosis were obtained from the requisition forms that were sent along with the biopsy sample. The biopsy samples were processed routinely, paraffin embedded of sections of 4 micrometer were taken and stained with Hematoxylin and eosin (H&E).

Results

In the present study fifty nine (59) upper endoscopic biopsies were studied which included 33 (55.94%) esophageal, 21 (35.59%) gastric, 4 (6.77%) gastroesophageal junction (GEJ) and 1 (1.69%) duodenal biopsy, among which 35 (59.32%) were of females and 24 (40.68%) were of males, with female: male ratio of 1.46:1. The highest number of biopsies were done in patients between 66-75 years followed by 46-55 years. The youngest patient was 26 year old and oldest being 85 year.

The esophagus was the most common site for biopsy with majority of lesions in lower esophagus 23 (38.98%) followed by mid esophagus 7 (11.86%) and upper esophagus 3 (5.08%). Out of 33 esophageal biopsies majority were squamous cell carcinomas (SCC) 27 (81.82%) followed by 5 (15.15%) non-neoplastic lesions and 1 (3.03%) with high grade dysplasia. On histopathological grading, 15 (55.56%) were moderately differentiated, 7 (25.92%) were poorly differentiated and 5 (18.52%) well differentiated.

Out of 21 gastric biopsies, majority 11 (52.38%) were non-neoplastic, followed by 6 (28.58%) signet ring cell carcinomas, 3 (14.28%) adenocarcinomas and 1 (4.76%) epithelioid gastrointestinal stromal tumor.

There were four GEJ biopsies with two (50%) SCC followed by one (25%) each of adenocarcinoma and non-neoplastic lesions. There was only a single non-neoplastic duodenal lesion.

Discussion

The present study was conducted from August 2018 to July 2019 for a period of one year comprising of fifty nine (59) upper gastrointestinal biopsies of which included 33 (55.94%) esophageal, 21 (35.59%) gastric, 4 (6.77%) GEJ and 1 (1.69%) duodenal biopsy. The most common site was esophagus followed by gastric, GEJ and duodenum.

Sex distribution of all cases

Of all the upper gastrointestinal biopsies, 59.32% were females and the rest 40.68% were males with female to male ratio of 1.46:1. This is in contrast to the various studies done earlier suggesting a male predominance which can be attributed to cigarette smoking, alcoholism and other dietary habits. The changing pattern observed could be due to increasing smoking trend in females or increasing awareness leading to improved screening methods leading to early diagnosis. The present study showed similar sex distribution as compared to the study done by Memon F *et al.* [8]

Age distribution of all cases

The predominance of upper gastrointestinal lesions were more in the age group of 66-75 years accounting for 33.89% followed by age group of 46-55 years accounting to 28.81%. The youngest patient was 26 year old and the oldest being 85 year old. The age related difference could be due to variation in the risk factors among the different age groups.

Esophageal lesions

Out of 33 esophageal biopsies 27 were squamous cell carcinomas followed by 5 non-neoplastic lesions and 1 high grade dysplasia. Majority of lesions were seen in lower end of esophagus 23 (38.98%) followed by mid esophagus 7 (11.86%) and upper esophagus 3 (5.08%). On histopathological grading, 15 (55.56%) were moderately differentiated, 7 (25.92%) were poorly differentiated and 5 (18.52%) well differentiated.

In the present study we found all the patients of esophageal malignancy as squamous cell carcinoma which is in concordance with the study done by Krishnappa R *et al.*[1,4,13] No adenocarcinomas were encountered during the study period.

Gastric lesions

Out of the 21 gastric biopsies majority 11 (52.38%) were non-neoplastic followed by 6 (28.58%) signet ring cell carcinomas, 3 (14.28%) adenocarcinomas and 1 (4.76%) epithelioid gastrointestinal stromal tumor. Majority of the gastric biopsies were diagnosed as malignancy on histopathology similar to the study done by Parloor K *et al.* [14]

GEJ lesions

There were four GEJ biopsies of which two (50%) were diagnosed as SCC followed by one (25%) each of adenocarcinoma and non-neoplastic lesions. This was in concordance with the study conducted by Ganga H *et al*, [10] Rumana *et al* [15] and Sheik *et al*. [16]

Duodenal lesions

There was only one non-neoplastic lesion of duodenum in the present study. Duodenum has a rich rapidly regenerating epithelium which can be easily affected by any inflammatory insult.

Table 1: Comparison of sex ratio in different age groups

Age Groups	Female	Male	Total
26-35	2	2	4
36-45	2	2	4
46-55	10	7	17
56-65	8	4	12
66-75	11	9	20
76-85	2	-	2
Total	35	24	59

Table 2: Comparison of site distribution in different age groups

Age Groups	Duodenum	GEJ	Upper esophagus	Middle esophagus	Lower esophagus	Gastric	Total
26-35					1	3	4
36-45					2	2	4
46-55		1			9	7	17
56-65	1	1		3	6	1	12
66-75		2	1	4	5	8	20
76-85			2				2
Total	1	4	3	7	23	21	59

Table 3: Comparison of distribution of lesions in different age groups

Age Groups	Adenocarcinoma	Epitheloid GIST	High grade dysplasia	Non-Neoplastic	SCC	Signet ring cell Carcinoma	Total
26-35		1		2	1		4
36-45			1	2	1		4
46-55	1			4	8	4	17
56-65				2	10		12
66-75	3			7	8	2	20
76-85				1	1		2
Total	4	1	1	18	29	6	59

Table 4: Histopathological grading of esophageal squamous cell carcinoma

Type	Number	Percentage
Well	5	18.51%
Moderate	15	55.56%
Poor	7	25.93%
Total	27	100%

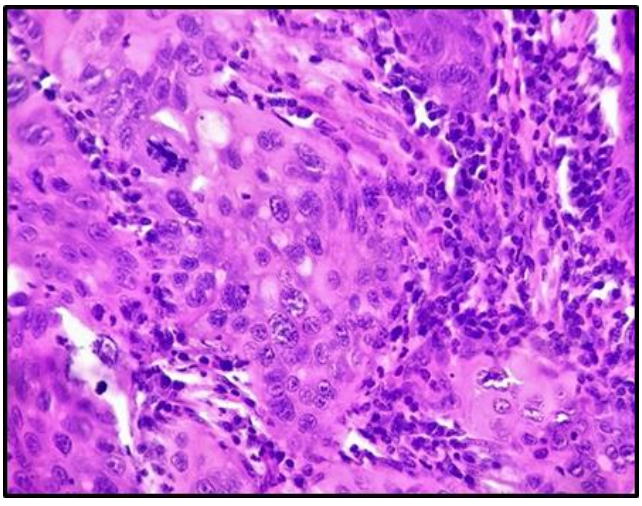

Fig 1: Squamous cell carcinoma H & E, x40

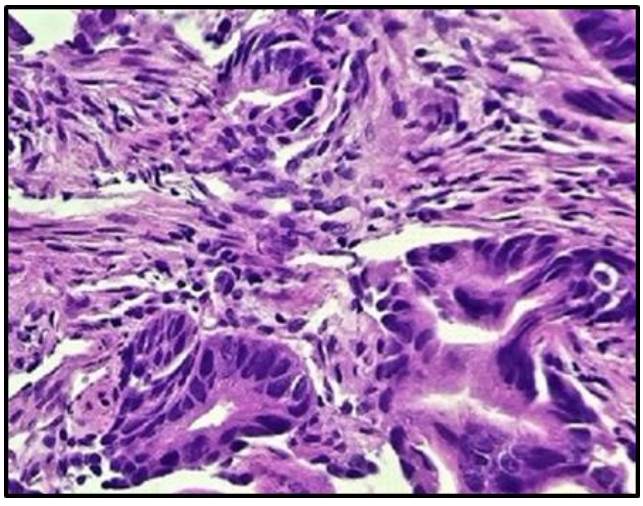

Fig 2: Adenocarcinoma H & E, x40

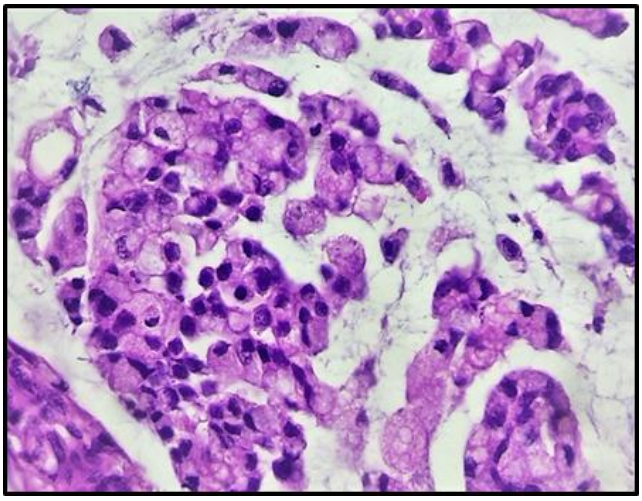

Fig 3: Signet ring cell carcinoma H & E, x40

Conclusion

The most common site for upper endoscopic biopsy was esophagus and the commonest lesion was malignancy. The upper gastrointestinal endoscopic evaluation followed by biopsy sampling of neoplastic and non-neoplastic lesions complement each other in management of patients. Endoscopy is incomplete without biopsy and histopathological examination gives a deeper insight into the morphological changes.

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