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Original Research Article

Histopathological spectrum of upper gastro intestinal lesions in endoscopic biopsies at a tertiary care centre

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ABSTRACT

Background: Gastrointestinal tract (GIT) endoscopy along with biopsy is an established procedure for investigating a wide range of gastrointestinal conditions, especially malignant and inflammatory lesions. Most common conditions requiring endoscopic biopsy of Upper GIT include dyspepsia, gastro oesophageal reflex disorder, Barrett's esophagus, oesophageal and gastric carcinomas.

Aims and Objectives: To determine the spectrum of histopathological lesions of GIT and to compare it with endoscopic findings.

Materials and Methods: The present study is an observational study done at the department of pathology of a tertiary care centre which included endoscopic biopsies of upper GIT. Biopsy specimens received were fixed in 10% formalin and processed routinely and stained with Haematoxylin and Eosin. Special stains were done as and when required. Endoscopic biopsies were analysed and assessed.

Inclusion Criteria: 1. It included endoscopic biopsies of esophagus, stomach, and duodenal lesions. 2. Age more than 20 years.

Exclusion Criteria: Inadequate and poorly fixed biopsies.

Results: A total of 177 endoscopic biopsies were studied, majority of lesions occurred in 61-70 years of age group and predominantly in males with M:F ratio 1.3:1. Out of total 177 biopsies, 21 (12%) were from esophagus, 90(51%) from stomach and 66(37%) from duodenum. The most common histopathological diagnosis in esophagus was esophagitis (47%) followed by barrettes esophagus (28%). In stomach, the most common diagnosis was gastritis (45%) followed by gastric polyps (34%) and in duodenum, it was duodenitis (66%) followed by celiac disease (18%). In comparison with endoscopic findings, 100% concordance was seen with esophagitis, gastritis, duodenitis and 60% with squamous cell carcinoma in esophagus, 91% concordance with adenocarcinoma in stomach.

1. Introduction

Gastrointestinal tract (GIT) endoscopy along with biopsy is an established procedure for investigating a wide range of gastrointestinal conditions, especially malignant and inflammatory lesions.[1] According to national cancer registry, oesophagus and gastric cancers are most frequently found in men while oesophageal cancers rank 3 in women.[2]

The upper gastrointestinal flexible Fiber optic endoscope was first used in 1968 and was a breakthrough in the diagnosis of GIT lesions.[3] The major indications for upper GIT endoscopic biopsy include evaluation of dyspepsia, odynophagia, dysplasia, peptic ulcer disease, infections, inflammatory disorders, vascular disorders, mechanical conditions, toxic and physical reactions, including radiation injury and neoplasms.[4]

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Endoscopic screening may detect gastric mucosal lesions at an early stage especially atrophy, intestinal metaplasia, and dysplasia to prevent progress of these lesions to invasive cancer.

Histology, in routine clinical practice is often regarded as the 'Gold Standard' against which all other studies are carried out.[5] The endoscopic biopsies are performed not only for diagnosis of the disease but also for monitoring the course, determining the extent of a disease and responses to therapy for the early detection of complications.[4] As a result, the reasons for obtaining mucosal biopsy from the upper gastrointestinal tract have increased and are no longer performed only for the detection of neoplasm.

2. Aim

To determine the histopathological spectrum of lesions of upper GIT in endoscopic biopsies.

3. Objective

To correlate histopathological findings with endoscopic findings.

4. Materials and Methods

The present study is an observational study and was conducted for 2 years, which included all upper gastrointestinal endoscopic biopsies received at the Department of Pathology. All age groups were studied, but 99% of endoscopic biopsies were between 20-90 years of age group, which were included in the study. Biopsy specimens received were fixed in 10% formalin and processed routinely and stained with Haematoxylin and Eosin. Special stains like AB-PAS /PAS and Giemsa stain were done as and when required. Immunohistochemistry studies like synaptophysin and chromogranin were done for confirmation of neuroendocrinetumor. Clinical data was obtained from the case records, which included the age and sex of the patients, relevant habits, clinical and endoscopic diagnosis. Endoscopic biopsies were analysed and assessed for histopathological spectrum of lesions and compared with their endoscopic findings. The data collected was entered in Microsoft excel and descriptive statistics were calculated.

4.1. Inclusion criteria

1. It included endoscopic biopsies of esophagus, stomach, and duodenal lesions.
2. Adult patients above 20 years of age.

4.2. Exclusion criteria

Inadequate biopsies and poorly fixed biopsies.

5. Results

A total of 177 endoscopic biopsies were studied, majority of lesions occurred in males with M: F 1.3:1 ratio and most common age group was 61-70 years of age. Age and gender distribution of biopsies at different sites are as follows (Table 1).

Out of total 177 biopsies, 21 (12%) were from esophagus, 90(51%) from stomach and 66(37%) from duodenum, as shown in Figure 1.

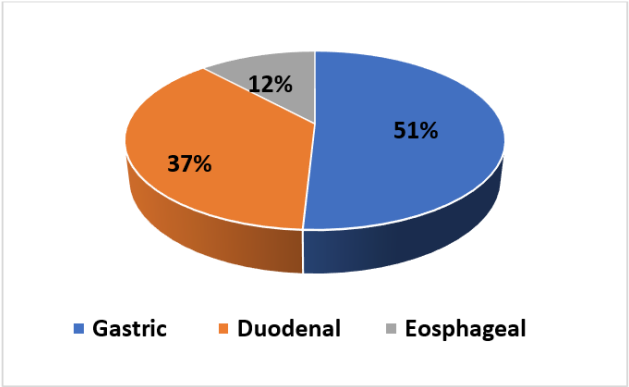

Figure 1: Site wise distribution of upper GI Biopsies

The endoscopic diagnosis and histopathological spectrum of lesions in esophagus is as in Table 2.

The endoscopic diagnosis and histopathological spectrum of lesions in stomach is as in Table 3.

The endoscopic diagnosis and histopathological spectrum of lesions in duodenum is as in Table 4.

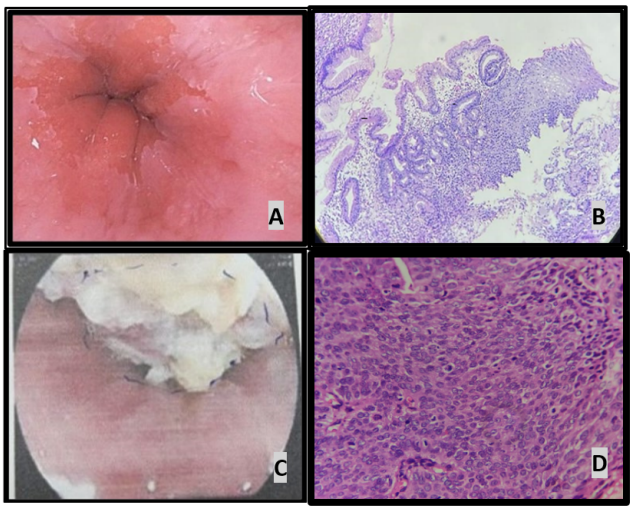

Figure 2: A): Endoscopy- Erythematous lesion in esophagus; **B**): Metaplastic columnar epithelium in esophagus, H&E stain, 100X; **C**): Non circumferential nodular growth in esophagus; **D**): Moderately differentiated SCC, H&E stain 400X

Table 1: Age wise, site wise and gender wise distribution of lesions in upper GI Tract

Age in Years	Esophagus		Gastric		Duodenum		Total
	M	F	M	F	M	F	
21-30	2	0	2	3	7	5	19
31-40	1	1	5	2	5	2	16
41-50	3	1	6	7	3	5	25
51-60	1	1	6	10	11	2	31
61-70	2	1	12	14	11	6	46
71-80	5	1	14	6	5	2	33
81-90	1	1	3	0	1	1	7
Total	15	6	48	42	43	23	177

Table 2: Correlation of endoscopic and histological diagnosis in esophageal biopsies

Endoscopic diagnosis	Histopathologic Diagnosis					% of concordance
	Esophagitis	Squamous cell carcinoma	Barret's Esophagus	Dysplasia	Total	
Esophagitis	10	0	0	0	10	100%
Carcinoma	0	3	0	2	5	60%
Barret's Esophagus	0	0	4	0	4	100%
Erythematous lesion	0	0	2	0	2	100%
Total	10	3	6	2	21	

Table 3: Correlation of endoscopic and histological diagnosis in gastric biopsies

Endoscopic diagnosis	Histopathologic diagnosis								
	Gastritis		Polyp	Peptic Ulcer	Adenocarcinoma		NEC*	Endoscopy Total	% of concordance
	Not associated with H. Pylori	Associated with H. Pylori			Intestinal type carcinoma	Signet ring cell Carcinoma			
Gastritis	29	12	0	0	0	0	0	41	100%
Polyp	3	0	28	0	0	0	0	31	90%
Ulcer	3	0	1	2	0	0	0	6	30%
Carcinoma	0	0	0	1	7	2	2	12	91%
Total	38	12	29	3	7	2	2	90	

*(NEC- Neuroendocrine carcinoma)

Table 4: Correlation of endoscopic and histological diagnosis in duodenal biopsies

Endoscopic diagnosis	Histopathologic diagnosis							% of concordance
	Celiac Disease	Duodenitis	Brunner Gland Hyperplasia	Neuro-endocrine Carcinoma	Dysplasia	GIST*	Total	
Celiac Disease	12	8	0	0	0	0	20	60%
Duodenitis	0	36	0	0	0	0	36	100%
Nodular/Polypoidal Lesion	0	0	6	1	1	0	8	75%
GIST	0	0	0	0	0	1	1	100%
Carcinoma	0	0	2	0	0	0	2	0
Total	12	44	8	1	1	1	66	

*(GIST- Gastrointestinal stromal tumour)

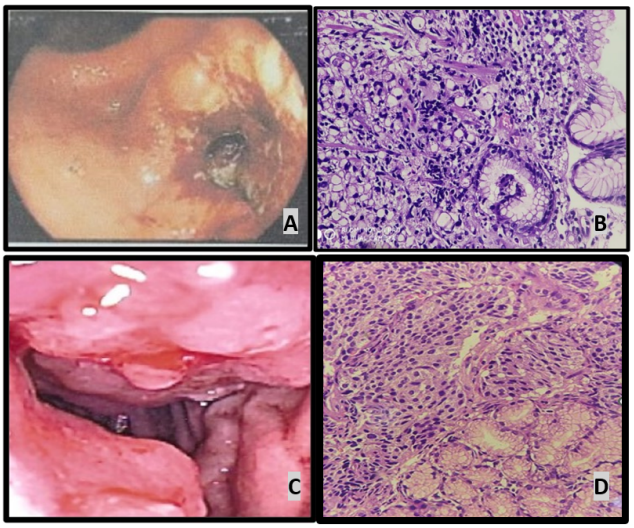

Figure 3: A): Ulceronodular lesion at distal antrum; **B)**: Signet ring cells extending into muscularis H&E stain 400X; **C**): Endoscopy showing growth in duodenum; **D)**: Neuroendocrine tumor in submucosa H&E stain, 400X

6. Discussion

The present study included 177 biopsies from Upper GIT, of which 21 (12%) were from esophagus, 90 (51%) were Gastric and 66 (37%) from Duodenum. The lesions were then classified into non neoplastic and neoplastic cases, out of which 16 (12%) were neoplastic and 161 (88%) were non neoplastic. Most common site in Upper GI biopsies was stomach (51%) which was similar in study done by Abhilash et al[6] and Krishnappa Rashmi et al.[4]

In the present study, most patients were between 61 to 70 years of age, which was in concordance with P Uma Rani et al.[7] and Jaynul Islam et al[8] study. The Male to Female ratio was 1.39: 1, which was similar to the study done by Shennak MM et al.[9] and Rashmi K et al[4] reflecting the fact that males could be exposed to more risk factors than females. In these studies, the men outnumbered women due to more prevalence of smoking, alcoholism, and stressful life similar to studies done by Paymaster et al.[10]

Among 21 esophageal biopsies, 18 (85%) were non neoplastic and 3 (15%) were neoplastic, the most common non neoplastic lesion was Esophagitis seen in 10 out of 21 cases also seen in Theresa JM et al[11] studies which followed barrettes esophagus and dysplasia. In the present study 100% concordance was seen in cases of esophagitis and barrettes esophagus on both endoscopic and histopathological diagnosis. Most common malignancy was squamous cell carcinoma which was also seen in Krishnappa R. et al.[4] study. In our study Squamous cell carcinoma showed female predominance whereas male predominance was seen in study done by Sandhya et al.[12] This might be due to other study was done on rural population where tobacco chewing was more common.

Gastritis was the most common non neoplastic lesion seen in 41 (45%) out of 90 cases which was showing similar findings with Qureshi et al.,[13] Bhat N et al[14] and Bhargavi M et al[15] studies.

Among chronic gastritis cases, 30% showed Helicobacter pylori positivity with similar findings seen in Choomsri et al[16] studies. The other lesions included polyps, ulcer, adenocarcinoma, and neuroendocrine carcinoma. 9 out of 12 carcinoma cases were diagnosed as adenocarcinoma showing findings similar to Rumana et al.[17] and Sheik et al[18] studies. In this study, decreased concordance was seen with endoscopic diagnosis for gastric ulcers (30%) which were histopathologically diagnosed as gastritis and polyps.

Out of 66 duodenal biopsies, Duodenitis was the most common non neoplastic lesion in 36(55%) cases which was in concordance with Abilash SC et al.[6] Hussain et al.[19] and Neil A Shepherd et al.[20] Other lesions included Brunner gland hyperplasia, celiac disease, dysplasia, adenocarcinoma, neuroendocrine tumour, and GIST. IHC studies like synaptophysin (100%) and chromogranin (90%) showed positivity in neuroendocrine tumour cases. Duodenitis showed 100% concordance, Celiac disease showed 60% concordance in comparison to endoscopic diagnosis and therefore the diagnosis needs to be confirmed by biopsy and serology. In the present study, 2 lesions diagnosed as carcinoma on endoscopy turned out as Brunner gland hyperplasia showing mismatch with endoscopic diagnosis, as the diagnosis given was suspicious of carcinoma. Therefore, endoscopy is less reliable and needs histopathology for confirmation of diagnosis.

7. Conclusion

The most common site of endoscopic biopsy is stomach. Histopathological spectrum included non-neoplastic 161 (88%) to neoplastic 16(12%) lesions. The incidence of non-neoplastic lesions is more than neoplastic lesions. Good concordance was seen in cases of esophagitis, Barrett's oesophagus, squamous cell carcinoma in oesophagus and chronic gastritis, polyps, adenocarcinoma in stomach and duodenitis, Brunner gland hyperplasia, celiac disease in duodenum. Decreased concordance was seen in oesophageal polypoidal lesions, gastric ulcers, and carcinomas in duodenum.

We therefore conclude that endoscopy is incomplete without biopsy and the combination of Endoscopy with histopathology and ancillary studies provide a powerful diagnostic tool for better patient management.

8. Source of Funding

None.

9. Conflict of Interest

None.

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