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A Study On Histopathological Spectrum Of Upper Gastrointestinal Endoscopic Biopsies.

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ABSTRACT

Upper GI disorders are one of the most commonly encountered problems in clinical practice with high degree of morbidity and mortality. Various pathologies involving the upper Gastro intestinal tract manifest with a similar group of symptoms which are difficult to assess clinically. There are several diagnostic investigations available in the evaluation of these symptoms where endoscopy is performed as the initial diagnostic test.70 patients to assess the histopathological spectrum of various upper GIT lesions with respect to clinical and endoscopic findings and to find out their frequency of occurrence in relation to age and sex.In the present study the most common non-neoplastic esophageal lesion was esophagitis (12.40%) followed by neoplastic lesion was squamous cell carcinoma (10.0%). Barrett's esophagus was seen in 5.20% cases. In the present study most common site for esophageal malignancy was middle one third (32.0%) of esophagus in the present study. It was observed that majority of cases show squamous cell carcinoma (10%) as predominant lesion while adenocarcinoma seen in 5.20% cases.To conclude the fibreoptic diagnostic upper GI endoscopy is relatively less invasive, simple, safe and well tolerated procedure, cost effective and provides good diagnostic yield in confirming various upper GI lesions. In routine clinical practice, histopathology is the "gold standard" for definitive diagnosis of various lesions.

Keywords: Esophagitis, Squamous cell carcinoma, adenocarcinoma

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INTRODUCTION

The upper gastrointestinal tract is composed of the oral cavity and salivary glands, esophagus, stomach, and small intestine (duodenum, jejunum, and ileum). The tract is essentially a smooth muscle–enveloped tube with innermost mucosa (barrier epithelium, lamina propria, and muscularis mucosae), submucosa, muscularis propria, and variable serosa or adventitia. The functions of the upper gastrointestinal tract include transport of the swallowed food bolus, enzymatic digestion, and absorption of nutrients, in addition to protective barrier function against the external environment. The morphologic appearance of the different sections of the upper digestive tract reflects the primary function of each segment and is variable between the species.Upper GI disorders are one of the most commonly encountered problems in clinical practice with high degree of morbidity and mortality. Various pathologies involving the upper Gastro intestinal tract manifest with a similar group of symptoms which are difficult to assess clinically. There are several diagnostic investigations available in the evaluation of these symptoms where endoscopy is performed as the initial diagnostic test [1]. The upper gastrointestinal flexible fiber optic endoscope was first used in1968 and was a major breakthrough in the diagnosis of gastrointestinal tract (GIT) lesions [2]. Currently Upper GIT endoscopy is regarded as an established modality of investigation as well as treatment for most patients with upper GI symptoms [3]. It is a simple, safe and well tolerated procedure with direct visualization of the pathologic site. The major indications for upper GI 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. It generates biopsies from the sites that were previously inaccessible, without the major resection. Biopsies are taken to establish a specific diagnosis or to follow the evolution of a particular lesion or disease. It also helps to determine the severity of a disease, to determine the response to therapy and to detect cancers or their premalignant stages. Endoscopic practice is undergoing a revolution with the development of much more accurate video- endoscopy, magnifying endoscopy and techniques such as chromo- endoscopy, auto fluorescence imaging and narrow band imaging [4]. Upper GIT endoscopy that visualizes the upper part of the GIT up to duodenum is an established mode of investigation and treatment of wide range of upper GIT conditions. It also offers the opportunity for biopsy of neoplastic and non-neoplastic lesions. It is a simple safe and well tolerated procedure with direct visualization of the pathologic site and biopsy leading to early detection of pathologic changes and therefore helps to start appropriate treatment. Endoscopic biopsy examination followed by histopathologic assessment is a convenient procedure and current gold standard for accurate objective assessment of patients with upper GIT symptoms. It is not only used to diagnose malignant and inflammatory lesions but also for monitoring the course, extent of the disease, response of the therapy and early detection of complications. This is reflected by rising trend in obtaining mucosal biopsies from the upper GIT [5]. Upper gastrointestinal tract (GIT) disorders are one of the most commonly encountered problems in the clinical practice with a high degree of morbidity and mortality and endoscopic biopsy is common procedure performed in the hospital for a variety of benign and malignant lesions [6]. The various lesions that can affect the GI act can be classified as congenital anomalies, infections, inflammatory, polyps, hamartomatous conditions, benign and malignant lesions [7]. Endoscopy lead gastric biopsy permits early detection of malignant lesions, explores H. Pylori and gastric mucosal lesions like intestinal metaplasia and dysplasia which may progress to invasive cancer [8]. With the knowledge of pre- cancerous conditions and the increase in percentage of people who smoke cigarette and drink alcohol which aid in early development of cancer endoscopy helps in early detection and treatment in case they present with complaints suggesting of upper GI carcinoma. Upper GI Endoscopy with histopathological correlation can differentiate the lesions in neoplastic and non- neoplastic conditions and aid in early detection and better treatment of the disease [9]. Evaluation of the upper gastrointestinal tract can provide information that is crucial in decision making as to future surgery. So, a thorough knowledge of the spectrum of lesions that can be diagnosed in these specimens is essential to make a proper diagnosis for better patient management. Hence, the present study was done at our tertiary care center to assess the histopathological spectrum of various upper GIT lesions with respect to clinical and endoscopic findings and to find out their frequency of occurrence in relation to age and sex.

MATERIAL AND METHODS

The present study was done at our Tertiary Care Centre- Dhiraj Hospital on 70 patients to assess the histopathological spectrum of various upper GIT lesions with respect to clinical and endoscopic findings and to find out their frequency of occurrence in relation to age and sex.

Study design: A hospital based prospective observational study

Study area: The study was done Department of Pathology from February 2021 to January 2024 Government Medical College And Hospital, Cuddalore District, Annamalai Nagar, Chidambaram, Tamil Nadu, India, on endoscopic biopsies of upper gastrointestinal tract received in the department of pathology.

Study population: All Endoscopic biopsies of upper gastrointestinal tract received in department of pathology of Tertiary Care Hospital who fulfilled the inclusion criteria.

Sample size: 70 patients

Inclusion Criteria: All Endoscopic biopsies of upper gastro intestinal tract received in department of pathology.

Exclusion Criteria: All the biopsies of the oral cavity and pharynx and beyond second part of duodenum.

Statistical analysis: Data collected was analysed statistically using percentage and frequency distribution and was presented in the form of tables, charts and graphs.

OBSERVATIONS AND RESULTS

The present study is a prospective study of 70 upper gastrointestinal endoscopic biopsies received in the department of pathology of our college. The present study was planned to determine the spectrum of upper GI lesions by endoscopic biopsies. Following are the results of analysis of seventy cases in the present study. Site wise distribution of Upper GI biopsies:

Table 1: site wise distribution of Upper GI biopsies

Site	Number	Percent
Esophagus	25	35.71%
Stomach	35	50.00%
Duodenum	10	14.29%
Total	**70**	**100%**

Out of the 70 upper GI endoscopic biopsy samples that were studied during the period, 25 (35.71%) were from the oesophagus, 35 (50.0%) from stomach and 10 (14.29%) from duodenum.

Table 2: Age wise distribution of Upper GI biopsies:

Age group	Number	Percent
11to20 years	1	1.7%
21to30 years	10	14.2%
31to40 years	8	11.4%
41to50 years	11	15.7%
51to60 years	15	21.4%
61to70 years	15	21.4%
>70years	10	14.2%
Total	**70**	**100%**

The highest numbers of biopsies were done in patients between 51 to 60 years and 61to70 years followed by 41to50 years. The lowest incidence was seen in age group of 11-20 years followed by 31to 40 years.

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Table 3: Sex wise distribution of Upper GI biopsies:

Sex	Number	Percent
Male	47	67.10%
Female	23	32.90%
Total	**70**	**100%**

Table 4: Clinical Presentations of Upper GI Biopsies:

Clinical symptoms	Number	Percentage
Dyspepsia	51	72.85%
Dysphagia	45	64.28%
Pain in abdomen	17	24.28%
Retrosternal burning	35	50.00%
Vomiting	15	21.42%
Loss of appetite	21	30.00%
Loss of weight	10	14.28%
Nausea	16	22.85%

72.85% of the patients presented with dyspepsia and 64.28% of patients presented with dysphagia. Other chief complaints include pain in abdomen, retrosternal burning, vomiting, loss of appetite, loss of weight & nausea.

Table 5: Site wise distribution of esophageal biopsies:

Site	Number	Percentage
Mid one third esophagus	9	36.0%
Lower one third of esophagus	16	64.0%
Total	**25**	**100%**

The most common site for the esophageal biopsy was lower one third 16 cases (64.0%).

Table 6: Age wise distribution of esophageal lesion in present study.

Age wise distribution of Esophageal lesions	Total	11-20 yrs	21-30 yrs	31-40 yrs	41-50 yrs	51-60 yrs	61-70 yrs	>70 yrs
Acute esophagitis	5	1	0	1	1	1	0	1
Chronic esophagitis	4	0	2	1	0	1	0	0
Barrett's esophagus	4	0	0	0	0	1	1	2
Moderate dysplasia of esophagus	1	0	0	0	0	0	0	1
Squamous cell carcinoma	7	0	0	0	3	0	3	1
Adenocarcinoma	4	0	0	0	0	2	1	1
Total	**25**	**1**	**2**	**2**	**4**	**5**	**5**	**6**

In the present study, out of 25 esophageal biopsies the commonly encountered esophageal lesion was squamous cell carcinoma 7 cases (28%) followed by acute esophagitis. 5 cases (20%). The highest incidence of squamous cell carcinoma was seen between 41 to 50 years and 61-70 years of age. The lowest incidence of esophageal lesions was in the age group 11- 20 years.

Table 7: Endoscopic finding of esophageal biopsies

Endoscopic findings	Number	Percent
Edematous mucosa	2	8.0%
Erosions	8	32.0%
Reddish esophageal mucosa	1	4.0%
Ulceroproliferative growth	7	28.0%
Polypoidal growth	6	24.0%
Circumferential growth around esophagus	1	4.0%
Total	**25**	**100%**

Most common endoscopic findings in the esophagus were erosions (32.0%) followed by ulcero- proliferative growth (28.0%).

Table 8: Histopathological findings of esophageal lesions:

Histopathological findings	Number	Percent
Acute esophagitis	5	20%
Chronic esophagitis	4	16%
Barrett's esophagus	4	16%
Moderate dysplasia of esophagus	1	4%
Squamous cell carcinoma	7	28%
Adenocarcinoma	4	16%
Total	**25**	**100%**

Most common histopathological finding present in esophageal biopsies was squamous cell carcinoma 7 cases (28%) followed by acute oesophagitis 5 cases (20%).

Table 9: Endoscopic and histopathological findings of esophageal carcinomas:

Endoscopic findings	HPE–SCC	%	HPE-AdenoCa	%	Total	%
Polypoidal growth	3	27.27%	1	9.09 %	4	36.36%
Proliferative growth	3	27.27%	0		3	27.27%
Ulceroproliferative growth	1	9.10%	3	27.27%	4	36.36%
Total	**7**	**63.64%**	**4**	**36.36%**	**11**	**100%**

Out of the 11 cases of carcinomas in oesophagus, 28% (7 cases) were squamous cell carcinoma and 16% (4 cases) were adenocarcinoma. Endoscopically, oesophageal carcinomas presented as Ulceroproliferative growth in 4 cases (36.36%), polypoid growth in 4 cases (36.36%) and proliferative growth in 3 cases (27.27%). In the present study, squamous cell carcinoma presented mainly as polypoidal growth & proliferative growth and adenocarcinoma presented mainly as ulceroprolifertive growth.

Table 10: Site wise distribution of gastric biopsies:

Site	Number	Percent
Body of stomach	17	48.57%
Fundus of stomach	3	08.57%
Antrum of stomach	9	25.72%
Pylorus of stomach	6	17.14%
Total	35	100%

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Table 11: Distribution of gastric lesions:

Lesions	No. of cases	Percentage
Inflammatory lesions	17	48.5%
Benign lesions	4	11.5%
Malignant lesions	14	40.0%
Total	35	100%

Table 12: Histopathological findings of gastric lesions:

Histopathological findings	Number	Percent
Acute gastritis	1	2.86%
Chronic gastritis	10	28.58%
Superficial gastritis	3	8.58%
Eosinophilic gastritis	3	8.58%
Hyperplastic gastric polyp	3	8.58%
Inflammatory polyp	1	2.86%
Non-Hodgkin lymphoma	1	2.86%
Signet ring cell carcinoma	3	8.58%
Adenocarcinoma	10	28.58%
Total	35	100%

In the present study, out of 35 gastric biopsies 10 cases (28.58%) were of chronic gastritis. There were 4 cases of polyp, 3 cases (8.58%) were hyperplastic gastric polyp and the other was inflammatory polyp 1 case (2.86%). Out of total 35 cases, 14 cases were malignant. Adenocarcinoma 10 cases (28.58%) was most commonly encountered followed by signet ring cell carcinoma 3 cases (8.58%), 1case (2.86%) is of non-Hodgkin's lymphoma.

Table 13: Histopathological distribution of malignant lesion of stomach:

Types of gastric carcinoma	No. of cases	Percentage
Adenocarcinoma	10	71.43%
Signet ring cell carcinoma	03	21.42%
Non-Hodgkin's lymphoma	01	7.15%
Total	**14**	**100%**

In the present study, among the malignant lesions of the stomach adenocarcinoma 10 cases (71.43%) were the most common lesion encountered which was presented as ulceroprolifertaive growth on endoscopically.

Table 14: Age wise incidence of gastric lesions:

Age wise distribution of gastric lesions	Total	11-20 Yrs	21-30 yrs	31-40 yrs	41-50 yrs	51-60 yrs	61-70 yrs	>70 yrs
Acute gastritis	1	0	0	0	0	1	0	0
Chronic gastritis	10	0	4	3	1	1	0	1
Superficial gastritis	3	0	1	1	1	0	0	0
Eosinophilic gastritis	3	0	0	0	0	0	2	1
Hyperplastic gastric polyp	3	0	0	0	1	0	2	0
Inflammatory polyp	1	0	0	0	0	0	0	1
Non-Hodgkin lymphoma	1	0	0	0	1	0	0	0
Signet ring cell carcinoma	3	0	0	0	1	1	1	0
Adenocarcinoma	10	0	0	1	1	6	1	1
Total	**35**	**0**	**5**	**5**	**6**	**9**	**6**	**4**

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Table 15: Age wise distribution of duodenal lesions:

Age wise distribution of duodenal lesions	Total	11-20 yrs	21-30 yrs	31-40 yrs	41-50 yrs	51-60 yrs	61-70 yrs	>70 yrs
Acute duodenitis	1	0	0	0	1	0	0	0
Acute intestinal perforation	1	0	1	0	0	0	0	0
Chronic duodenitis	5	0	2	1	0	0	2	0
Parasite in duodenum	1	0	0	0	0	0	1	0
Adeno carcinoma	2	0	0	0	0	1	1	0
Total	**10**	**0**	**3**	**1**	**1**	**1**	**4**	**0**

Table 16: Endoscopic findings of duodenal lesions:

Endoscopic findings	Number	Percent
No abnormality	2	20%
Whitish thread like worm seen in duodenum	1	10%
Nodularity	2	20%
Ulceroproliferative growth	5	50%
Total	**10**	**100%**

Table 17: Histopathological findings of duodenal lesions.

Histopathological findings	Number	Percent
Acute duodenitis	1	10%
Acute duodenal perforation	1	10%
Chronic duodenitis	5	50%
Parasite	1	10%
Adeno carcinoma	2	20%
Total	**10**	**100%**

Table 18: Overall incidence of upper GI lesions in present study:

Histopathological findings	Number	Percent
Acute esophagitis	5	7.20%
Chronic esophagitis	4	5.20%
Barrett's esophagus	4	5.20%
Moderate dysplasia of esophagus	1	1.50%
Squamous cell carcinoma of esophagus	7	10%
Adenocarcinoma of esophagus	4	5.20%
Acute gastritis	1	1.50%
Chronic gastritis	8	11.45%
H. pylori gastritis	2	2.85%
Superficial gastritis	3	4.30%
Eosinophilic gastritis	3	4.30%
Hyperplastic gastric polyp of stomach	3	4.30%
Inflammatory polyp of stomach	1	1.50%
Non-Hodgkin lymphoma of stomach	1	1.50%
Signet ring cell carcinoma of stomach	3	4.30%
Adeno carcinoma of stomach	10	14.30%
Acute duodenitis	1	1.50%
Acute duodenal perforation	1	1.50%
Chronic duodenitis	5	7.20%
Parasite Ancylostoma duodenale	1	1.50%
Adeno carcinoma of duodenum	2	2.90%
Total	**70**	**100%**

Non-neoplastic lesions of upper GI:

Non-neoplastic lesions accounts for 48.57% of all upper GI biopsies in the present study, gastric lesions (24.28%) were found most commonly involved followed by oesophageal lesions (12.85%) and then the duodenal lesions (11.42%). Most commonly encountered non-neoplastic oesophageal lesion were oesophagitis. Most commonly encountered non-neoplastic gastric lesion was chronic gastritis; followed by superficial gastritis & eosinophilic gastritis. Most commonly encountered non-neoplastic duodenal lesions were duodenitis, chronic duodenitis being the most common.

Premalignant lesions:

Premalignant lesions account for 7.20% of all biopsies which were seen in esophagus. Dysplasia totally accounted for 1.50% of all upper GI biopsies. Dysplasia in the oesophagus accounted for1.50% of all biopsies. Dysplasia was not seen in biopsies from stomach & duodenum. Barrett's esophagus was seen in 5.20% of all oesophgeal biopsies.

Neoplasms in upper GI:

Benign polyps: There were 4 cases (5.20%) cases of benign polyps in the present study, out of which 3 are hyperplastic gastric polyp and 1 is inflammatory polyp.

Malignant neoplasms: Total number of upper GI malignancies were 38.57% (27 cases), out of which 15.71% were esophageal malignancy, 20% were gastric malignancies and 2.85% were duodenal malignancy, with male predominance in all malignancies. Endoscopic histopathologic correlation of upper GI lesions:

Out of 32 patients suspected of having malignancy on endoscopy, 27(38.57%) of them showed malignancy on histopathology. The rest ofthe5cases(7.14%) cases were benign on histopathology. Out of 10 (14.28%) patients suspected of having benign lesion on endoscopy, 9 cases (12.85%) patients turned out to be benign and 1(1.42%) were malignant histopathologically.

28 (40%) patients had different endoscopic findings, such as ulceration, hyperemia, reddish mucosa and whitish worm. These were non-neoplastic lesions histopathologically.

DISCUSSION

The present study was done at our tertiary care center on 70 patients to assess the histopathological spectrum of various upper GIT lesions with respect to clinical and endoscopic findings and to find out their frequency of occurrence in relation to age and sex. Good clinical and endoscopy information is a fundamental part of "adequacy" and this strongly affects how a biopsy should be read. However, the precise diagnosis becomes more certain on histopathological examination. The most common indications for gastric biopsy are; to detect various types of gastritis along with evidence of Helicobacter pylori status, gastric ulcers and different tumours. Malignant tumours of the upper gastrointestinal tract (oesophagus and stomach) account for 13,300 deaths and approximately 16,600 new cases each. These tumours usually have a long natural history and may present at a fairly advanced stage. Nevertheless, patients with these tumours exhibit important alarm symptoms, for example, dysphagia, dyspepsia, chronic gastrointestinal bleeding, progressive unintentional weight loss, progressive difficulty in swallowing, persistent vomiting, iron deficiency anaemia or epigastric mass that warrant further clinical investigations. The incidence of gastro intestinal malignancies increase with age which has led to increased number of endoscopy as well as biopsy in order to detect cases at the earliest stage. Even the slightest clinical suspicion at middle and old age warrants the endoscopic biopsy and histopathological analysis [10-13].

CONCULSION

Biopsy sampling of upper gastrointestinal mucosa at diagnostic endoscopy provides useful information. Diagnostic interpretations are misinterpreted at times due to tiny biopsy material, handling and processing artifacts. However, multiple bits of endoscopic biopsies from abnormal looking mucosa are recommended to establish a definitive diagnosis. Whenever there is a disagreement, the histopathological appearances served to correct a mistaken endoscopic finding. Endoscopy is incomplete without biopsy and

so the combination of methods provides a powerful diagnostic tool for better patient management study. Histopathology is the gold standard for the diagnosis of endoscopically detected lesions and endoscopy is incomplete without biopsy. Biopsy provides an excellent opportunity for the clinician and histopathologist to correlate the clinical data, endoscopic findings and pathological lesions. To conclude the fibreoptic diagnostic upper GI endoscopy is relatively less invasive, simple, safe and well tolerated procedure, cost effective and provides good diagnostic yield in confirming various upper GI lesions. In routine clinical practice, histopathology is the "gold standard" for definitive diagnosis of various lesions.

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