ORIGINAL RESEARCH

Histopathological study of upper gastrointestinal tract endoscopic biopsies in a tertiary care hospital

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Abstract

Background: The upper gastrointestinal tract disorders are one of the most commonly encountered problems with high degree of morbidity and mortality. A wide variety of infections, inflammations, autoimmune and neoplastic conditions may occur. The aims of this study is to determine the spectrum of the histopathological lesions of upper GIT biopsies and their correlation with endoscopic findings.

Materials and Methods: It iscross sectional, descriptive and observational studydone in the department of pathology at Maharishi Markandeshwar Medical College and Hospital, Kumarhatti, Solan, Himachal Pradesh from January 2022 to December 2022 on 191 upper GIT endoscopic biopsies.

Results: Study observes that common age of presentation was 30-50 years with male to female ratio of 1.4:1. Majority of the biopsies were from stomach 160(83.76%), followed by duodenum 20(10.47%), esophagus10(5.2%)and GE junction1(0.52%).In stomach, non-neoplastic lesions were common predominantly comprising of chronic gastritis (82.5%) with *Helicobacter pylori* positivity seen in 61 cases (46.21%). The most common encountered endoscopic findings in chronic gastritis were hyperemia, erythemia and erosion of mucosa. Among duodenal and esophageal biopsies, chronic nonspecific inflammatory pathology with endoscopic finding of multiple superficial erosions were common.

Conclusion: Endoscopy in combination with biopsy for Histopathological examination plays an important role in the early diagnosis of GI tract lesions and also provide an opportunity for a broad range of treatment options as well as potential for possible cure.

Keywords: Biopsy, endoscopy, histopathology, upper GIT lesions

Introduction

The upper gastrointestinal tract disorders are one of the most commonly encountered problems in clinical practice with a high degree of morbidity and mortality.A wide variety of infections, inflammations, vascular disorders, mechanical conditions, toxic & physical reactions including radiation injury and neoplasms may occur in the upper GI tract[1,2].Inflammatory lesions are the commonest entity with multifactorial etiology. *H. pylori* gastritis is most prevalent worldwide. A spiral gram negative bacterium mainly colonize the gastric mucosa, can be detected in more than 50% cases[3,4] Among the untreated cases 10-20% develop peptic ulcer disease and 1% gastric maliganacy[5].*H. Pylori* infection is associated with age, sex, alcohol intake, socioeconomic status and environmental stress[6-10].Autoimmune digestive disorders of GI tract has

now become one of the commonly occurring lesion in upper GI tract. In celiac disease adverse reaction to gluten a group of protein found in cereals occurs. Histopathological types of celiac disease is based on Modified Marsh-Oberhuber classification, emphasizing the importance of intraepithelial lymphocytes, crypt hyperplasia and villous atrophy[11].Upper GI cancers are the most prevailing cancers with Stomach cancer being commonestworldwide[12-15]. The upper gastrointestinal flexible fibre optic endoscopy was first used in 1968 and proved to be a major breakthrough in the diagnosis of GIT lesions by providing a unique opportunity to visualize the mucosal surface[16-18]. Endoscopy is incomplete without biopsy. Thus upper GIT endoscopy in combination with biopsy for histopathological examination plays an important role in the early diagnosis of GI neoplasms and provide an opportunity for a broad range of treatment options as well as potential for possible cure[19,20].

Aims and Objectives

1. To determine the spectrum of the histopathological lesions of upper GI tract.
2. To correlate endoscopic andhistopathological findings.

Materials and Methods

The Cross sectional, Descriptive and Observational study was conducted in Department of pathology, Maharishi Markandeshwar Medical College and Hospital, Kumarhatti, Solan, Himachal Pradesh; from January to December 2022 on 191 upper GIT endoscopic biopsies. The Endoscopic biopsies were received in histopathology lab in 10% neutral buffered formalin. The biopsies were processed and section cutting carried out. The sections then stained by Hematoxylin and eosin. The stained slides were examined under microscope and histopathological patterns were studied. All the relevant data such as age, gender, clinical symptoms and endoscopic findings were obtained and documented. Special stains(Giemsa, Periodic acid Schiff &Alcian blue) also done wherever required.

Inclusion criteria

1. All the upper GIT endoscopic biopsies, which include the lesions from esophagus, stomach andduodenum.
2. All the symptomatic patients presented to gastroenterologist for endoscopy with consent.

Exclusion criteria

1. All lesions of the oral cavity, pharynx.
2. All lesions below the duodenum.
3. Patients without consentor not willing to participate in the study.

Results

Total 191 upper gastrointestinal tract biopsies were studied. Out of 191 biopsies 160(83.76%) were from stomach, 20(10.47%) from duodenum, 10(5.2%) from esophagus and 1(0.52%) from GE junction (Fig.1). Patient age varied from 16-81 years with common age of presentation was 30-50 years with M:F ratio of 1.4:1. Among the regional distribution of gastric biopsies; antrum (68.75%), body(25.0%) were the commonest site followed by fundus(3.75%) and pylorus(2.5%)(Fig 1).

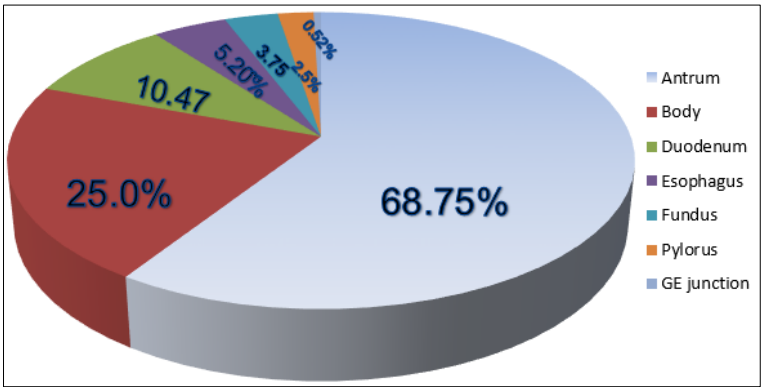

Fig1: Site wise distribution of upper gastrointestinalendoscopic biopsies

Gastric biopsies: A total of 160 gastric biopsies were received. Non neoplastic lesions were common in our study and predominantly comprising of chronic gastritis(82.5%). To know the *H. pylori* status, Giemsastained sections were microscopically examined and results came positive in 61/132(46.21%) cases of chronic gastritis and characterized by the presence of spiral-shaped bacterium in mucosal glands. The activity was microscopically searched and characterized by presence of neutrophils in gastric mucosa and it was seen in 17/132(12.87%) cases. Intestinal metaplasia and lymphoid aggregates were noted in 7/132(5.30%) and 5/132(3.78%) of chronic gastritis respectively. Two cases each of gastric polyp and gastric ulcer were histopathologically diagnosed. One signet ring cell carcinoma of stomach with endoscopic finding of ulceroproliferative growth was also included in our study. Gastric endoscopic biopsies exhibits histologically normal study in 7 (4.37%) (Table 1).

Table 1: Histomorphology of endoscopic biopsies from stomach

Histomorphology	Number of Biopsies	% of Biopsies
Chronic nonspecific gastritis	69	43.12
Chronic *H. pylori* induced gastritis	50	31.25
Acute on chronic nonspecific gastritis	05	3.12
Acute on chronic *H. pylori* induced gastritis	12	7.50
Chronic nonspecific follicular gastritis	02	1.25
Chronic *H. pylori* induced follicular gastritis	03	1.87
Chronic nonspecific gastritis with intestinal metaplasia	04	2.50
Chronic *H. pylori* induced gastritis with intestinal metaplasia	03	1.87
Gastric polyp	02	1.25
Gastric ulcer	02	1.25
Gastric carcinoma(Signet ring cell)	01	0.62
Normal histology	07	4.37

The common endoscopic findings in nonneoplastic lesions of stomach were hyperemic/erythemic mucosal patch 55/160(34.37%), erosive mucosa 43/160(26.87%) followed by ulcerative mucosa, polypoidal mucosa and mottled mucosa.(Table 2).

Table 2: Endoscopic findings in correlation with histopathological diagnosis of gastric biopsies

Endoscopic finding	Chronic nonspecific gastritis	*H. pylori* induced gastritis	Chronic gastritis with intestinal metaplasia	Chronic gastric ulcer	Gastric polyp	Carcinoma
Hyperemia/erythemia	24	27	4			
Erosion	19	21	3			
Edema	4	1				
Ulceration	7	3		2	2	
Polypoidal	5	2				
Flattened	2					
Thickened	1	1				
Proliferative						1
Bleeding	1	2				
Mossaic	2	1				
Mottled	4	3				

Table 3: Comparison of presence of*H. Pylori* in patients with Gastritis

Study	% Of*H. Pylori* Positive Cases
Meshraam*et al*[26]	61%
Prasad *et al*.[27]	61%
Adisa *et al*.[31]	57.2%
Malik *et al*.[32]	51%
Amin *et al*.[33]	65%
Present study	46.2%

Duodenal biopsies:A total of 20 duodenal biopsies were received.The bulk was from D1&D2 junction (60%). Among the duodenal biopsies chronic nonspecific duodenitis was common and presented in 15(75%) cases. One case each of peptic duodenitis, duodenal ulcer and celiac disease were also seen histopathologically. Normal study seen in 2 cases (Table 4).

Table 4: Histomorphology of endoscopic biopsies from duodenum

Histomorphology	Number of biopsies	% of biopsies
Chronic nonspecificDuodenitis	15	75.0
Peptic duodenitis	01	5.0
Peptic ulcer	01	5.0
Celiac disease	01	5.0
Normal histology	02	10.0

The common endoscopic findings in chronic inflammation of duodenum were multiple superficial erosions(60%) and scalloped mucosa(20%), followed by ulcerative (13.33%) and flattened mucosa(6.66%). (Table 5).

Table 5: Endoscopic findings in correlation with histopathological diagnosis of duodenal biopsies

Endoscopic finding	Chronicnonspecificduodenitis	Peptic duodenitis	Duodenal ulcer	Celiac disease
Erosion	09	01	-	01
Scalloped mucosa	03	-	-	-
Flattened musa	01	-	-	-
Ulcerative mucosa	02		01	-

Esophageal biopsies: Total 10 biopsies from esophagus were received. Among them 6 had spectrum of chronic nonspecific esophagitis. 1 case showed features of low grade dysplasia. One eosinophilic esophagitis also seen. The remaining 2 cases showed esophageal tissue in normal limits (Table 6). The commonest endoscopic finding were multiple erosions(50%), nodular mucosa (16.66%) and white mucosal patch(16.66%). One lesion in esophgo-gastric junction was recorded with histopathological diagnosis of nonspecific inflammatory pathology with erosive mucosa.On endoscopy. In present study endoscopic evaluation in matching the histological diagnosis of esophageal & gastroesophageal junction lesions did not have reliable correlation as the number of biopsies were limited.

Table 6: Histomorphology of endoscopic biopsies from esophagus & gastroesophageal junction

Histomorphology	Number of Biopsies	% of Biopsies
Chronic nonspecific esophagitis	07	63.66
Eosinophilic esophagitis	01	9.09
Dysplasia	01	9.09
Normal histology	2	18.18

Discussion

In present study on 191 upper GIT endoscopic biopsies the majoritywere from stomach(83.76%) followed by duodenum(10.47%) and esophagus(5.23%) with male predominance in between 4^{th}-6^{th} decadeThe age and sex related difference could be due to variation in the risk factors. These findings are closest[21-23] to the study by Krishnapa *et al*., Somani *et al*., Keerthana *et al*.

Stomach: Among the regional distribution of gastric biopsies, most of the lesions were located at antrum(68.75%) Many studies found the antrum as a commonest affected site[21-24]. Non neoplastic lesions of stomach were common in our study, predominantly comprising of chronic gastritis 132/160(82.5%) followed by gastric ulcers(1.25%) and polyps(1.25%). Our findings are near[21-24] to studies by,Krishappa*et al*. Somani *et al*., Keerthana *et al*.,Margaret TJ *et al*. In present study, the *H. pylori* status came positive in 61/132(46.21%) cases of chronic gastritis.The status of *H. pylori* infection compared well[26,27,31-33] with other documented studies by Meshram *et al*., Prasad *et al*., Adisa*et al*., Malik *et al*. and Amin*et al*., showed chronic gastritis as commonest non neoplastic gastric lesionand among them *H. pylori* positivity was seen in majority of the cases(Table 3). In our study among all chronic gastritis, evidence of activity was seen in 17/132(12.87%). The *H. pylori* positivity noted in majority of them comprising of 12/17(70.58%). Similar results were observed[24,27,29,34] in studies doneby Margeret TJ *et al*., Prasad *et al*.,TMM Hassan *et al*.& Thapa *et al*. The predominant endoscopic findings were hyperemic/erythemic mucosal patch 55/160(34.37%) followed closely by erosive mucosa 43/160(26.87%). The disease wise correlation of endoscopic gastric findings was done and it was observed that results are similar[23] to keerthana *et al*. In other study by Sun-ypung Lee *et al*., it was seen that in chronic nonspecific gastritis the common endoscopic findings are erosive mucosa and in case of *H. pylori* infection nodularity and hyperemic spots are common on endoscopy. In the study by TMM Hassan *et al*. they were examined 120 gastric biopsies the endoscopic findings were hyperemia followed by erosion, ulceration, nodularity[34].In our study only one gastric endoscopic biopsy came out to be neoplastic with histopathological diagnosis of signet ring cell carcinoma. The endoscopic finding was ulceroproliferative growth. Among 160 gastric biopsies, 7(4.37%) showed gastric mucosa within normal limits.

Duodenum: Total 20 duodenal biopsies were studied. In majority of them the histopathological diagnosis was chronic nonspecific duodenitis 15(75%). This observation is in comparision[22,24,25] with the studies conducted by Somani *et al*.,Margeret TJ *et al*., Mosammat *et al*. One case each of peptic duodenitis, Duodenal ulcer and celiac disease were also seen. The study done by Krishnappa *et al*. also showed the similar results of chronic nonspecific duodenitis as commonest along withone case of duodenal ulcer noted[21].Normal study seen in 2 cases. In present study

the most common endoscopic findings in chronic nonspecific duodenitis were multiple superficial erosions followed by nodular mucosa. The study done by Keerthana *et al*. showing majority of the patients suffering from chronic nonspecific duodenitis had endoscopic findings of multiple mucosal nodules and one duodenal ulcer presented as ulcer in endoscopy similar to our study[23]. In the study by TMM Hassan *et al*. majority of cases with duodenitis the common endoscopy findings were hypremia and ulceration[34].

Esophagus: Among the 10 esophageal biosies, 50% were histopathologically diagnosed as chronic nonspecific esophagitis. 1 caseeach of eosinophilic esophagitis and low grade dysplasia also noted. In the studies by, Krishnappa *et al*., Keerthana *et al*., Margeret TJ *et al*.and Rosy *et al*. found that nonspecific esophagitis was predominant histopathological diagnosis with common endoscopic finding of multiple superficial erosions[21,23,24,30]. In the study conducted by Keerthana *et al*. stated that 61.1% of esphageal biopsies showed non neoplastic inflammatory pathology with congested mucosa as commonest endoscopic presentation[23]. In another study by Mosammat *et al*. stated that among the non-neoplastic lesion of esophagus, inflammatory pathology was common microscopic diagnosis[25].It was found that endoscopic evaluation in matching the histological diagnosis in esophageal lesions did not have reliable correlation as the number of biopsies were limited. In Dashan *et al*.study they also epmhasizing on limited correlation of endoscopy and histopapathology of esophageal lesions[36]. One case of mild dysplasia with endoscopic finding of ulcerative mucosa also noted. Two esophageal biopsies showed normal histology.

Conclusion

In the present study we observed that the most common site of endoscopic biopsies is stomach(83.76%). Males in 3rd-5th decades are commonly affected by the upper GIT lesions. Chronic gastritis is the most frequent histopathological diagnosis among the gastric non neoplastic lesions which mainly presented as hyperemic/erythemic and erosive mucosal patch endoscopically. *H. pylori* positivity was seen in majority. The most common histopathological lesions of duodenum and esophagus were nonspecific inflammation. In duodenitis the common endoscopy findings is multiple superficial erosion. In esophagus the correlation of endoscopy with histopathology is rather limited. The upper GI endoscopy in combination with histopathological examination help in early detection of mucosal lesions, diagnosis of carcinoma at early stage and confirmation of clinically suspected cases leading to early clinical management.

Ethical committee approval: This study has been approved by the institutional ethical committee.

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