Original Article

Histopathological Spectrum of Lesions in Upper Gastrointestinal Endoscopic Biopsies

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ABSTRACT

Introduction: Upper gastro-intestinal endoscopy is regarded as the most essential investigation for gastro-intestinal tract (GIT) lesions. It is safe, well tolerated and provides direct visualization of the involved site. The aim of this study is to find out the histopathological pattern of endoscopic biopsies of upper gastrointestinal tract.

Methods: The study is a retrospective observational study, conducted in the Department of Pathology, Fewacity Hospital and Research Center, Pokhara, Nepal. Data collection was done during a 12 month period from April 2020 to March 2021.

Results: Out of 597 upper GI biopsies, 190 (31.82%) patients were males and 407 (68.17%) patients were females. The age of the patients ranged from 10 to 96 years. The site wise distribution of endoscopic biopsies was esophagus and gastro esophageal junction 33 (5.52%), stomach 538(90.11%) and duodenum 26 (4.35%) cases.

Conclusion: Upper GI endoscopy is effective procedure for diagnosis and further management.

Keywords: *endoscopy, gastric, esophagitis, metaplasia*

Introduction

Upper gastrointestinal tract (GIT) is a common site for nonneoplastic and neoplastic lesions including malignant tumors. Upper GIT can be affected by various pathologies like infectious diseases, inflammatory disorders, mechanical trauma, toxic injuries, physical reactions, radiation damage and neoplasm.[1] Any patient experiencing the upper abdominal symptoms like pain or dyspepsia is advised to have endoscopic examination followed by histopathologic study. Endoscopy generates biopsy from sites that were previously inaccessible without a major surgery.[2]

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Flexible fiber optic endoscope is being utilized as a major modality of investigation in the diagnosis of gastrointestinal tract (GIT) lesions since the last century.[3] Upper GI endoscopy is regarded as the most essential investigation for GI lesions. Endoscopy can also be used for treatment of most patients with upper GI symptoms. It is safe, well tolerated and provides direct visualization of the involved site. The main indications for upper GIT endoscopic biopsy include evaluation of dyspepsia, odynophagia, peptic ulcer disease, inflammatory disorders and neoplasms.[3] It also helps in early detection of premalignant and malignant lesions.[1] Endoscopic visualization helps in clinical diagnosis, but at the same time histopathological correlation of biopsy specimen is a requisite for accurate final diagnosis.[4-6] Histological study of tissues following endoscopic biopsy provides specific diagnosis and guides management. Biopsies are taken also to follow the evolution of a particular lesion or disease.[2] Samples for study are also taken to determine the extent and severity of a disease, and to find out the response to therapy.[2,7-10]

Across the world, gastric adenocarcinoma is the second most common cancer. Carcinoma esophagus is ranked as the seventh most common carcinoma and is a leading cause of death.[5] The aim of this study is to find out the histopathological pattern of endoscopic biopsies of upper gastrointestinal tract.

Methods

The present study was conducted in the Department of Pathology, Fewacity Hospital and Research Center, Pokhara, Nepal. It is a retrospective observational study. Data collection was done during a 12 month period from April 2020 to March 2021. Permission for research was obtained from the hospital board prior to commencement of the study. The biopsy samples received from upper GI endoscopy were fixed in 10% formaldehyde and routinely processed. Approximately 4 micrometer thick sections were cut and stained with Hematoxylin and Eosin (H&E). In addition, Geimsa stain was performed to confirm the presence of H. pylori as needed.

For detection of H. pylori induced lesions, the surface epithelium and foveolar lumen were searched for curved bacilli in H&E. Giemsa stain was used to facilitate their recognition. Organisms were searched under oil immersion (100X).The sections were examined for various histopathological features related to gastritis like chronic and mixed inflammatory infiltrates, neutrophilic activity, intestinal metaplasia, atrophy, and presence of H. pylori. The sections were also examined for the presence of malignant changes.

Grading for gastric and duodenal biopsies was done according to updated revised Sydney and modified Marsh classification. All tumors were classified according to the WHO classification.

All endoscopic biopsies of upper gastrointestinal tract and the lesions present in oesophagus, stomach and up to second part of duodenum were included.

All lesions of the mouth and pharynx as well as all the duodenal biopsies beyond the second part of the duodenum were excluded from the study.

RESULTS

Out of 597 upper GI biopsies, 190 (31.82%) patients were males and 407 (68.17%) patients were females; male to female ratio being 1:2.14. The age of the patients ranged from 10 to 96 years. The youngest patient was 10 years old male with chronic gastritis while the oldest patient was 96-year-old male with chronic gastritis with glandular intraepithelial neoplasia. The site wise distribution of endoscopic biopsies was- esophagus and gastro esophageal junction 33 (5.52%), stomach 538 (90.11%) and duodenum 26 (4.35%) cases.

Histological diagnosis of esophageal, gastric and duodenal biopsies is presented below in tables 1, 2 and 3 respectively. Carcinoma was detected in esophageal and gastric lesions. In esophageal lesions, squamous cell carcinoma was seen in two patients (6.06%) out of 33 cases of esophageal biopsies.

In gastric lesions, 5 cases of gastric adenocarcinoma (0.92%) were observed (out of 538 biopsies) and one case of diffuse B cell lymphoma (0.18%) was noticed.

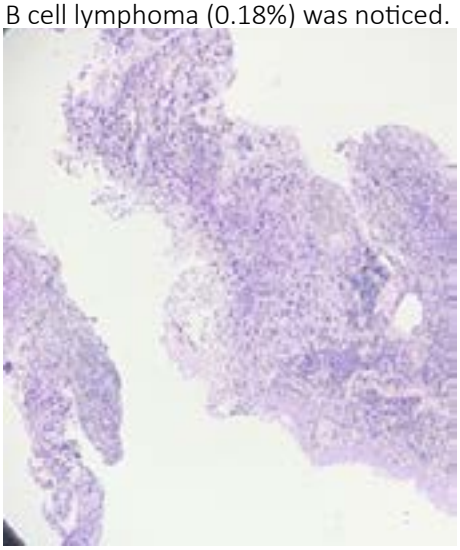

Fig 1: Moderately differentiated squamous cell carcinoma, esophagus (H & E 10x)

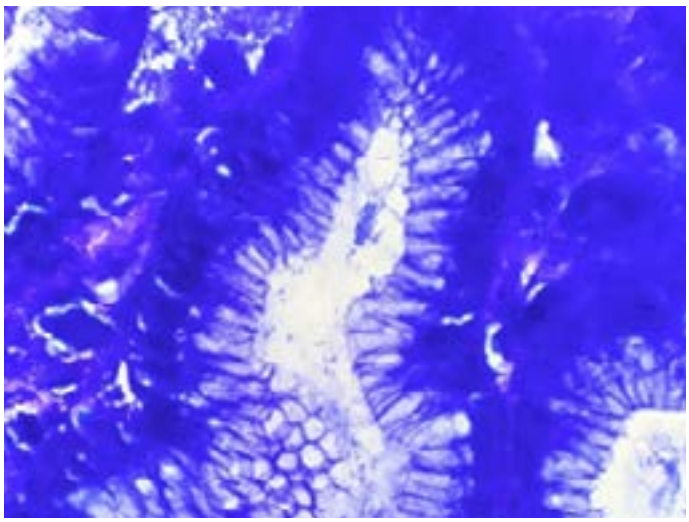

Fig 2: Stomach, H. pylori positive (Giemsa 100x)

Among 5 cases of adenocarcinoma, 3 (50%) cases were poorly differentiated adenocarcinomas and 2 (33.33%)

cases were moderately differentiated adenocarcinomas. Out of these malignant lesions, 4 (66.66%) cases were from male patients and 2 (33.33%) cases were from female patients. Site wise distribution revealed 5 (83.33%) cases from pyloric antrum, 1 (16.66%) case from corpus.

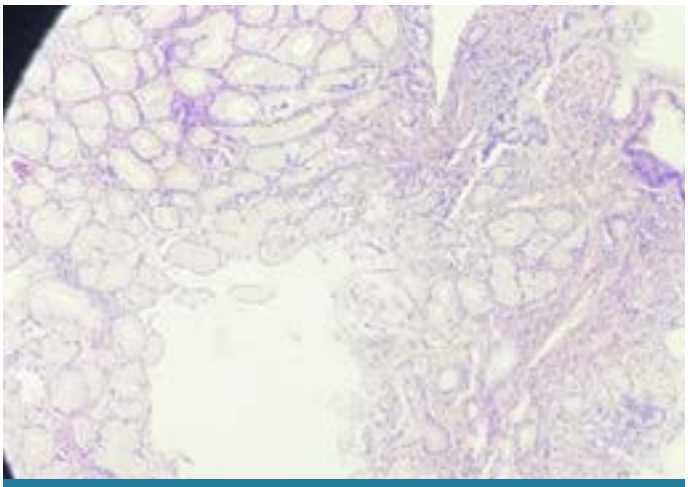

Fig 3: Gastric ulcer (H&E 10x)

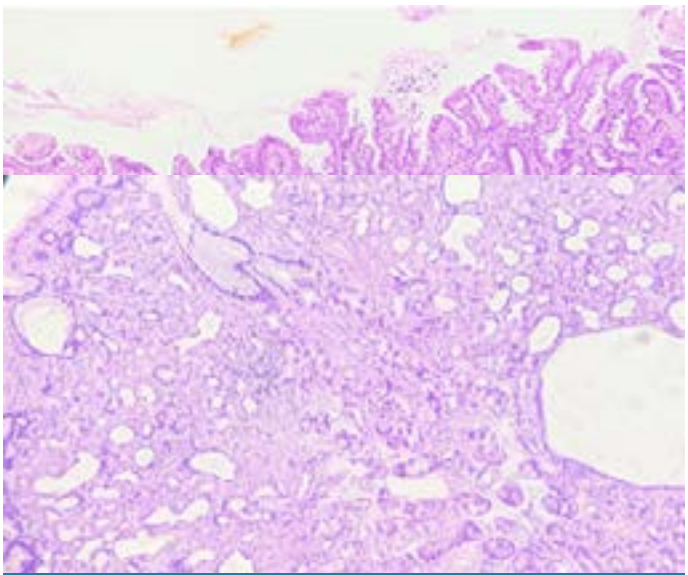

Fig 5: Stomach fundic gland polyp (H&E 10x)

Table 1: Histological findings in gastric biopsies

Lesions	No of cases	Percentage (%)
Chronic gastritis with H. Pylori negative	349	64.86%
Chronic active gastritis with H. Pylori positive	40	7.43%
Chronic gastritis with H. Pylori positive	22	4.08%
Benign gastric ulcer with H. Pylori positive	45	8.36%
Gastric ulcer with H. Pylori positive and intestinal metaplasia	2	0.37%
Chronic gastritis with H. Pylori positive and glandular intraepithelial neoplasia	2	0.37%
Gastric ulcer with glandular intraepithelial neoplasia and intestinal metaplasia	2	0.37%
Chronic gastritis with intestinal metaplasia	24	4.46%
Gastric ulcer with intestinal metaplasia	6	1.11%
Chronic gastritis with glandular intraepithelial neoplasia	12	2.23%
Gastric ulcer with glandular intraepithelial neoplasia	6	1.11%
Atrophic gastritis	1	0.18%
Fundic gland polyp	6	1.11%
Hyperplastic polyp	15	2.78%
Gastric adenocarcinoma	5	0.92%
Diffuse large B cell lymphoma	1	0.18%
Total	538	

Table 2: Histological findings in esophageal biopsies

Lesions	No of cases	Percentage (%)
Chronic nonspecific esophagitis	21	63.63%
Benign esophageal ulcer	5	15.15%
Barrett's esophagus without dysplasia	4	12.12%
Squamous cell carcinoma	2	6.06%
Eosinophilic esophagitis	1	3.03%
Total	33	

Table 3: Histologic findings in duodenal biopsies

Lesions	No of cases	Percentage (%)
Chronic duodenitis	22	84.61%
Duodenal ulcer	2	7.69%
Brunner's gland hyperplasia without dysplasia	1	3.84%
Celiac disease	1	3.84%
Total	26	

Discussion

Hirachan et al have discussed that endoscopy is incomplete without histopathological examination of biopsy and so, the combination plays an important role in diagnosis and management of upper gastrointestinal tract disorders.[11] According to Sunita Sharma et al, it is a well tolerated procedure but alone is insufficient to diagnose mucosal lesions in about 15-30% of cases.[12] In these cases histopathology is required. Some authors have stressed that tissues that look normal on endoscopy should also be sent to histological study. [5,8]

In this study out of 597 upper GI biopsies, female patients outranked male patients, with female to male ratio 2.14:1. In a similar study, male patients were predominant with male to female ratio of 1.2:1.[13] Hirachand et al pointed out in their study that, out of 243 total cases, 138 (56.8%) were males and 105 (43.2%) were females with male to female ratio of 1.76:1.[11] The site wise distribution of endoscopic biopsies in the present study was- esophagus and gastro esophageal junction 33 (5.52%), stomach 538 (90.11%) and duodenum 26 (4.35%) cases. In a study by Krishnappa Rashmi et al, stomach was the commonest site for upper GI endoscopic biopsy with 60% non-neoplastic and 40% neoplastic lesions.[8] Most common neoplasm of stomach was adenocarcinoma. Among total 110 upper GIT endoscopic biopsy samples 22 (20%) were oesophageal, 73 (66.36%) gastric and 15 (13.64%) duodenal biopsies. Among oesophageal biopsies 18 (81.82%) were histologically neoplastic of which 13 (81.25%) were SCC and 03 (18.75%) adenocarcinoma.[14] In duodenum, inflammatory lesions were more common than malignancy, according to Shanmugasamy K.[15]

In the present study, the most common esophageal lesion was nonspecific esophagitis. As demonstrated in table above two patients had squamous cell carcinoma. Veena et al have mentioned that the most common non –neoplastic lesion was chronic non-specific gastritis in their study and the most common neoplastic lesion was moderately differentiated squamous cell carcinoma of esophagus. [13] The most commonly missed oesophageal lesion on endoscopy was reflux oesophagitits and hyperplastic epithelium, which was diagnosed by histology.[5]

According to Kaur Manpreet et al, the most common lesion in their study of non-neoplastic esophageal biopsies was non-specific esophagitis (79%) with the least common being Barrett's esophagus (3%).[6] In their study acute or chronic gastritis (37%) followed by fundic gland polyp and ulcers (18% each) were the most recognized entities.[6] They highlight the correlation of endoscopic findings such as erythema, edema, exudates, loss of scalloping and mucosal granularity with the histopathology findings for reaching at the correct diagnosis.[6]

In the present study most biopsies were taken from gastric lesions with chronic gastritis being the most frequent diagnosis of all. Mild chronic gastritis was the commonest lesion noted in non-neoplastic lesions and adenocarcinoma was the commonest neoplastic lesion in the endoscopic gastric biopsies.[10] The most common non– neoplastic lesion was chronic non-specific gastritis and the most common neoplastic lesion was moderately differentiated squamous cell carcinoma of esophagus.[13]

Hussain et al have surmised that histopathological study detects mucosal lesions at an early stage especially atrophy, intestinal metaplasia and dysplasia which is helpful to prevent progress of these lesions to invasive cancer. [16]

Conclusion

Upper GIT problems are fairly common in the general population in Nepal. Upper GIT endoscopy is safe and effective procedure for diagnosis and further management in such patients.

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