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Histopathological spectrum of lesions of upper gastrointestinal tract – A study of endoscopic biopsies

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ABSTRACT

Background

The disorders of upper gastrointestinal tract are responsible for a great deal of morbidity and mortality. Upper GI endoscopy in combination with biopsy plays an important role in the exact diagnosis of these disorders for further management.

Objectives

To study the histopathological spectrum of upper GI tract lesions.

Materials and Methods

A descriptive study was conducted on endoscopic biopsies of upper GI tract in a tertiary care hospital over a period of 26 months from March 2011 to April 2013.

Results

Out of 196 endoscopic biopsies studied 129 were from male patients and 67 were from female patients. An age range of 19- 90 years was observed. There were 50 (25.5%) cases from esophagus, 15(7.65%) cases from GE junction, 127 (64.8%) cases from stomach and 4 (2.04%) cases from duodenum. 45(23%) cases were non-neoplastic, 52(26.5%) cases were benign neoplasms while 99(50.5%) were malignant neoplasms. Histopathology revealed gastritis (38 cases) (84.4%) as the most frequently diagnosed inflammatory lesion while adenocarcinoma stomach (45 cases) (45.9%) comprised the most frequently diagnosed malignant lesion.

Conclusion

Endoscopy generates biopsy specimens from sites that were previously inaccessible without a major resection. So a thorough knowledge of the spectrum of lesions that can be diagnosed in these specimens is pertinent to make a proper diagnosis for better patient management.

Keywords: Upper GIT, Endoscopy, Biopsy, Histopathology

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INTRODUCTION

The disorders of upper gastrointestinal tract are responsible for a great deal of morbidity and mortality and are one of the most commonly encountered problems in clinical practice. The gastrointestinal flexible fibreoptic endoscope was first used in 1968 and proved to be a major breakthrough in the diagnosis of oesophago gastro duodenal lesions.[1]Endoscopy generates biopsy from

sites that were previously inaccessible without a major resection. Biopsies are taken to establish a specific diagnosis or to follow the evolution of a particular lesion or disease. They are also taken to determine the extent and severity of a disease, to determine response to therapy and to detect cancers or their premalignant stages.[2]

The oesophagus and stomach can be sampled for a wide variety of infections, inflammatory disorders, vascular disorders, mechanical conditions, toxic and physical reactions, including radiation injury and neoplasms.[3]

The aim of this study is to find out the histopathological pattern of endoscopic biopsies of upper gastrointestinal tract.

MATERIALS AND METHODS

The present study was conducted in the Postgraduate Department of Pathology, Government Medical College, Srinagar on 196 upper gastrointestinal biopsies performed at Shri Maharaja Hari Singh (SMHS) Hospital during a 26 month period from March 2011 to April 2013. The biopsies received were fixed in 10% formaldehyde and routinely processed. Approximately 5 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 where ever needed.

Inclusion criteria

All endoscopic biopsies of upper gastrointestinal tract.

Exclusion criteria

1) All lesions of the mouth and pharynx.
2) All duodenal biopsies beyond the second part of the duodenum.

RESULTS

Out of 196 upper GI biopsies, 129 (65.8%) patients were males and 67 (34.2%) patients were females; male to female ratio being 1.92:1. The age of the patients ranged from 19 to 90 years. The youngest patient was a 19 year old female with squamous papilloma of oesophagus while the oldest patient was 90 year old male with squamous cell carcinoma of the oesophagus.

The site wise distribution of endoscopic biopsies was- oesophagus 50 (25.5%), gastro esophageal junction 15(7.65%), stomach 127 (64.8%) and duodenum 4 (2.04%) cases.

Out of 50 oesophageal biopsies, four cases showed features of chronic nonspecific esophagitis. The rest of the lesions were neoplastic with two cases of squamous papillomas, two hyperplastic polyps, one case of squamous cell carcinoma insitu and forty one cases of squamous cell carcinoma.

All the malignant neoplastic lesions of oesophagus were squamous cell carcinomas on morphology, with 22(53.65%) patients being males and 19(46.34%) being females. Majority of the lesions were found in lower oesophagus (28 cases) (68.3%) followed by 11 cases (26.83%) in middle oesophagus and only 2 cases (4.87%) in upper oesophagus. On histopathological grading 35cases (85.36%) were moderately differentiated [Fig 1], 4 cases (9.75%) were well differentiated while 2 cases (4.87%) showed poor differentiation.

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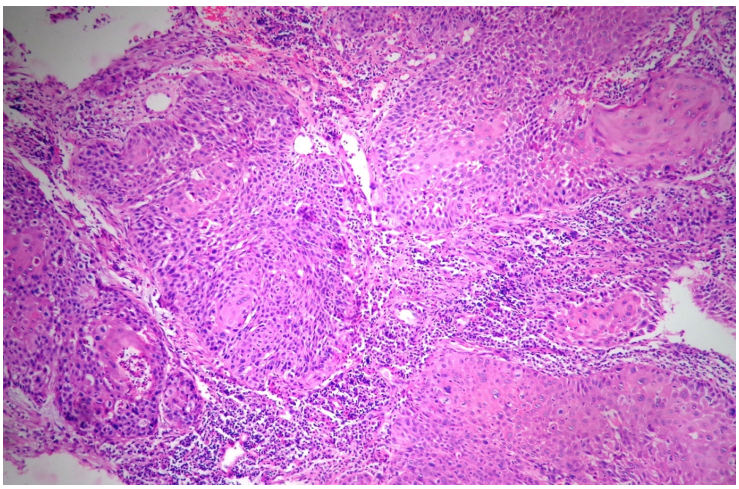

Fig 1: Photomicrograph of Moderately differentiated squamous cell carcinoma esophagus. (H&E, 10X)

Out of 15 biopsies from GE junction, 11 (73.33%) were adenocarcinomas. There were 3 cases (27.27%) of Barrett's esophagus and 1case (9.09%) of reflux esophagitis among the biopsies from GE junction.

Out of 127 biopsies from stomach, 40 (31.49%) revealed inflammatory lesions with 38 cases of gastritis [Fig 2] and 2 cases of acute gastric ulcer. This was followed by benign neoplastic lesions of stomach 42 cases (33.07%) comprising of 39 hyperplastic polyps, 2 Puetz Jeghers polyps and 1 fundic gland polyp.

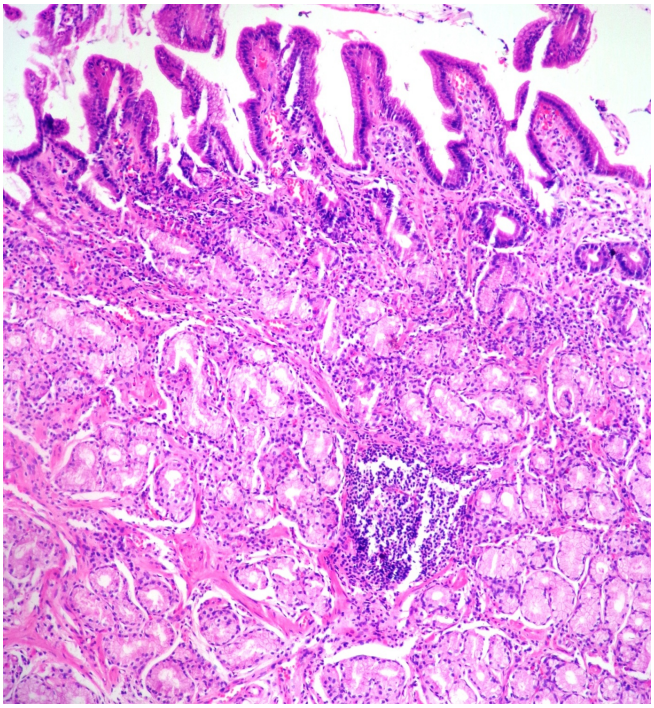

Fig 2: Photomicrograph of Chronic gastritis with a lymphoid aggregate in the lamina propria. (H&E, 10X)

Out of 38 cases of chronic gastritis, H.Pylori was present in 26 cases [Fig 3] and absent in 12 cases.

Both cases of acute gastric ulcer were negative for H. Pylori.

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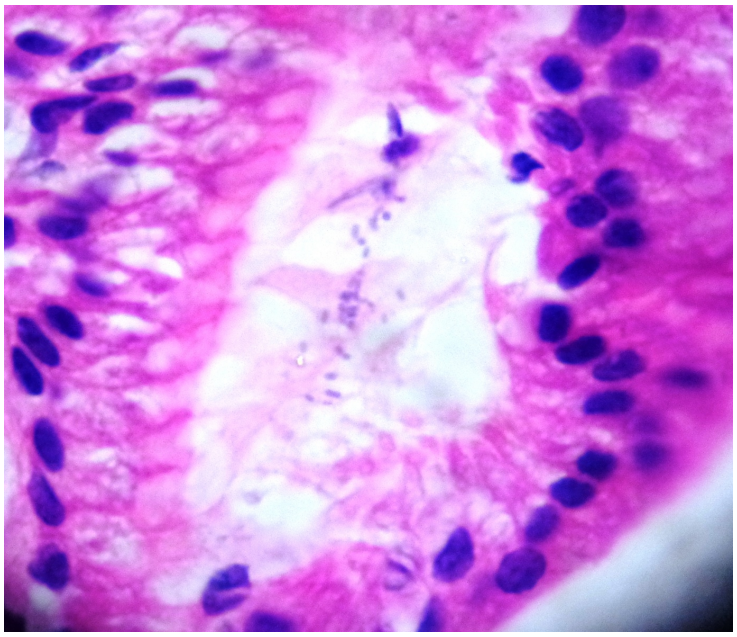

Fig 3: Photomicrograph of Helicobacter Pylori organisms in a case of chronic gastritis. (H&E, Oil Emersion)

Out of 45 cases (35.43%) malignant neoplastic lesions of the stomach, 39 cases (86.67%) were from male patients and 6 cases (13.33%) were from female patients. Site wise distribution revealed 24 cases from pyloric antrum, 12 cases from cardia and 9 cases from corpus. On histopathologic examination 36 cases were adenocarcinomas of intestinal type among which 17 cases (37.77%) were poorly differentiated adenocarcinomas, 14 cases (31.11%) were moderately differentiated adenocarcinomas [Fig 4] and 5 cases (11.11%) were well differentiated adenocarcinomas.

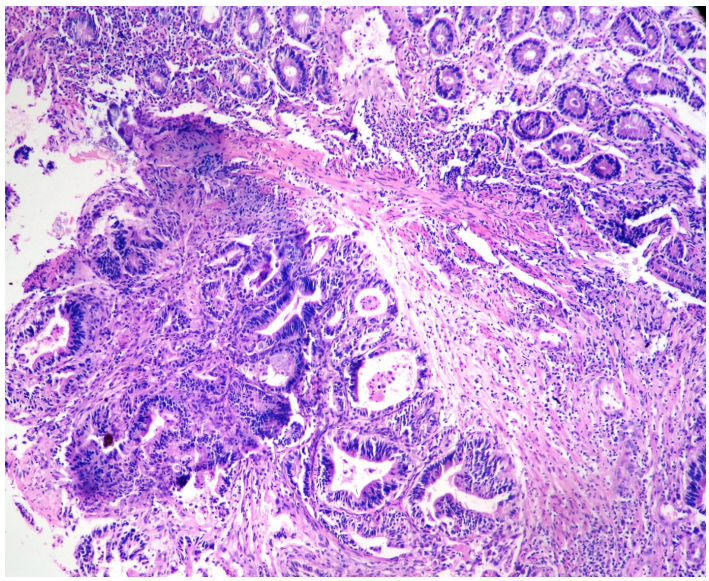

Fig 4: Photomicrograph of Moderately differentiated adenocarcinoma stomach. (H&E, 10X)

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6 cases (13.33%) showed signet ring cell type carcinoma (diffuse) [Fig 5 & Fig6] while there was one case (2.22%) of mucinous type of carcinoma.

Early gastric carcinoma was observed in two biopsy specimens (4.44%).

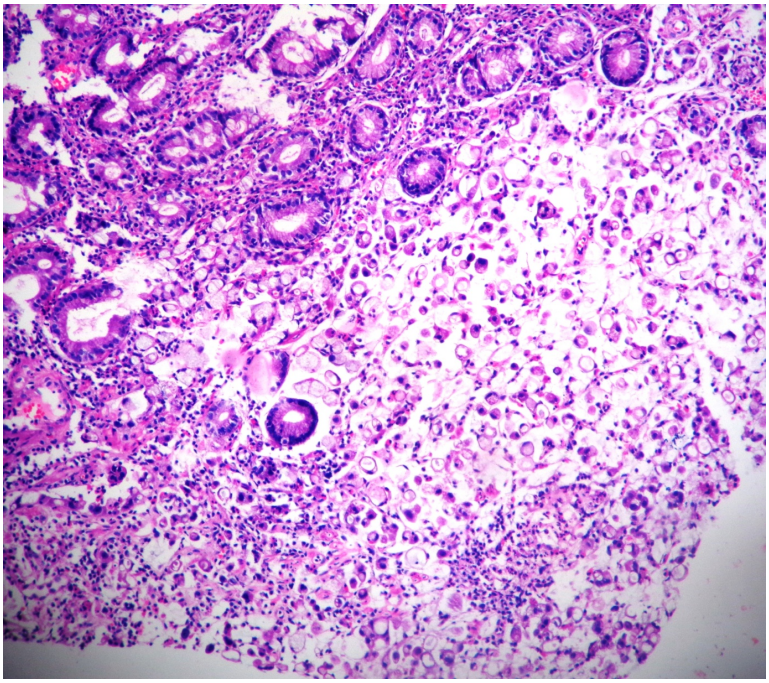

Fig 5:Photomicrograph of Signet ring cell type carcinoma stomach (Diffuse). (H&E, 10X)

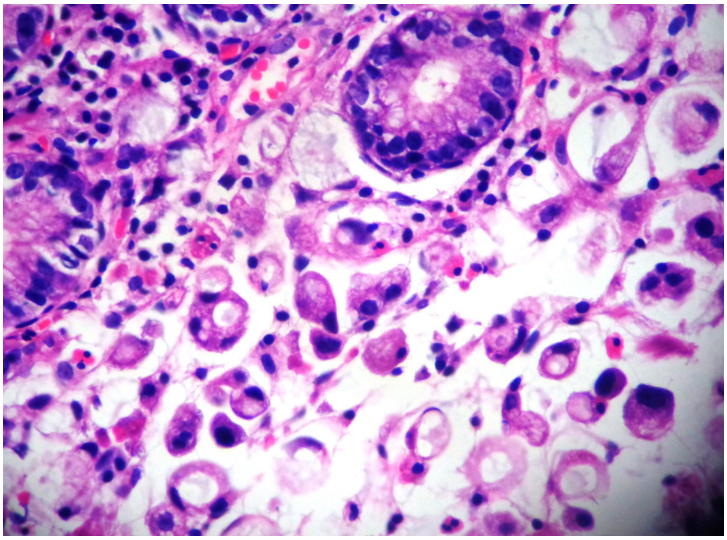

Fig 6:Photomicrograph of Signet ring cell adenocarcinoma stomach. (H&E, 40X)

There were four cases of endoscopic biopsies from lesions involving the first two parts of duodenum. Among these cases two patients had celiac disease followed by one case each of tubular adenoma and well differentiated adenocarcinoma of the ampullary region.

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DISCUSSION

According to National Cancer Registry, esophageal and gastric cancers are the most common cancers found in men, while esophageal cancer ranks third among women after carcinoma of breast and cervix.[4] The frequency of gastrointestinal cancer is 62.25% in Kashmir which is very high compared to other parts of India where it ranges from 5.8% in Amritsar to 14.36% in Kerala.[5] Hence there is a need to detect these malignant lesions at an early stage and to differentiate them from the various benign and inflammatory conditions that afflict the upper GI tract and may give rise to an overlapping symptomatology. Histopathological study of endoscopic biopsy specimens is used to confirm the endoscopic diagnosis in a case of suspected malignancy or to make the diagnosis of a benign condition, thus allowing an early therapeutic decision without unnecessary delay. The upper gastrointestinal flexible fibreoptic endoscope was first used in 1968 and proved to be a major breakthrough in the diagnosis of upper GI tract lesions. The procedure is well tolerated, causing minimal discomfort and allows for biopsy under direct vision.[6]

The present study was conducted on196 cases of upper GI tract endoscopic biopsies that were received in our department from March 2011 to April 2013. A male to female ratio of 1.92:1 was observed in our study. A similar male predominance was also observed by Shennak MM et al [7] which they attributed to greater degree of exposure of male subjects to various risk factors and greater attendance of male patients to the outpatient department of the hospital as compared to the female patients.

A predominance of upper GI tract diseases was found between the age groups of 41-60 years which showed a similar trend to other reported studies.[7,8]

Esophageal lesions

Among the esophageal biopsies studied, 9/50 (18%) revealed non neoplastic pathology while 41/50 (82%) were malignancies. Overall they constituted 41.83% of all the malignant lesions in our study. This observation differed from other studies in which non neoplastic conditions of esophagus predominated the overall picture.[7] This could be attributed to special dietary practices of Kashmiri population. Salted tea, prepared by brewing green tea leaves with sodium bicarbonate is a favorite drink among Muslims in Kashmir. It shows high methylating activity upon in-vitro nitrosation. In addition, other dietary items containing substantial amounts of N-nitroso compounds, such as sun-dried vegetables, dried fish and red chilies, are substantially consumed by this population.[9]

The sub site distribution of esophageal carcinoma revealed lower esophagus to be the commonest affected subsite with 28/41 cases (68.29%), followed by middle esophagus with 11/41 cases(26.82%) and only 2/41(4.87%) cases were found in upper esophagus. This finding correlated with another study from Kashmir by Rumana et.al[10] where they studied the changing pattern of esophagogastric cancer in Kashmir and found that there was a trend towards an increase in the frequency of cancer of lower end of esophagus and gastroesophageal junction.

Gastro esophageal junction lesions

Out of 15 biopsies from GE junction, 11 (73.33%) were adenocarcinomas which together with 28 carcinomas from lower esophagus comprised 39.8% of all the malignant lesions of upper GI tract. This finding correlates with the observation made by Rumana et.al [10] who found a significant increase in number of malignancies of the lower end of esophagus and GE junction from 14.5% in 1984-88 and 14.06% in 1989-93 to 24.36% in 1994-1998.[10]

There were 2 cases (13.33%) of Barrett's esophagus and 1case (6.66%) of reflux esophagitis among the biopsies from GE junction.

Gastric lesions

In our study, gastric biopsies constituted the majority (64.8%) of the cases. This was also observed by Shennek MM et.al.[7] Of the total 127 biopsies from stomach, 82 (64.56%) were non neoplastic lesions whereas 45 (35.44%) were malignant neoplasms. The most common non neoplastic lesion observed was chronic gastritis 40(88.8%) followed by hyperplastic

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polyp 39(86.6%). There were 2 cases of Puetz Jeghers polyp and 1 case of fundic gland polyp. The distribution of non-neoplastic lesions and malignant neoplasms correlated with similar findings made by Rupendra et al [11] in their study of 100 gastric biopsies. Majority of our cases of chronic gastritis (26/38) also showed H.Pylori infection and correlated histologically with the presence of neutrophils and lymphocytes in the lamina propria which correlated with the results of study by Afzal et.al.[12]They concluded that H.Pylori negative chronic gastritis could be due to therapy for H. Pylori eradication or failure to see H.Pylori in the tissue specimens.

The sub site distribution of gastric carcinoma revealed pyloric antrum as the commonest site with 24/45(53.33%) cases, followed by body with 9/45(20%) cases and then cardia-fundus with 12/45(26.66%) cases. The findings partly conform with those of Rumana et al [10] and Naseema etal [13] whso also observed that pyloric antrum as the commonest site of carcinoma stomach. However, our observations revealed an increased percentage of tumors from gastric cardia-fundus as compared to gastric body which was not the case with the above mentioned studies from our region. These studies revealed lowest percentage of gastric tumors from gastric cardia. This could be attributed to a larger number of specimens studied by these authors.

With respect to differentiation of gastric carcinoma, poorly differentiated adenocarcinoma (37.77%) was slightly more than moderately differentiated adenocarcinoma (31.11%). There were only 5 cases (11.11%) of well differentiated adenocarcinoma. This correlated with the findings by Kato Y et al [14] where they observed a significant decrease in the well differentiated carcinoma in Japan. There were 6 cases (13.33%) of signet ring cell carcinoma and one case (2.22%) of mucinous carcinoma. There were 2 cases (4.44%) of early gastric carcinoma.

Duodenal lesions

There were only four patients for histopathological diagnosis of endoscopic biopsy involving the first two parts of duodenum. Out of these, two patients had celiac disease followed by one case each of tubular adenoma and well differentiated adenocarcinoma of the ampullary region.

CONCLUSION

Biopsy sampling of upper gastrointestinal mucosa at diagnostic endoscopy provides useful information. A variety of non-neoplastic and neoplastic lesions were reported in the present study across a wide range of age and site distribution. Limitations in diagnostic interpretation are encountered at times due to tiny biopsy material, handling and processing artefacts. However, multiple bits of endoscopic biopsies from abnormal looking mucosa is recommended to establish a definitive diagnosis. Endoscopic biopsies can detect changing patterns in the spectrum of lesions besides detecting upper GI mucosal lesions at an early stage especially atrophy, intestinal metaplasia and dysplasia so as to prevent progress of these lesions to invasive cancer.

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