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Role of Endoscopic Biopsy in Upper Gastrointestinal Diseases.

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ABSTRACT

Upper gastrointestinal (GI) endoscopy is well tolerated procedure but alone is insufficient to diagnose mucosal lesions in about 15-30% of cases. In these cases histopathology is required. Thus endoscopy in combination with biopsy acts as a useful adjunct for diagnosis of upper GI lesions and plays an important role in management of patients. Hence the present study was done to determine the spectrum of upper GI endoscopic biopsies. Upper GI endoscopic biopsies from 2010 to 2014 done for lesions in esophagus, stomach and duodenum were studied. The biopsy specimens were stained with Hematoxylin and Eosin. Other special stains were done wherever required. Total 196 upper GI endoscopic biopsies were studied, out of which 83, 48, 49 and 15 were from esophagus, stomach, duodenum and gastroesophageal junction respectively. One case was from esophagogastric anastomosis site. Squamous cell carcinoma was the most common lesion in esophagus. Among non-neoplastic lesions, chronic esophagitis was more common. In stomach most common lesion was adenocarcinoma followed by chronic gastritis. In duodenum there were 41 cases of chronic duodenitis and one case of well differentiated adenocarcinoma of periampullary region. Endoscopic biopsy leads to early diagnosis of various upper GI lesions and thus helps in early therapeutic decisions and management of patient.

Keywords: Endoscopic biopsy, upper gastrointestinal tract, histomorphology, lesions

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INTRODUCTION

Upper gastrointestinal (GI) endoscopy is visual examination of the upper gastrointestinal tract (UGIT) using a lighted, flexible fibreoptic or video endoscope and its use is now part of routine gastroenterological practice [1,2]. The major advantages of endoscopy over contrast radiography in evaluation of diseases of the alimentary tract is direct visualization of mucosal lesions, the ability to obtain biopsy specimens from superficial lesions and the ability to perform therapeutic interventions [3]. UGIT is a common site for tumors, especially malignant tumors. In India, according to the National Cancer Registry, esophageal and gastric cancers are the most common cancers found in men, while esophageal cancer ranks third among women [4]. Endoscopic appearance is valuable in diagnosis of mucosal lesions but more accurate and detailed information can be obtained from histological examination of mucosal biopsy specimens [5]. Hence the present study was done to determine the spectrum of upper GI endoscopic biopsies.

MATERIALS AND METHODS

Endoscopic biopsies of UGIT received in the Department of Pathology, B.L.D.E. University's Shri B.M.Patil Medical College, Hospital & Research Centre, Bijapur from July 2010 to July 2014 were studied. Endoscopic biopsies done for lesions in esophagus, stomach, first part and second part of duodenum up to opening of common bile duct were included. Biopsies done for lesions of the oropharynx were excluded. Endoscopic biopsy tissues were fixed in 10% buffered formalin followed by tissue processing and embedding in paraffin. Then sections of 3-5 micron thickness were prepared and stained with routine Haematoxylin and Eosin. Other special stains like Periodic Acid Schiff, Giemsa stain and immunohistochemistry (IHC) were performed wherever necessary. Ethical clearance was obtained from institutional ethical committee.

RESULTS

A total of 196 upper gastrointestinal endoscopic (UGE) biopsies were studied. Out of which 136 (69.38%) were from males and 60 (30.62%) were from females with a male to female ratio of 2.3:1. Out of 196 cases, 83 (42.34%) were from esophagus, 48 (24.48%) were from stomach, 49 (25%) were from duodenum and 15 (7.65%) were from gastroesophageal junction (GEJ). One case was from esophagogastric anastomosis site in a case of post trans-hiatal esophagectomy accounting for 0.5%. In esophagus, mid esophagus was the most common site of biopsy. In stomach, pylorus and pre-pyloric region were the most common sites.

In esophagus, neoplastic lesions (68.67%) were more common than non-neoplastic lesions (26.51%). In stomach, neoplastic lesions were 52.08% and non-neoplastic lesions were 47.92%. In duodenum, non-neoplastic lesions (93.88%) were far more common than neoplastic lesion (2.04%). In GEJ, 26.66% cases were non-neoplastic and 73.34% cases were neoplastic. Overall non-neoplastic lesions were equal to neoplastic lesions of UGE biopsies. (Table no. 1) The biopsy from esophagogastric anastomosis site showed moderately differentiated SCC which recurred following trans-hiatal esophagectomy. Out of 196 endoscopic biopsies, 6 biopsies were inadequate to opine, 4 were from esophagus and 2 were from duodenum. In these cases there was either scant tissue, only epithelium without subepithelial tissue or only fibroconnective tissue.

Table 1: Distribution of neoplastic & non-neoplastic UGIT lesions according to site

SITE	NON-NEOPLASTIC	NEOPLASTIC	INADEQUATE	TOTAL
Esophagus	22(26.51%)	57(68.67%)	04(4.82%)	**83**
Stomach	23(47.92%)	25(52.08%)	00	**48**
Duodenum	46(93.88%)	01(2.04%)	02(4.08%)	**49**
Gastroesophageal junction	04(26.66%)	11(73.34%)	00	**15**
Esophagogastric anastomosis site	00	01	00	**01**
Total	**95(48.47%)**	**95(48.47%)**	**6(3.06%)**	**196**

Amongst the non neoplastic lesions of esophagus, chronic esophagitis was most common lesion accounting to 13/22 cases (59.09%). There were 4 cases of dysplasia out of which 2 cases showed features of esophagitis. 4 cases were diagnosed as Barrett's esophagus (Fig 1). There was one case each of hyperplastic polyp, ciliated metaplasia and ulcer with granulation tissue.

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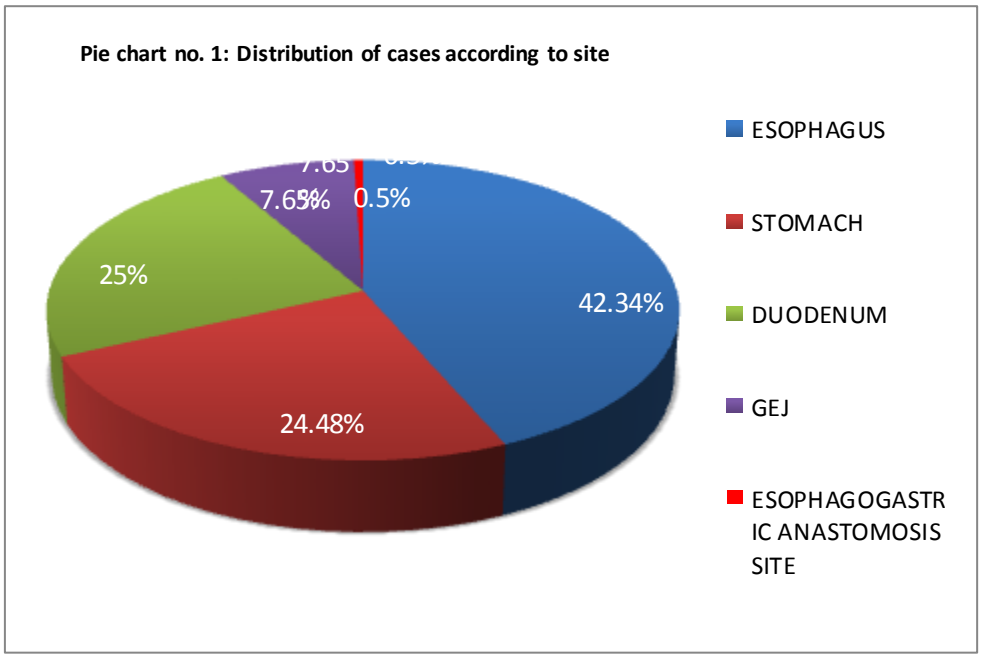

Amongst the neoplastic lesions of esophagus, there were 51 cases of squamous cell carcinoma (SCC). Well differentiated SCC, moderately differentiated SCC and poorly differentiated SCC were 15, 29 and 07 cases respectively. One case of well differentiated SCC was associated with candidiasis (Fig 2). There were 2 cases of adenocarcinoma, both were from lower segment of esophagus. Poorly differentiated carcinoma was seen in 3 cases, out of which for 2 cases differential diagnosis of small cell carcinoma was suggested based on histomorphology. In one case of esophageal biopsy, diagnosis of suspicious for malignancy was suggested.

In gastric biopsies amongst non-neoplastic diseases most commonly diagnosed lesion was gastritis. (Table no. 2)

Table 2: Distribution of non-neoplastic lesions of stomach

Sl. No	HISTOMORPHOLOGICAL PATTERN	NUMBER OF CASES
1.	Chronic non-specific gastritis	15(65.22%)
2.	*H.pylori* gastritis	02(8.69%)
3.	Chronic gastritis with intestinal metaplasia	02(8.69%)
4.	Ulcer with suppurative necrosis	01(4.35%)
5.	Candidal infection	01(4.35%)
6.	Inflammatory polyp	01(4.35%)
7.	Hyperplastic polyp	01(4.35%)
	Total	**23**

In endoscopic gastric biopsies, among the neoplastic lesions, majority of the cases were of adenocarcinoma accounting to 68% (17 cases) followed by signet ring adenocarcinoma (Fig 3) accounting to 12% (3 cases). There were 4, 9 and 4 cases of well, moderately and poorly differentiated adenocarcinoma respectively. One case of poorly differentiated adenocarcinoma was associated with candidiasis. There were 2 cases of poorly differentiated carcinoma out of which in one case differential diagnosis of non-hodgkin's lymphoma was given for which IHC marker (CK7 and CK20) staining was done. CK7 showed focal positivity (Fig 4) and CK20 showed diffuse positivity (Fig 5) indicating diagnosis of poorly differentiated adenocarcinoma of stomach (Fig 6). In stomach there was one case each of poorly differentiated SCC and adenomatous polyp and one case was suspicious for malignancy.

Out of 15 cases of GEJ biopsy, 6 cases were of moderately differentiated SCC, 5 cases were of adenocarcinoma, 2 cases were of chronic non-specific inflammation and one case each of Barrett's esophagus and hyperplastic polyp.

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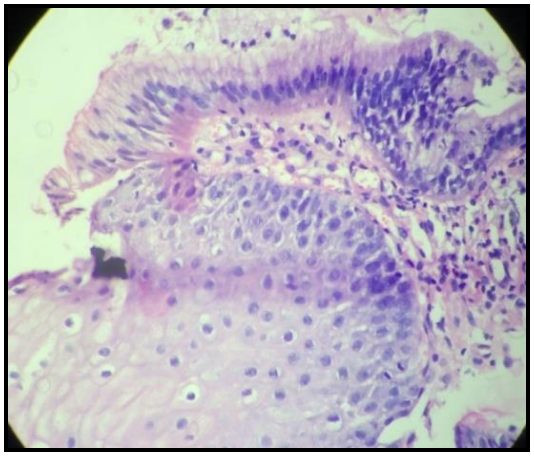

Figure 1: Photomicrograph of Barrett's esophagus (H&E stain 400x)

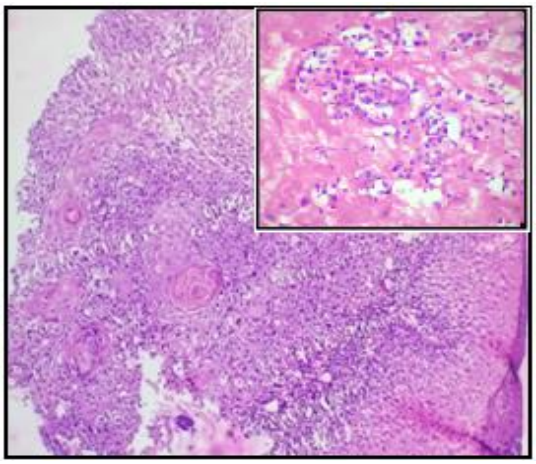

Figure 2: Photomicrograph of Well differentiated SCC of esophagus with Candidiasis(H&E stain 100x). Insert showing *candidal* yeast forms & pseudohyphae

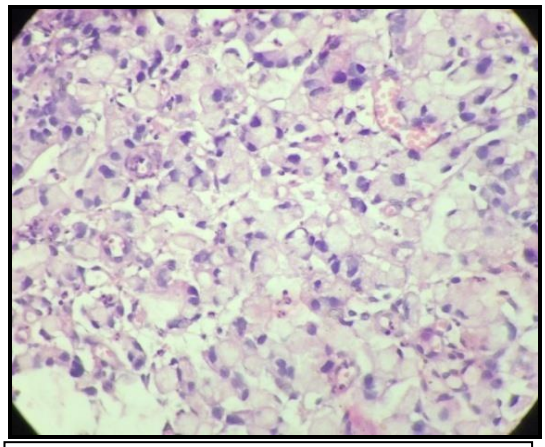

Figure 3: Photomicrograph of Signet ring adenocarcinoma of stomach (H&E stain 400x)

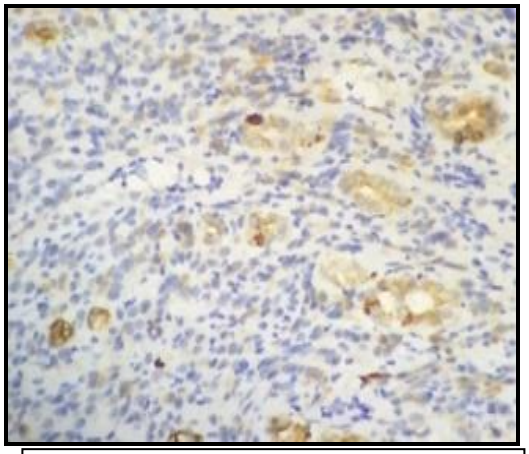

Figure 4: Photomicrograph of Poorly differentiated carcinoma showing focal positivity for CK7 (400x)

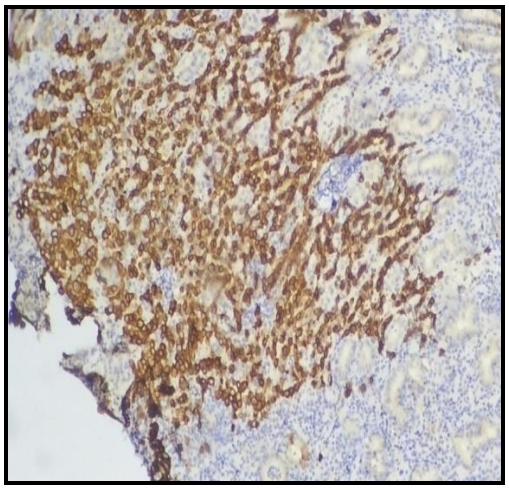

Figure 5: Photomicrograph of poorly differentiated carcinoma showing diffuse positivity for CK20 (40x)

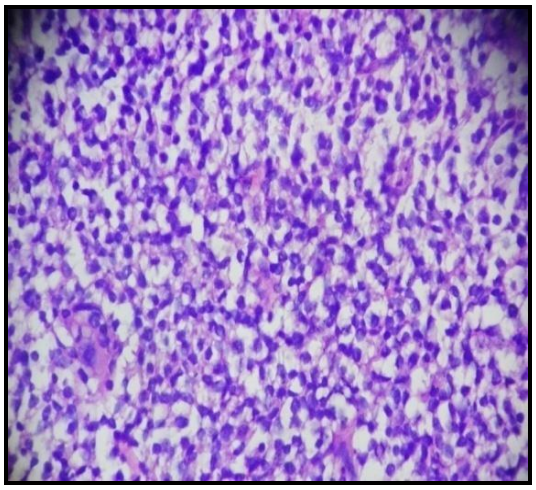

Figure 6: Photomicrograph of Poorly differentiated carcinoma (H&E stain 400x)

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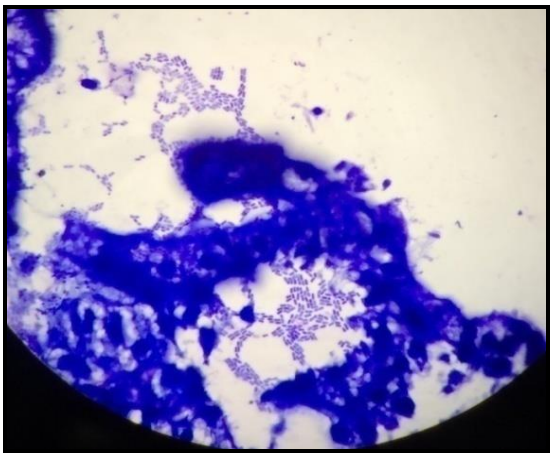

Figure 7: Photomicrograph of *H. pylori* colonies in stomach (Giemsa stain 1000x)

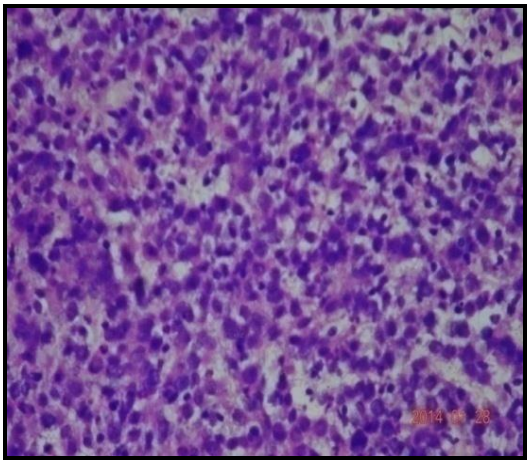

Figure 8: Photomicrograph of MALToma of stomach (H&E stain 400x)

In duodenal endoscopic biopsies, chronic non-specific duodenitis was the commonest lesion. (Table no.3)

Table 3: Distribution of lesions of duodenum

Sl. No	HISTOMORPHOLOGICAL PATTERN	NUMBER OF CASES
1.	Chronic non-specific duodenitis	41(87.23%)
2.	*H. Pylori* duodenitis	01(2.13%)
3.	Celiac disease	01(2.13%)
4.	Villous atrophy with crypt hyperplasia	02(4.25%)
5.	Well differentiated adenocarcinoma	01(2.13%)
6.	Normal histology	01(2.13%)
	Total	**47**

DISCUSSION

UGIT disorders are one of the most commonly encountered problems in clinical practice. The definitive diagnosis of UGIT disorders rests on the histopathological confirmation and is one of the bases for planning proper treatment [6].

Patients with upper GI lesions presented in the age group of 1st to 8th decade, the youngest patient was 04 years old and oldest was 87 years old. The mean age group was 44 years. Most common age group presenting with upper GI lesions was between 40 to 70 years accounting to 62%. Findings of our study correlated with the results of study done by Rashmi K *et al* [6].

In our study, male patients were more in number than female patients. This could probably be due to the large number of male patients attending the outpatient department compared to the female patients, and high incidence of gastrointestinal tract malignancies in males than females as stated by Rashmi k *et al* [6].

The incidence of non-neoplastic lesions and neoplastic lesions in our study was equal amounting to 48.47% each. However in study done by Rashmi K *et al* [6] and Gulia SP *et al*, [7] majority of lesions were non-neoplastic. In our study, in esophagus and stomach majority of the lesions were neoplastic. This may be because of obvious gross finding of neoplastic lesions on endoscopy which might have made taking biopsy inevitable in such cases.

Amongst the non-neoplastic lesions of esophagus, chronic non-specific esophagitis was the most common lesion accounting to 59.09% which was similar to the findings of other author's study of histomorphological spectrum of endoscopic biopsies [6,8].

Amongst the neoplastic lesions of esophagus, most common lesion in our study was moderately differentiated SCC. The next common malignancy was adenocarcinoma. There were 5.26% cases of poorly differentiated carcinoma. These findings were similar to study done by Pun CB *et al* [9]. In our study, SCC was most common in the age group of 50 to 75 years and the most common site of occurrence was mid esophagus followed by lower esophagus. However in study done by Pun CB *et al* [9] esophageal cancer was most common in the age range of 61 to 70 years and the most common site of occurrence of SCC was distal third of esophagus followed by mid esophagus.

In our study, there were 41.66% cases of adenocarcinoma of stomach including signet ring adenocarcinoma and 39.58% cases of chronic gastritis which was similar to study done by Pailoor K *et al* [10] where most common lesion in gastric biopsy was adenocarcinoma followed by chronic gastritis.

Giemsa stain for *H. pylori* was done in all cases of chronic gastritis and chronic duodenitis. *H. pylori* were found in only 2 cases (10.5%) of chronic gastritis and in one case (2.38%) of chronic duodenitis. (Fig 7) In study done by Rashmi K *et al* [6] and Gulia SP *et al* [7] *H. pylori* positivity was seen in 7% and 4.57% cases of non-neoplastic lesions of stomach respectively. Study of Loffeld RJLF *et al* [11] stated that the presence of *H. pylori* is decreasing due to a lower acquisition of the microorganism. According to some authors, decrease in the incidence of *H. pylori* positive gastritis could be due to antibiotic therapy for *H. pylori* eradication [7].

In our study one case was reported as chronic non-specific gastritis on biopsy. However in this case clinical features and endoscopic findings were highly suggestive of malignancy. Hence gastrectomy was performed and the resected specimen showed features of MALToma on histopathology. (Fig 8)

Bacon CM *et al* [12] in their study said that, many endoscopic biopsy specimens showing gastric lymphoid infiltrates lack all features favouring MALT lymphoma. In such cases an integrated diagnostic approach incorporating immunohistological and molecular genetics assessment along with histological examination is required.

We observed that candidiasis was associated with one case of well differentiated SCC of esophagus, one case of poorly differentiated adenocarcinoma of stomach and there was one case of pre-pyloric perforation associated with candidiasis giving an overall incidence of 1.57%. In a study done by Scott BB and Jenkins D, [13] 4% of gastro-esophageal biopsies were associated with candidiasis. According to these authors, the presence of associated local pathology suggests that candidiasis is secondary to mucosal damage and it would be sensible to give antifungal therapy routinely to such patients as extension and systemic spread of the candidiasis might otherwise be precipitated [13].

The gastroesophageal junction (GEJ) is an anatomic area that represents the junction between the distal esophagus and the proximal stomach (cardia).[14] In our study, in GEJ biopsies, SCC (40%) was the most common lesion followed by adenocarcinoma (33.33%) and chronic non-specific inflammation (13.33%). Many authors have studied about reflux disease at gastroesophageal junction but studies on neoplastic diseases at GEJ are very few.

In our study, we received 49 cases of duodenal biopsies in which there were 85.7% cases of chronic duodenitis. In one case of duodenal biopsy, diagnosis of celiac disease was suggested based on clinical features of malabsorption and histological features of complete villous atrophy, crypt hyperplasia and intraepithelial lymphocytes. In one case, endoscopic biopsy was taken from peri-ampullary mass and was reported as well differentiated adenocarcinoma. Study done by Rashmi K *et al* [6] and Gulia SP *et al* [7] also observed duodenitis as most common lesion in duodenal biopsies.

CONCLUSION

Upper GI endoscopy helps in visualization of specific site of mucosal lesions. Histopathology is the gold standard for the diagnosis of endoscopically detected lesions and endoscopy is incomplete without biopsy. Endoscopic biopsy leads to an early diagnosis of various upper GI lesions and acts as a powerful diagnostic tool for early therapeutic decisions and management of the patients.

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