Histopathological spectrum of upper gastrointestinal lesion detected by endoscopy guided biopsy-A single institute experience

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Abstract
Endoscopy guided biopsy plays an important role in diagnosing lesion of upper GIT tract. It is safe, cost effective and is a day care procedure. Most of the patient with GIT malignancy are asymptomatic or has no specific symptoms in early stage and are often diagnosed in advanced stage. Punch biopsy of the lesion under endoscopy guidance and its histopathological evaluation helps in diagnosing this. The current study is done to study the histomorphological spectrum of upper GIT lesion and its correlation with the endoscopy findings.

Keywords: Endoscopy, GIT, Biopsy, Histopathology.

Introduction
Oesophagogastroduodenoscopy or Upper GI endoscopy is a visual examination of the upper gastrointestinal tract using a lighted, flexible fiber optic or video endoscope. Oesophagus, stomach and duodenum are the parts of upper gastrointestinal tract where most of the pathological lesions occur and range from inflammation to malignancy. Endoscopic guided biopsy is a diagnostic tool and is the current gold standard for the assessment of patients with upper GIT symptoms. It plays a crucial role in the management and surveillance of the premalignant conditions of upper GI tract and also in the follow up of patients. Keeping this in view, we conducted a clinico-pathological study of endoscopic biopsies of upper GIT lesion and also evaluated its histopathological spectrum.

Aims and Objectives
1. To study and evaluate the clinical, endoscopic and histopathological lesions of oesophagus, stomach and duodenum.
2. To type the inflammatory lesions of oesophagus, stomach and duodenum.
3. To study the association of H. pylori with upper GI tract lesions.
4. To study and evaluate the neoplastic lesions of oesophagus, stomach and duodenum
5. To use special stains wherever possible

Materials and Methods
This is a retrospective and prospective study. The patients who have undergone endoscopy guided biopsy were included in the study. A detailed clinical history in relation to sign and symptoms, duration, presenting complaints, lifestyle was taken into account. The biopsy specimens so obtained were fixed in 10% buffered formalin. Paraffin embedded blocks was made. The slides were routinely stained with Hematoxylin and Eosin stain. Special stain were used wherever required (Reticulin, PAS, Mucicarmine). A total of 109 endoscopic biopsies were found to be adequate and studied.

Observations
Out of 109 endoscopic biopsies 54(49.54 %) were from oesophagus, 35(32.11%) were from stomach, 3(2.75%) were from gastroesophageal junction and 17(15.59%) were from duodenum (Table 1)

Most of the patients presented with dysphagia, dyspepsia and epigastric pain. Rest of the patients had nonspecific symptoms like vomiting, weight loss, anemia etc. The most common age group was 5^{th} to 6^{th} decade with male preponderance.

The middle third of oesophagus was the most common site involved with 32 (72.73%) cases, followed by 11(25%) cases in lower third. (Table 2). One case was diagnosed as heterotropic pancreas (Fig. 1A).

Squamous cell carcinoma (73.68%) was most commonly found in the middle third of oesophagus (Fig. 2B).

Chronic gastritis or non specific gastritis (90.90%) was the most common gastritis. 14(40%) biopsies were diagnosed as adenocarcinoma. One (2.85%) case was reported as hyperplastic polyp. Out of 11 cases of gastritis 2 cases (18.18%) showed H.pylori positivity. Two cases (14.29%) of signet ring carcinoma and one case of mucinous carcinoma (Fig. 3B), were also diagnosed. (Table 3).

In our study, out of total 17 duodenal biopsies, 9(52.94%) were diagnosed as chronic nonspecific duodenitis, 4(23.53%) were diagnosed as celiac disease, 2(11.76%) were diagnosed as subtotal villous atrophy (Fig. 1C) and one (5.88%) was tubercular (Fig. 4B). Celiac disease was classified according to Marsh classification. Out of 4 celiac disease 3 were grade IIIc and one was IIIb. In two cases tTGA was >200 and in two cases tTGA was <100.

For the malignancy endoscopy had 76.0% agreement with histopathological findings and for inflammation endoscopy had 81.0% agreement with histopathological findings (Table 4 and 5).

Table 1: Distribution of total endoscopic biopsies

Site	No. of Biopsies	Percentage%
Oesophagus	54	49.54 %
Stomach	35	32.11%
GE junction	3	2.75%
Duodenum	17	15.59%
Total	109	100%

Table 2: Sitewise presentation and histopathological diagnosis of oesophageal dysplasias and malignancies

Sub site	Dysplasia	Ca in Situ	Malignant			Total
			SCC	Adeno carcinoma	Mucoepidermoid Carcinoma	
Upper third	0	0	1(2.63%)	0	0	1(2.27%)
Middle third	3(100%)	0	28(73.68%)	0	1(100%)	32(72.73%)
Lower third	0	0	9 (23.68%)	2(100%)	0	11(25%)
Total	3(100%)	0	38(100%)	2(100%)	1(100%)	44(100%)

Table 3: Histopathological diagnosis of gastric endoscopic biopsies

Diagnosis	Gastritis	Dysplasia	Malignancy	Polyp	Normal	Inconclusive	Total
No. of biopsies	11 (31.42%)	0	14 (40%)	1 (2.85%)	3 (8.75%)	6 (17.14%)	35 (100%)

Table 4: Correlation of endoscopy with histopathology

	Endoscopic diagnosis				Histopathological diagnosis			
Site	Inflammation	Growth	Others	Total	Inflammation	Growth	Others	Total
Oesophagus	1	49	4	54	3	41	10	54
Stomach	6	22	7	35	1	14	10	35
Duodenum	14	3		17	14	0	3	17
GE junction	_	3	_	3	_	3	_	3
Total	21	77	11	109	31	58	23	109

Table 5: Correlation of endoscopic findings with histopathological findings

Different Findings	Kappa	Strength of Agreement	Proportion Agreement
Malignancy	0.464	Moderate	76.0%
Inflammation	0.536	Moderate	81.0%

Table 6: Comparative evaluation of histopathological diagnosis of oesophageal lesions

	Qureshi et al (2007)[3]	Sneha Jawalkar et al (2015)[4]	Present study (2016)
Oesophagitis	19.9%	15.66%	5.55%
Dysplasia	10.1%	4.82%	5.55%
Malignancy	8.1%	68.67%	75.93%
Inconclusive		4.82%	7.40%

Table 7: Comparative study of histopathological diagnosis of oesophageal malignancies

Histopathological diagnosis	Gadour and Ayoola (2004)[6]	Qureshi et al (2007)[3]	Ali et al (2009)[5]	Sneha Jawalkar et al (2015)[4]	Present study (2016)
Squamous cell carcinoma	17 (43.58%)	17(23.1%)	64(92.5%)	51(89.47%)	38(86.36%)
Adenocarcinoma	16 (41.02%)	50(70.2%)	5(7.5%)	2(3.5%)	2(4.54%)
Mucoepidermoid carcinoma	_	_	_	_	1(2.27%)
Malignant melanoma	1(2.56%)	_	_	_	_
Anaplastic CA	5(12.82%)	2(2.70%)	_	_	_
Adenosquamous arcinoma	_	_	_	_	_
Undifferentiated	_	2(2.70%)	_	_	_

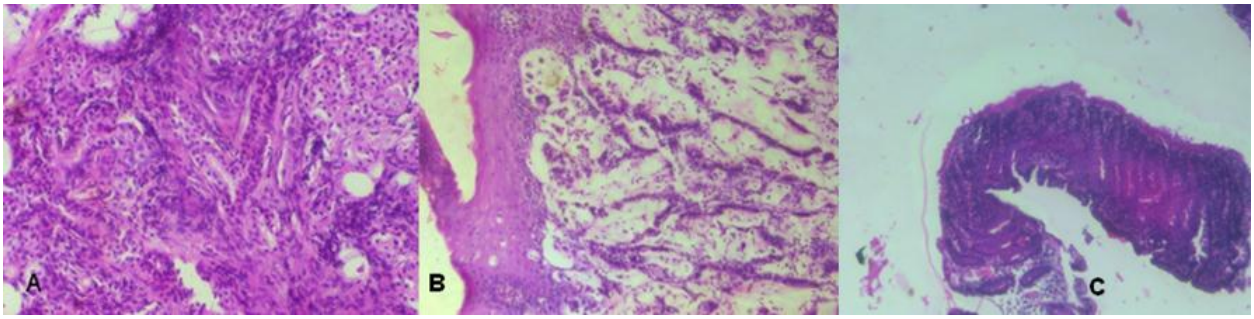

Fig. 1: H&E images: A: Heterotrophic Pancreas of oesophagus showing duct and acini (100X); B: Mucinous adenocarcinoma (100X); C: Celiac disease showing total villous atrophy with intraepithelial lymphocytes (100x).

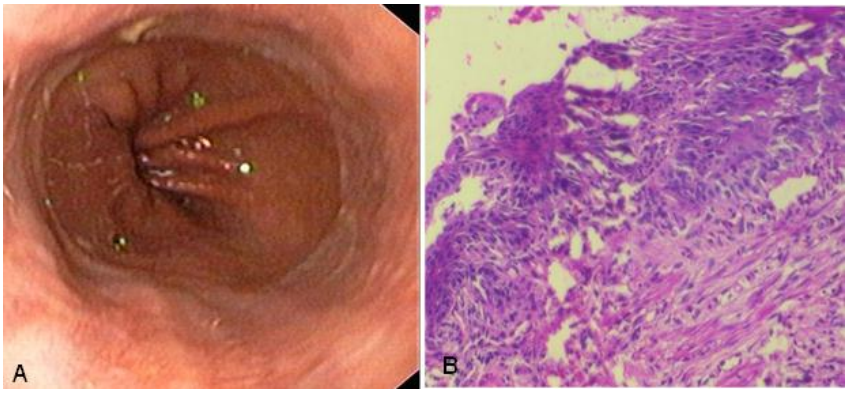

Fig. 2: A. Endoscopy view of Esophageal growth; B. H&E image showing Squamous cell carcinoma (100X)

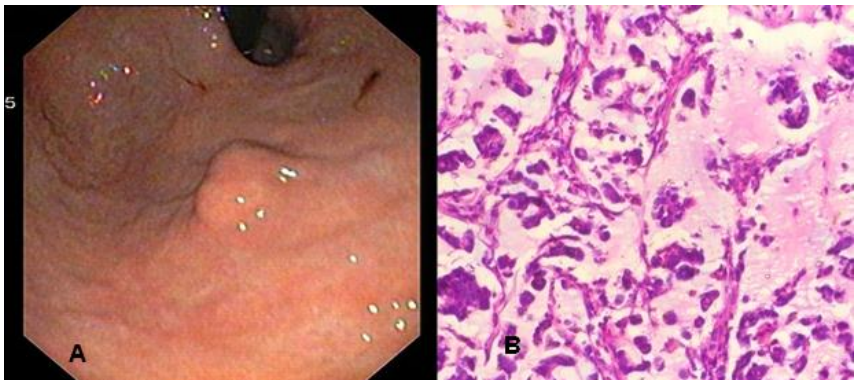

Fig. 3: A. Endoscopy view of stomach showing a polypoidal growth. B. H&E image showing poorly formed glands in pool of mucin

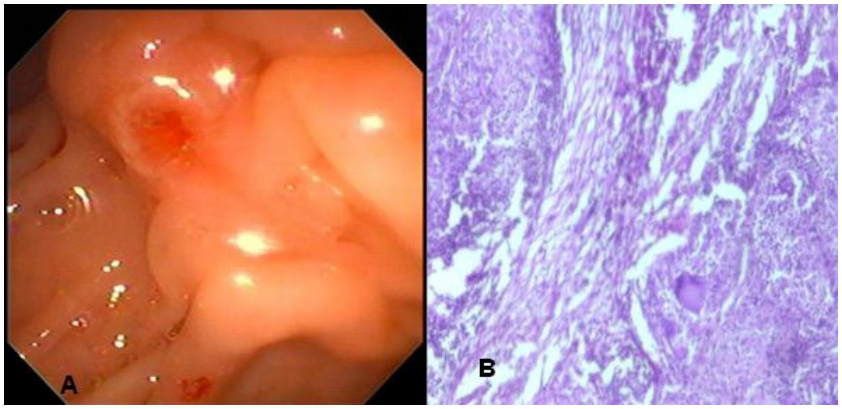

Fig. 4: A. Endoscopy view showing ulcer; B. H&E image showing tubercular duodenitis

Discussion

Although endoscopic examination of interior of bowel was first recorded by Bozzini in 1807,[1] Kussamaul[2] was the first to successfully study the interior of the stomach employing a 13mm diameter hollow metal tube. The upper gastrointestinal flexible fiber optics endoscope was first introduced in 1968. Subsequently, it proved to be an established mode of investigation and treatment of upper GIT lesion. It is a simple safe and well tolerated procedure. It plays a significant role in early diagnosis and treatment of malignant lesions. Most of the cases remain asymptomatic in early stage and are often diagnosed in advanced stage. But punch biopsy of the lesion under direct vision can help in reaching the diagnosis.

Endoscopy guided biopsy was most commonly done in esophagus. The positive endoscopy findings correlated better in the present study especially in neoplastic lesion. It was found in 75% of the esophageal biopsies. One case was diagnosed as heterotropic pancreas. It occurs mostly in stomach, colon and liver. Oesophagus is unusal site for heterotropic pancreas and mostly present with dyspepsia.

Squamous cell carcinoma was the most common malignancy diagnosed. Although incidence of adenocarcinoma is more in western countries but in a developing country like ours incidence of squamous cell carcinoma is high because of attributable risk factors like tobacco, alcohol, smoking, poor oral hygiene and low socioeconomic status.

These findings were comparable with Sneha Jawalkar et al[4] who found 51(89.47%) cases of squamous cell carcinoma, 2 cases (3.50%) of adenocarcinoma and 3 cases of poorly differentiated carcinoma**.** These findings were also in accordance with Ali et al who found squamous cell carcinoma in 64 cases (92.5%).[5] In contrast, Gadour et al[6] and Qureshi et al (2007)[3] observed equal and higher incidence of adenocarcinoma as compared to squamous cell carcinoma, respectively may be due to geographical variation and contributory factors (Table 6).

The middle one third was the most common site of malignancy in esophagus and this was in corcondance with Rashmi et al.7 However, Ali et al[5] obtained different results and observed that maximum 54 cases (78.4%) occurred in lower one-third followed by 13(18.8%) in middle-third and 2(2.8%) in upper third (Table 7). This variation can be explained by uneven geographic distribution and variation in ethnicity and gender. The determination of the site of the cancer may not be too accurate since the length of the esophagus varies with the height of the individuals. Also the different surgeons though experienced in endoscopy may have an observer variation.

In our study, all the three cases of gastro-oesophageal junction biopsies were diagnosed as adenocarcinoma.

Similar findings were observed in study conducted by Bilal A Sheikh et al (2015) in which out of 15 biopsies from GE junction, 11(73.3%) were adenocarcinomas.[8]

In contrast, Sneha Jawalkar et al[4] observed that 40% of cases were squamous cell carcinomas followed by 33.33% were adenocarcinomas among GE junction biopsy.

Our study was similar to study conducted by Sneha Jawalkar et al (2015)[4] in which there were 41.66% cases of adenocarcinoma and 39.58% cases of chronic gastritis.

Similar study was done by Rashmi et al (2013)[7] in which out of total 68 patients biopsied for gastric pathology, 41 patients (60%) had non neoplastic lesions and 27(39.75%) had neoplastic lesions. Adenocarcinoma was the most common malignancy among neoplastic lesion.

In contrast, the study by Qureshi et al (2007) observed that 169 cases (18.5%) were of superficial gastritis and 20 cases (2.2%) were of gastric carcinoma out of 428 cases[3]

Gadour and Ayoola (2004) observed that adenocarcinomas constituted 12(50%) out of total 24 malignancies of stomach. The increased malignancy could be due to the relatively high frequency of anaplastic tumors (21%) and lymphomas (29%) in their study[6]

In our study, 11(31.42%) cases were diagnosed as gastritis of various grades with 5(45.45%) cases of chronic gastritis, 5 (45.45%) cases of non specific gastritis and one (9.1%) case of acute gastritis.

Similar study was done by Bilal A. Sheikh et al (2015) in which out of 127 biopsies from stomach, 40(31.49%) revealed inflammatory lesions with 38 cases of gastritis 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.[8]

Two cases were diagnosed as H-pylori which was in concordance with study done by Sneha jawalkar (et al 2015)[4]

Lower incidence of H.pylori may be due to availability good antibiotics and antacids and also of sensitive non-invasive diagnostic tests for H. pylori. H. pylori prevalence is generally more in children and decreases as the age advances.

Duodenitis was the commonest lesion seen. Similar study done by Sneha Jawalkar et al (2015) showed that out of 49 cases of duodenal biopsies 85.7% cases were of chronic duodenitis.[4] In one duodenal biopsy, diagnosis of celiac disease was suggested.

In our study inconclusive cases was more which may be be due to improper sampling, wrong technique, scanty material and poor patient's compliance.

Our study showed that the cases where tTGA was <100 U and negative IgA duodenal biopsy was done for arriving at a conclusive diagnosis.

Conclusion

Upper GI endoscopy helps in visualization of specific site of mucosal lesions. It 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. Histopathology combined with endoscopy is the gold standard for the diagnosis of upper GIT lesion. It leads to an early diagnosis and acts as a powerful diagnostic tool for early therapeutic decisions and management of the patients. A variety of non-

neoplastic and neoplastic lesions were reported in the present study across a wide range of age and site distribution. However, multiple bits of endoscopic biopsies from abnormal looking mucosa are recommended to establish a definitive diagnosis. Limitations in diagnostic interpretation are encountered at times due to tiny biopsy material handling and processing artefacts.

Conflict of Interest: None.

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How to cite this article: Sharma S, Agarwal L, Rai NN, Agrawal MM. Histopathological spectrum of upper gastrointestinal lesion detected by endoscopy guided biopsy-A single institute experience. *Arch Cytol Histopathol Res* 2019;4(2):154-8.