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Research article

A STUDY ON HISTOPATHOLOGICAL SPECTRUM OF UPPER GASTROINTESTINAL TRACT ENDOSCOPIC BIOPSIES

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ABSTRACT

Background: Upper gastrointestinal tract disorders are one of the most commonly encountered problems in clinical practice. A variety of disorders can affect the upper GIT (gastro intestinal tract). The definitive diagnosis of upper gastrointestinal disorders rests on the histopathological confirmation and is one of the bases for planning proper treatment. **Objectives:** To determine the spectrum of histopathological lesions of upper gastrointestinal tract. To establish endoscopic biopsies as an effective tool in the proper diagnosis and management of various upper gastrointestinal tract lesions. **Patients and Methods:** A prospective study was conducted on the upper GIT endoscopic biopsies and the histopathological assessment was done at the department of pathology, M.S. Ramaiah medical college and teaching hospital from November 2006 to July 2008. **Results:** Of the total 25 cases of esophageal biopsies, 56% constituted non neoplastic lesions and 44% had neoplastic pathology. The most common malignancy was SCC (squamous cell carcinoma) occurred most commonly (73%) in the middle one third of the esophagus. In stomach biopsies, 41 (60%) had non neoplastic pathology and 27 patients (40%) had neoplastic pathology. The most common malignancy was adenocarcinoma. **Conclusion:** In our study, the commonest site for upper GI endoscopic biopsy was from the stomach (68%) with 60% non neoplastic and 40% neoplastic lesions. Most common neoplasm of the stomach was adenocarcinoma.. Out of the 100 cases, there was a consensus between endoscopic and histopathological diagnosis in 78% of the cases. Whenever there was a disagreement, the histopathological appearances served to correct a mistaken endoscopic finding. We therefore conclude that endoscopy is incomplete without biopsy and so the combination of methods provides a powerful diagnostic tool for better patient management.

Keywords: Upper GIT, endoscopy, Biopsy, Histopathology

INTRODUCTION

Upper Gastrointestinal tract disorders are one of the most commonly encountered problems in clinical practice with a high degree of morbidity and mortality and endoscopic biopsy is common procedure performed in the hospital for a variety of benign and malignant lesions.

The esophagus and stomach can be sited for a wide variety of infections, inflammatory disorders, vascular disorders, mechanical

conditions, toxic and physical reactions, including radiation injury and neoplasm[1].

Introduction of the endoscopes in 1960's has greatly improved the diagnostic facility for fiberoptic endoscopy because they are readily accessible and can easily be sampled for specific histopathological or microbiologic investigation with available biopsy forceps. Tissue specimen can be removed from the lesions under direct vision using biopsy forceps. The procedure causes minimal discomfort and thus can be repeated. Histopathological study of biopsy specimens are used to confirm endoscopic diagnosis in suspected malignancy or to rule out in the endoscopically benign appearing lesion.

The endoscopic biopsies are performed not only for the diagnosis of the disease but also for monitoring the course, determining the extent of a disease, as responses to therapy and for the early detection of complications. As a result, the reasons for obtaining mucosal biopsy from the upper gastrointestinal tract have increased and are no longer performed only for the detection of neoplasm.

Aims and objectives

1 To determine the spectrum of histopathological lesions of upper gastrointestinal tract.
2 To establish endoscopic biopsy as an effective tool in the proper diagnosis and management of various upper gastrointestinal tract lesions.

PATIENTS AND METHODS

The present study included one hundred (100) endoscopic biopsies. They were taken from patients who were clinically diagnosed to have an upper gastrointestinal tract lesion needing biopsy at the department of Gastroenterology, M.S.Ramaiah medical college teaching hospital, during the period of Nov 2006 to July 2008.

Inclusion criteria: All endoscopic biopsies of the upper gastrointestinal tract.

Exclusion criteria: 1. All lesions of the mouth and pharynx 2. All duodenal biopsies below the second part

Endoscopies were performed using a large channel endoscope Pentax EG-2901. Biopsy specimens were obtained with large 10 mm open span biopsy (KW2218CS). A smaller 7.5 mm open span biopsy forceps (KW 1815 S) was used if a smaller caliber endoscope was needed because of the stricture or patient's clinical condition.

The biopsy specimen was put in saline and placed on the filter paper with mucosal surface upwards. Then the filter paper was immersed in 10% formalin for fixation. After adequate fixation entire tissue was routinely processed and embedded in paraffin with mucosal surfaces uppermost. Five micron thick sections were cut perpendicular to this surface and four to five sections were prepared on each slide. Each section was stained with H and E and studied microscopically. Adequacy of biopsy was assessed. An attempt was made to diagnose the lesion on gross visualization during endoscopy and to correlate them histopathologically. Special stains were done whenever required. Tumors were diagnosed as per WHO histological classification of gastrointestinal tumors.

OBSERVATIONS

From November 2006 to July 2008, 100 upper gastrointestinal endoscopic biopsies were prospectively included in this study. Among all the upper gastrointestinal tract biopsies, esophageal biopsies were 25 (25%), gastric biopsies were 68 (68%), and duodenal biopsies were seven (7%) (Figure1). Table 1 shows the distribution on neoplastic and non neoplastic lesion.

Of the 100 cases with upper gastrointestinal biopsies, 33 patients were females and the rest were all males. This could probably due to the large number of male patients attending the outpatient department compared to the female patients, and increase the number of

gastrointestinal tract malignancies in males than females.

There were 67 males and 33 female patients with a male: female ratio of 2.03:1. The highest incidence was seen in 4th and 5th decades, the lowest incidence was seen in 2^{nd}, 8^{th}, 9^{th} decades.

The youngest patient was 10 years old and oldest patient was 95 years old. Of all the 100 cases, 56 cases (56%) were non neoplastic and 44 cases (44%) were neoplastic.

Of the total 11 cases of esophageal neoplastic lesions, all (100%) were malignant, were squamous cell carcinoma (Figure2). Carcinoma of the esophagus which was most common in the middle third accounted for eight cases (73%), followed by lower third, two cases (18 %) and upper third, one case (9%).

For all the 11 cases of carcinoma esophagus, histopathological grading is shown in table 2. Proliferative and ulceroproliferative lesions had four cases each followed by ulcerative and stenosis/stricture endoscopically.

The commonest site for gastric biopsy was pylorus (45%) followed by a body (32%), cardia (13%) and fundus (10%). Of the 68 cases of gastric biopsies, 27 cases (40%) were neoplastic and 41 cases (60%) were non neoplastic. The majorities (37%) of the non neoplastic lesions in gastric biopsies were chronic nonspecific gastritis (table 3) (Figure 3). Of the 27 neoplastic lesions of the stomach, 19 cases (70%) were malignant and eight cases (30%) were benign.

Among the total 27 neoplastic lesions of the stomach, malignant lesions exceeded benign lesions in both the sexes, with males having 13 malignant cases and four benign lesions, and females had six malignant and four benign lesions. Of the total eight cases of benign lesions of the stomach, adenomatous polyps were five cases (63%) and hyperplastic polyp were three cases (37%).

In the site wise distribution of gastric carcinoma, pyloric region had eight cases (43%), followed by cardia and fundus with five cases (26%) each and followed by one case in the fundus (5%). The majority of the cases of gastric carcinoma were poorly differentiated adenocarcinoma (56%) followed by moderately differentiated adenocarcinoma (44%). There was one patient with well differentiated adenocarcinoma, signet ring cell carcinoma (Figure 4). The endoscopic findings in gastric carcinoma are seen in table 4.

There were seven patients for histopathological diagnosis of endoscopic biopsy involving the upper two parts of the duodenum. Four patients had chronic nonspecific duodenitis followed by one patient each with duodenal ulcer, well differentiated adenocarcinoma of ampulla of Vater and tubular adenoma (Figure 5).

Table.1: Distribution of all lesions

Nature of lesion	No. of cases	Percentage
Non neoplastic	56	56 %
Neoplastic	44	44 %
Total	100	100%

Table.2: Histopathological grading of esophageal squamous cell carcinoma

Type	No. of cases	Percentage
Well differentiated	2	18%
Moderately differentiated	8	73 %
Poorly differentiated	1	09%
Total	11	100 %

Table.3: Distribution of non neoplastic lesions of stomach

Diagnosis	No of cases	Percentage
Acute non specific gastritis	2	5%
Chronic nonspecific gastritis	15	37%
Chronic gastritis with H. pylori positive	3	7%
Chronic gastritis with intestinal metaplasia	2	5%
Chronic gastritis with mild atypia	1	2%
Acute on chronic nonspecific gastritis	6	15%
Gastric ulcer	8	20%
No specific pathology seen	4	10%
Total	41	100%

Table.4: Endoscopic and histopathological findings of gastric carcinoma

Endoscopic findings	Adenocarcinoma	Percentage
Ulcerative growth	07	37%
Proliferative	04	21%
Ulceroproliferative	06	32%
Flattening of mucosa	01	5%
Erythematous appearance	01	5%
Total	19	100%

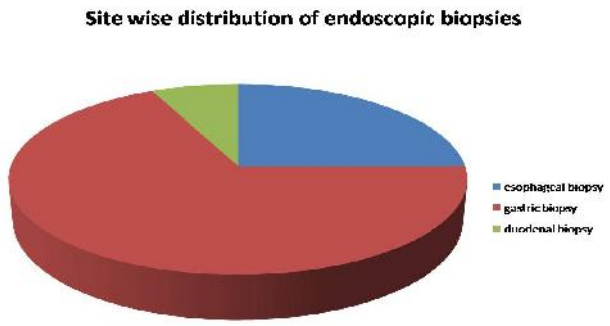

Fig.1: Pie chart representation of site of endoscopic biopsies

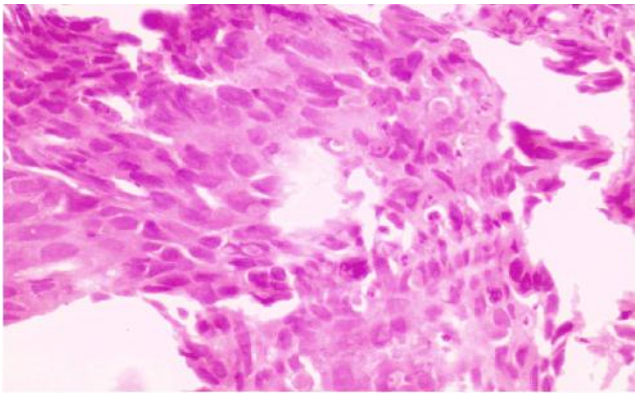

Fig.2: Moderately differentiated squamous cell carcinoma of esophagus (H&E, 160X)

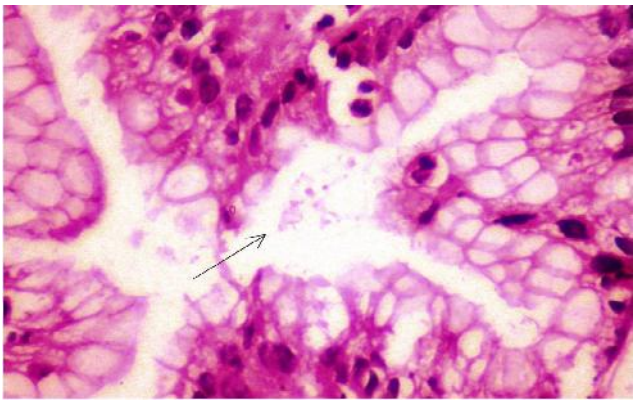

Fig.3: Chronic gastritis helicon-bacter pylori (H Pylori) (160X)

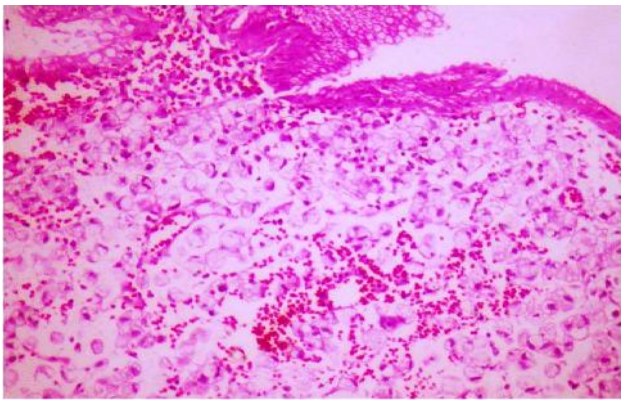

Fig.4: Signet ring adenocarcinoma stomach induced (400X)

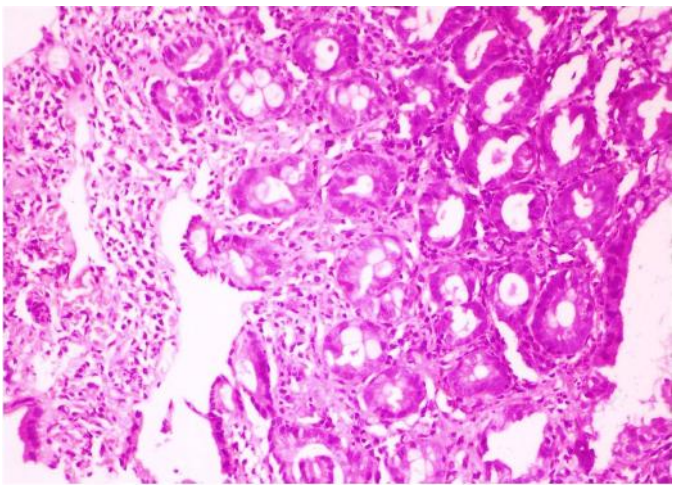

Fig.5: Tubular adenoma of duodenum (40X)

DISCUSSION

The study was conducted from November 2006 to July 2008 comprised of one hundred upper gastrointestinal endoscopic biopsies, of which 25 (25%) cases were esophageal biopsies, 68 (68%) were gastric biopsies and seven cases (7%) were duodenal biopsies.

In the present study most common site for upper gastrointestinal endoscopic biopsy is from the stomach, followed by esophagus and duodenum.

Sex distribution of all cases:

Of the 100 patients with upper gastrointestinal tract endoscopic biopsies, 33% were females and 67% were males. This was also proved by another study done by Shennak MM et al[2].

The male: female ratio was 2.03: 1. This gender ratio favoring males could be reflective of the fact that males are exposed to more risk factors than females and gastrointestinal malignancies are more common in males according to JC Paymaster et al[3].

Age distribution of all cases:

In the present study there was a predominance of upper gastrointestinal tract disease between the age groups of 51-60 yrs accounting for 27%. The youngest patient was 10 yrs old and the oldest patient was 96yrs old. The age related difference could be due to variation in the risk factors among the different age groups.

Distribution of esophageal lesions:

Of the total 25 patients with esophageal disorder non-neoplastic (56%) lesions were more compared to the neoplastic lesions (44%). The majority of the non neoplastic lesions were chronic nonspecific esophagitis which was also shown by the study conducted by Shennak MM et al[2].

In our study we found all the cases of esophageal malignancy as SCC. Though the incidence of adenocarcinoma is on the rise in many countries including India, our study did not prove that, may be partly because of the limited number (25%) of patients with esophageal biopsies than those of the stomach and only 11 cases of malignancy with the total 25 biopsies.

Esophageal carcinoma most commonly occurred in the middle third in our study which accounted for eight patients (73%). The next most common site was lower third with two patients (18%) and one patient had it in the upper third. This was also confirmed by a study conducted by Rao et al[4,] where they have compared the distribution of esophageal carcinoma among six hospitals cancer registries in India.

This was also confirmed by another Indian study done by Rumana et al[5]. SCC of esophagus endoscopically presented as proliferative and ulceroproliferative lesions with four cases (36%)

each, while ulcerative with two cases (18%) and stenosis/stricture as one case (9%).

Of all the 11 cases of esophageal carcinoma, eight cases (73%) were moderately differentiated; two cases (18%) were well differentiated SCC, and one case was diagnosed as poorly differentiated SCC.

Distribution of gastric biopsy site

In our study, the majority (68%) of the upper GIT endoscopic biopsies were carried from stomach. This was also confirmed by Shennek MM et al[2]. The pylorus and body of the stomach were biopsied in 30 and 22 patients with a percentage of 45% and 32% respectively. This was followed by cardia in nine patients (13%) and fundus in 7 patients (10%). Of the total 68 patients biopsied for gastric pathology, 41 patients (60%) had non neoplastic lesions and 27 patients (40%) had neoplastic lesions.

Among the non neoplastic lesions of the stomach, chronic non specific gastritis was a leading diagnosis with 15 s(37%), followed by gastric ulcer. Helicobacter pylori positive cases were seen among three patients. Our study correlated with study done by Shennak MM et al with respect to chronic nonspecific gastritis, but number of gastric ulcer patients nearly doubled (20%) in our study when compared to their study.

Neoplastic lesions of the stomach:

Of the 27 neoplastic lesions of the stomach about 19 cases were malignant and eight cases were benign. This has also proven by many studies, suggesting that malignant neoplasm are more common than benign ones.

Sex distribution of neoplastic lesions of stomach:

Of the total 27 neoplastic lesions of the stomach, malignant lesions exceeded benign lesions in both the sexes with 13 males having malignant disease and four benign. In females six had malignant and four benign lesions. The sex ratio for gastric carcinoma in our study was 2.2:1. Flamant et al in their study noted the sex ratio for all gastric cancers was 2.3:1 which correlated with our study.

Comparison of site wise distribution of gastric carcinoma:

In the present study, the distribution of gastric carcinoma was as follows: Pylorus with 43%,cardia and body with 26% each followed lastly by fundus with 5%,which is similar to study done by Morson etal, where they reported an incidence of 47% in the antrum, followed by pylorus 23% and 21% in the body and cardia[6].

In our study, adenocarcinoma of stomach endoscopically presented as ulcerative growth (37%), followed by ulceroproliferative growth (32%) proliferative growth (21%), flattening of mucosa and erythematous appearance (5% each), which is similar to study done by Qizilbash and Stevenson where ulcerative lesions constituted majority (70%) of the cases[7].

In our study, with respect to differentiation of gastric carcinoma, poorly differentiated (56%) adenocarcinoma was slightly more common than moderately differentiated (44%) adenocarcinoma. Kato Y et al in their study noted that there was a significant decrease in the well differentiated carcinoma in Japan which correlated with our study[8].

Our study constituted, four signet ring cell carcinoma, two cases showed growth in the body of stomach, one each in fundus and pylorus. Male: Female was 3:1. Signet ring cell carcinomas may form lacy or delicate trabecular glandular growth and they may display a zonal or solid arrangement. Special stains (PAS, mucicarmine or alcian blue) help to detect sparse dispersed tumor cells in the stroma[9].

Duodenal lesions in upper gastrointestinal tract biopsies:

There were only seven patients for histopathological diagnosis of endoscopic biopsy involving the upper two parts of duodenum. Four patients had chronic nonspecific duodenitis followed by one patient each with duodenal ulcer, well differentiated adenocarcinoma of ampulla of vater and tubular adenoma.

Endoscopic correlation with Histopathology:

Endoscopic diagnosis of esophageal lesions was made in 17 out of the 25 cases. With respect to malignant lesions endoscopic diagnosis was made in 10 out of the 11 cases of esophageal carcinoma. Hence the correlation between endoscopy and histopathology with respect to esophageal carcinoma was 91%.

Out of the total 68 stomach biopsies, the endoscopic correlation was made in 56 cases including neoplastic and non neoplastic. In carcinoma stomach endoscopic correlation with histopathology was 14 cases out of 19 cases (74%), less than that seen with esophageal carcinoma. This may be because esophageal carcinoma presents late in the disease course and hence can be picked up by endoscopy easily and stomach malignancies present mostly as ulcers or flat lesions especially in younger individuals with diffuse type of carcinoma, which may lead to misinterpretation endoscopically.

Hence care should be taken in choosing the correct site for biopsy, with adequate clinical information along with meticulous processing of the tissue and reporting by the pathologist in order not to miss any pre malignant and malignant lesions.

CONCLUSION

In our study, the commonest site for upper endoscopic biopsy was from the stomach (68%) with 60% non neoplastic and 40% neoplastic lesions. Most common neoplasm of the stomach was adenocarcinoma. The second most common site was esophagus with 25 cases having 14 non neoplastic and 11 neoplastic lesions and seven cases were from the upper half of the duodenum.

Out of the 100 cases, there was a consensus between endoscopic and histopathological diagnosis in 78% of the cases. Whenever there was a disagreement, the histopathological appearances served to correct a mistaken endoscopic finding. We therefore conclude that endoscopy is incomplete without biopsy and so the combination of methods provides a powerful diagnostic tool for better patient management.

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