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ORIGINAL ARTICLE

Clinico Histo-Morphological Spectrum of Endoscopic Biopsies of Upper Gastrointestinal Tract

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Abstract

Background: The definitive diagnosis of upper gastrointestinal disorders depends on histopathological confirmation and is the basis for planning treatment. **Aim:** To study the spectrum of lesions of upper git through endoscopic biopsies and determine incidence of H. pylori among gastric lesions through giemsa stain. **Material and Methods:** A 2 years prospective study was conducted on upper gastrointestinal tract in a sample size of 266 endoscopic biopsies from 257 patients. Clinical data was obtained from hospital records and requisition form submitted along with tissue specimens received in the department and the lesions were classified based on their clinico-morphological findings. Giemsa stain for H pylori wherever required, was applied. **Results:** Endoscopic biopsies were studied on patients ranging from 04 to 97 years with a male to female ratio of 1.44:1. The most common site of biopsy was Duodenum (36.9%), closely followed by Stomach (34.9%). The histopathology revealed 80.1% non-neoplastic lesions and 19.9% neoplastic lesions.. H. Pylori was found to be associated with 35.3% cases of chronic gastritis. **Conclusion:** The key principal of gastrointestinal biopsy interpretation is correlation with clinical data and endoscopic information in order to identify the true pathology.

Key Words

Endoscopy, Upper GIT, H. pylori

Introduction

The lesions from upper gastrointestinal tract include those arising from the oesophagus, stomach, first and second part of duodenum. [1] Definitive diagnosis of upper gastrointestinal disorders depends on the histopathological confirmation and forms the basis for planning treatment. [2] The histopathological examination of the endoscopic biopsies helps in detection of different pathologic lesions which may affect upper GIT like: infectious and inflammatory disorders, mechanical, physical and toxic reactions and neoplasm. [3]

Endoscopic biopsy is a minimally invasive diagnostic medical procedure which directly visualizes the concerned part, using an endoscope. [4] Procedure is incomplete without biopsy and histopathology is the gold standard for diagnosing endoscopically detected lesions. [5] Biopsy provides an opportunity to correlate the clinical data, endoscopic findings and pathological lesions.

This not only helps to diagnose malignant and inflammatory lesions but also helps in monitoring the course, extent of the disease, response to the given therapy and early detection of complications. This is reflected by rising trend in obtaining the mucosal biopsies from the Upper GIT [1] The mucosal biopsies for histopathological identification in the earlier stages of different gastrointestinal lesions by endoscopy allows early therapeutic decisions without any delay. [6]

The endoscopic gastric biopsy not only permits exact

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diagnosis of specific entity but also provides opportunity to explore H. pylori status. [7] H. Pylori was found in gastric antral mucosa, which is associated with chronic gastritis, peptic ulcer, gastric carcinoma or Maltoma.[8] The organisms are often visible on hematoxylin and eosin staining, though are more easily seen with Giesma stain, which is useful in their detection even when in small numbers. The severity of histo-morphological changes in H. Pylori induced infections is graded according to Updated Sydney system. [9]

Material and Methods

This was a prospective study conducted on upper gastrointestinal endoscopic biopsies over a period of 2 years (from 2018 to 2020). All patients having upper gastrointestinal disturbances who underwent endoscopic mucosal biopsies of oesophageal, gastric and duodenal lesions were included in this study.

The Institutional Ethical clearance and patients informed written consent was obtained. Clinical data like age, sex and site of biopsy was obtained through requisition form submitted along with tissue specimens received and the biopsy specimens were routinely processed after proper fixation and were embedded in paraffin wax. The sections cut were then stained with H & E through an automatic stainer and microscopic study was done. 2% Giemsa stain was applied to examine for association of H. pylori with the lesions, wherever required.

Concurrence was noted between clinical and histopathological diagnosis and analysis of endoscopic findings associated with the various gastrointestinal lesions was done

The lesions were classified according to the site involved and were also categorized on basis of their morphological features on histopathological examination.

Statistical analysis: Specificity, sensitivity, positive and negative predicted values were calculated wherever required.

Results

A total number of 266 biopsies from 257 patients belonging to both sexes in different age groups were observed in this study. Upper GIT biopsies from 09 patients were taken from 2 sites simultaneously. This included biopsies from oesophageal and gastric sites in 04 patients and gastric and duodenal sites in 05 patients. Among 257 patients, 59.1% were males and 40.9% were females with a male to female ratio of 1.44:1.

The age of patients ranged from 4 years to 97 years with a maximum number of cases in 21-40 years of age group (35.4%), closely followed by age group of 41-60 years (31.1%) [*Table-1*]. The maximum number of biopsies were taken from Duodenum (36.9%), followed by Gastric (34.9%) and minimum number of biopsies were taken from Oesophagus (28.2%). The associated endoscopic findings were available for 196 biopsies out of total 266 biopsies, which were as follows [*Table -2*]

The percentage wise distribution of histo-pathological diagnosis of upper GI lesions was done based on their categorization. As depicted in [*Table -3*] the category of histopathological diagnosis of upper gastrointestinal lesions contributing to maximum cases of endoscopic biopsies from different sites was Inflammatory (58.6%). The Pre-malignant cases included 02/08 cases of oesophageal mucosal dysplasia, 03/08 cases of Barrett's Oesophagus, 02/08 cases of Menetrier's disease and 01/08 case of adenomatous polyp [*Fig- 1]*

Histomorphological Spectrum of Upper Gastrintestinal Lessions From Diffrent Sites:

The most common lesion associated with oesophagus was Squamous cell carcinoma (Malignant), with stomach was chronic gastritis (Inflammatory) and with duodenum was Chronic duodenitis (Inflammatory) [*Table - 4*]. 33/98 cases from duodenum were the cases of malabsorption including 16/33 cases of celiac sprue and 17/33 cases of tropical sprue. Assessment of biopsies in patients with celiac disease was done on basis of MARSH classification.

The most common malignant condition from oesophagus was Squamous cell carcinoma (33/38 cases- 86.8%), followed by Adenocarcinoma (05/38 cases- 13.2%). The malignant cases from stomach included Adenocarcinoma (10/11 cases) and malignant Gastrointestinal stromal tumour (01/11 case) [*Fig- 2*]. While all the 04 malignant cases from duodenum were of Adenocarcinoma.

Concurrence of Clinico-histopathological diagnosis of Malignant cases among different sites in terms of Statistical Parameters

Oesophagus: Out of total 75 Oesophageal biopsies, 43 cases were clinically diagnosed Malignant while 38 were diagnosed Malignant on histo-pathological examination.

Stomach: Out of total 93 Gastric biopsies, 18 cases were clinically diagnosed Malignant while 11 were diagnosed Malignant on histo-pathological examination.

Duodenum: Out of total 98 duodenal biopsies, 12 cases were clinically diagnosed Malignant while 04 were diagnosed Malignant on histo-pathological examination [*Table- 5*]

Taking histo-pathological diagnosis as gold-standard the sensitivity, specificity, positive and negative predictive values for endoscopic diagnosis in malignant cases of different sites were as follows [*Table- 6*].

Out of total 98 duodenal biopsies, 49 were clinically diagnosed as Malabsorption of which 33 were categorised

Table 1: Age and sex distribution of cases

Age range in years	Number of cases (%)	Male	Female
20	26 (10.1)	14	12
21-40	91 (35.4)	50	41
41-60	80 (31.1)	53	27
61-80	54 (21)	31	23
>80	06 (2.4)	04	02
Total	**257 (100)**	**152**	**105**

Table 2. Histopathological disganosis

Histopathological diagnosis	Most common associated endoscopic finding
Inflammation	Mucosal nodularity/elevated lesion
Malabsorption	Loss/grooving of folds
Polyp	Polyps
Pre-malignant	Ulcers and thickened mucosal wall
Malignant	Growth/Mass

Table3 Category wise distribution of upper gastrointestinal lesions

CATEGORY	No of cases	Percentage (%)
Inflammatory	156	58.6
Malabsorption	33	12.4
Polyp	13	4.9
Pre- malignant	08	3.0
Malignant	52	19.6
No significant pathology	04	1.5

Table 4. Histomorphological spectrum of upper gastrointestinal tract lesions from different sites.

Category	Oesophagus (N=75)	Stomach (N= 93)	Duodenum (N= 98)
Inflammatory	41.3%	75.2%	55.1%
Pre – malignant	6.7%	2.2%	1%
Malignant	50.7%	11.8%	4.1%
Polyp	-	8.6%	5.1%
Malabsorption	-	-	33.7%
No significant pathology	1.3%	2.2%	1.0%

Table 5. Distribution of clinically suspected and histopathologically confirmed malignant cases from different sites and diagnosis of remaining cases.

Site	Clinically suspected malignant cases	Histopathologically confirmed malignant cases	Histopathological diagnosis of remaining cases
Oesophagus	43	38	Reflux oesophagitis- 03 Chronic oesophagitis – 02
Stomach	18	11	Polyp – 01 Chronic active gastritis- 06
Duodenum	12	04	Chronic active duodenitis – 08

as Malabsorption on histopathological examination.

Taking histo-pathological diagnosis as gold-standard the sensitivity and specificity of endoscopic diagnosis of Malabsorption cases from duodenum were 100% and 75% respectively.Association of H. pylori with various histopathological lesions:

H. Pylori infection was suspected clinically in 66 cases. Morphological features were collaborative in 50 cases on H&E, however 43.9% cases (29/66 cases) were confirmed to be positive on Giemsa stain [Fig- 3]. Out of these 29 H. Pylori positive cases, 24 cases had histopathological diagnosis of gastritis which accounted for 35.3% of total gastritis cases (24/68). Taking histo-pathological diagnosis on Giemsa stain as gold-standard, the sensitivity and specificity of H&E to diagnose H. pylori cases were 100% and 50% respectively.

Discussion

According to National Cancer Registry, gastric and oesophageal cancers are one of the most common cancers found in men. Hence there is a need to detect

Table 6. Concurrence of Clinico-histopathological diagnosis of Malignant cases in different sites in terms of Statistical Parameters

Site	Sensitivity	Specificity	Positive predictive value	Negative predictive Value
Oesophagus	100%	86.4	88.3%	100%
Gastric	100%	91.4	61.1%	100%
Duodenum	100%	92.1	33.3%	100%

Table- 7. Site wise distribution of endoscopic biopsies

Site	Stomach	Oesophagus	Duodenum
Jaynul Islam SM et al (3)	66.36%	20%	13.64%
Sandhya PG et al (13)	84.85%	6.25%	5.62%
Memon F et al (14)	51.3%	39%	9.7%
Rashmi K et al (15)	68%	25%	7%
Present study	34.9%	28.2%	36.9%

these malignant lesions at an early stage to differentiate them from various benign and inflammatory conditions that affect the upper GI tract and may give rise to an overlapping spectrum of symptoms. [4]

The Sex ratio in our study (1.44:1) was comparable with that of Margaret TJ *et al* [10], Shanmugasamy K *et al* [9] & Khandelia R *et al*. [11] This ratio could be reflective of the fact that males are exposed to more risk factors than females which was also concluded by Jeshtadi A *et al.* [12]

In our study, the number of biopsies from Duodenum (36.9%) was almost equivalent to that from Stomach (34.9%), in comparison to other quoted studies where stomach was found to be the most common site [*Table-7]*. This could be due to different risk factors attributed to different geographical locations and also increase trend of taking duodenal biopsies for increasing Malabsorption cases, attributed to environmental and dietary factors.

In our study concurrence between clinical and histopathological diagnosis was noted in 80.8% of total cases. Rashmi K *et al* [15] had similar findings in which diagnosis was made in 91% (10/11) cases of oesophageal carcinomas and 74% (14/19) cases of gastric carcinomas. The study by Sharma S *et al* [16] revealed the clinical and histopathological agreement in 75% oesophageal biopsies. The most common endoscopic finding associated with cases of malignancy was the presence of growth (75%) in present study. This finding was comparable with study by Rashmi K *et al* [15] where growth was associated with 58% of malignant cases along with ulcers in 32% cases, flattened mucosa and erythematous mucosa in 5% cases each. Similar findings were observed by Qizilbash and Stevenson. [17]

Association of H. pylori in our study was observed in 35.3% cases of chronic gastritis. This was in contrast to study by Sheikh BA *et al* [10] , where H. pylori was found to be associated with majority of gastritis cases (26/38) and in 30/45 cases in study by Afzal S *et al.* [8] Shrestha R *et al* [18] concluded a prevalence of H. Pylori infection in 68% of upper gastro-intestinal lesions.

Lower incidence of H. pylori in our study could be attributed to availability of good antibiotics and different dietary habits as compared to that in geographic locations with higher prevalence of H. pylori.

Limitation(s): The limitation of this study is lack of follow up of patients.

Conclusion

The key principal of gastrointestinal biopsy interpretation is correlation with clinical data and endoscopic information in order to identify the exact/true pathology. Our study concluded specificity of endoscopy for malignant cases ranging from 86.4% to 92.1% for different sites. Therefore, endoscopy alone should not be used as a diagnostic method for gastrointestinal lesions. Endoscopic findings and histo-pathological examination are complementary to each other.

Through a consistent systemic approach, interpretation of gastrointestinal biopsies provides important information which can be life-saving in certain conditions and often can be reassuring to the patients undergoing GI tract biopsies.

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Conflicts of Interest

There are no conflicts of interest.

References

1. Bhat N, Sheikh BA, Mir JN, Reshi R, Wani LA, Farooq S. Histopathological study of upper gastrointestinal endoscopic biopsies-1 year prospective study. Br Biomed Bull 2018;6(2):315.
2. Rani PU, Ramya N, Swathi C, Kumar V, Spandana P. Efficacy of endoscopic biopsies in establishing histologic diagnosis of upper gastrointestinal tract lesions- a one year retrospective study. J Diagnostic Pathology Oncology 2017;2(4):91-92.
3. Islam SM, Ahmed AM, Ahmad MS, Hafiz SA. Endoscopic and histologic diagnosis of upper gastrointestinal lesions, experience in a port city of Bangladesh. Chattagram Maa-O-Shishu Hospital Med College J 2014;13(3):23
4 Trisal M, Goswami KC, Khajuria A. A study of histopathological spectrum of gastrointestinal endoscopic biopsies in a tertiary care centre. Saudi J Pathol Microbiol 2018;3(8):226-34.
5. Somani NS, Patil P. Histopathological study of the upper gastrointestinal tract endoscopic biopsies. Annals of Pathology and Lab Med 2018;5(8):12
6. Hussain SI, Reshi R, Akhter G, Beigh A. Clinico histopathological study ofupper gastrointestinal tract endoscopic biopsies. Int J Curr Res Rev 2015;7(16):78-85.
7. Barr H. Endoscopic screening for upper gastrointestinal malignancy. Therapeutic Gastrointestinal Endoscopy 2002;54-6.
8. Afzal S, Ahmad M, Mubarik A, Saeed F, Rafi S, Saleem N et al. Morphological spectrum of gastric lesions-Endoscopic biopsy findings. Pak Armed Forces Med J 2006; 56(2): 143-9.
9. Shanmugasamy K, Bhavani K, Anandraj Vaithy K, Narashiman R, Dhananjay S Kotasthane. Clinical correlation of upper gastrointestinal endoscopic biopsies with histopathological findings and to study the histopathological profile of various neoplastic and non-neoplastic lesions. J Pharm Biomed Sci 2016;6(3):220-4.
10. Margaret TJ, Lavanya M, Gerad RJ, Basha SK. Evaluating the spectrum of histomorphological patterns on endoscopic biopsy in patients with gastrointestinal tract disorders. Tropical J Pathology Microbiology 2020;6(1):12
11. Khandelia R, Saikia M. Histopathologic Spectrum of Upper Gastrointestinal Tract Mucosal Biopsies: A Prospective Study. Int J Med Sci Clinic Invent 2017;4(11): 3314-6.
12. Jeshtadi A, Mohammad AM, Kadaru MR, et al. Study of gastric biopsies with clinicopathological correlation - A tertiary care centre experience. J Evid Based Med Healthc 2016; 3(57), 2937-40.
13. Sandhya PG, Madhusudan C, Naseem N, Balakrishnan CD, Balagurunathan K. Interpretation of upper gastrointestinal tract endoscopic biopsies - a study conducted in teaching hospital in Puducherry, India. Int J Medical Health Science 2012;1(3);17-24.
14. Memon F, Baloch K, Memon AA. Upper gastrointestinal endoscopic biopsy; Morphological spectrum of lesions. Professional Med J 2015;22(12):1574-9.
15. Krishnappa R, Horakerappa MS, Mangala AK, Gouri M. A study on histopathologic spectrum of upper gastrointestinal tract endoscopic biopsies. Int J Medical Res Health Sci 2013; 2(3):418-24.
16. Sharma S, Agarwal L, Rai NN, Agarwal MM. Histopathological spectrum of upper gastrointestinal lesion detected by endoscopy-guided biopsy: a single institute experience. Archives of Cytology Histopathology Research 2019;4(2):154-8.
17. Qizibash AH, Stevenson GW. Early gastric cancer. Pathology annals 1979:14-24.
18. Shrestha R, Koirala K, Shiv Raj KC, Batajoo KH. Helicobacter Pylori Infection among patients with upper gastrointestinal symptoms: Prevalence and Relation to endoscopy diagnosis and histopathology. J Family Med Prim Care 2014;3:154-8