Original Research Article

Study of histopathological types of gastro-intestinal lesions by endoscopic biopsy

Kontham Praveen[1], Farida Begum[2], Kandukuri Mahesh Kumar[3*]

[1]Senior Resident, Department of Pathology, Government Medical College, Nizamabad, Telangana State, India
[2]Assistant Professor, Department of Pathology, Government Medical College, Nizamabad, Telangana State, India
[3]Assistant Professor, Nizam's Institute of Medical Sciences, Hyderabad, Telangana State, India
[*]Corresponding author email: **doctormaheshgoud@gmail.com**

International Archives of Integrated Medicine, Vol. 3, Issue 11, November, 2016.

Available online at http://iaimjournal.com/
ISSN: 2394-0026 (P) **ISSN: 2394-0034 (O)**
Received on: 18-10-2016 **Accepted on:** 01-11-2016
Source of support: Nil **Conflict of interest:** None declared.
How to cite this article: Kontham Praveen, Farida Begum, Kandukuri Mahesh Kumar. Study of histopathological types of gastro-intestinal lesions by endoscopic biopsy. IAIM, 2016; 3(11): 46-53.

Abstract

Introduction: Gastro Intestinal Tract (GIT) is an important site for wide variety of lesions which include congenital, inflammatory, neoplastic conditions. The invention of flexible fiber-optic endoscope is a very good achievement towards the diagnostic field. With the use of this facility direct vision of diseased mucosa and biopsy of mucosal lesions, therapeutic induction and photographic visualization of the lesions are made possible.

Aim: Aim of this study was to know the incidence of Gastro intestinal lesions with reference to age, sex and site and to study the histopathological types of Gastro Intestinal lesions.

Materials and methods: The present study included 180 GIT biopsies (gastro intestinal biopsies) between the period August 2013 to August 2015 .Clinical details and case histories were obtained from the patients presented to the gastroenterology department. Biopsies were obtained by the gastroenterologist with fiber optic forward viewing endoscope.

Results: Among all the GIT biopsies, esophageal biopsies were 11 (6.11%), gastric biopsies were 31 (17.22%), gastro esophageal junction 4 (2.22%), and small Intestinal 67 (37.22%) and 67 (37.22%) was from large intestine.

Conclusion: Endoscopy and subsequent biopsy for histopathology can detect early malignant lesions. In the absence of endoscopic screening, detection of these lesions may be missed. Such patients may present with advanced stage of disease in later life. In endoscopic biopsy only mucosa is seen, the level of invasion cannot be ascertained.

Key words

Gastro Intestinal Tract Lesions, Endoscopy, Biopsy, Carcinoma, Polyp, Histopathology.

Introduction

Gastro Intestinal Tract (GIT) is an important site for wide variety of lesions which include congenital, inflammatory, neoplastic conditions. In present era, gastroenterology is one of the most important and expanding branch of medicine. The invention of flexible fiber-optic endoscope is a very good achievement towards the diagnostic field. With the use of this facility direct vision of diseased mucosa and biopsy of mucosal lesions, therapeutic induction and photographic visualization of the lesions are made possible. The endoscopic biopsy in many instances has replaced, rather than being used as an adjunct procedure. Lesions of the GIT range from inflammatory lesions to carcinomas. The symptoms of GIT lesions include nausea, vomiting, dyspepsia, pain abdomen, malaena etc. Thus, the following study is undertaken to study the histopathology of these lesions. These biopsies will help a large group of patients who come or suffer with symptoms of abdominal diseases. After accurate diagnosis, treatment modalities can be applied.

Aim

Aim of this study was to know the incidence of Gastro intestinal lesions with reference to age, sex and site and to study the histopathological types of Gastro Intestinal lesions.

Materials and methods

The present study included 180 GIT biopsies (gastro intestinal biopsies) between the period August 2013 to August 2015 .Clinical details and case histories were obtained from the patients presented to the gastroenterology department. Biopsies were obtained by the gastroenterologist with fiber optic forward viewing endoscope. Rapid fixation was done to prevent shrinkage by placing the specimen in 10% neutral normal saline. Care was taken not to shake rigorously the bottle containing the specimen and also while transferring the tissue to the laboratory. After usual time fixation of the biopsy specimen, it was wrapped in a piece of filter paper after adding eosin and processed accordingly .It is then unwrapped and embedded in paraffin with mucosal surface uppermost .Four micron sections were cut perpendicular to this surface and 3 to 4 sections were taken on each slide .One slide was stained with Hematoxylin and Eosin stain and studied. Apart from the routine Hematoxylin and Eosin stain, the sections were studied with the following special stains wherever it was necessary.

Results

Among all the GIT biopsies, esophageal biopsies were 11 (6.11%), gastric biopsies were 31 (17.22%), gastro esophageal junction 4 (2.22%), and small Intestinal 67 (37.22%) and 67 (37.22%) was from large intestine **(Table - 1)**.

Table - 1: site wise distribution of GIT lesions.

LESION	TOTAL	%
Esophageal lesion	11	6.11
Gastric lesion	31	17.22
Gastro esophageal junction	4	2.22
Small intestine lesion	67	37.22
Large intestine lesion	67	37.22

Maximum numbers of cases were seen in the 3th decade of life (23.88%) and only one case was found in 8th decade (1.21%) **(Table - 2)**. Majority of the cases were seen in the age group of 21-40 years (42.21%). The oldest patient was 86 years and the youngest patient was 11 years. The sex ratio was 1.2:1. Males were 99, females were 81.

The lesions encountered were divided as esophageal, Gastric lesions, gastresophageal junction lesions, and Small intestine and large intestine lesions. Commonest esophageal lesions were esophagitis and esophageal carcinoma

(2.8%) whereas commonest gastric lesion encountered was chronic gastritis (10%). Other esophageal lesions were esophagitis, Barret's esophagus, ulcer, dysplasia, gastric carcinoma **(Table - 3)**.

Table - 2: Age distribution of various lesions.

Age interval (Years)	No. of cases	%
11-20	8	4.4
21-30	33	18.33
31-40	43	23.88
41-50	23	12.77
51-60	30	16.66
61-70	33	18.33
71-80	9	5
81-90	1	0.55
TOTAL	180	100.0

Table - 3: Distribution of individual lesions.

Lesion	Cases	%
Esophageal lesions		
Esophagitis	5	2.8
Barret's esophagitis	1	0.5
Esophageal carcinoma	5	2.8
Gastric lesions		
Chronic gastritis	18	10
Polyp	04	2.2
Ulcer	01	0.6
Dyspepsia	01	0.60
Gastric carcinoma	07	3.8
Gastresophageal junction	**04**	**2.2**
Small intestinal lesions	**67**	
Crohn's disease	23	12.8
Inflammatory bowel disease	15	18.7
Non specific colitis	21	11.6
Hyperplasic polyp	8	4.4
Large intestinal lesions	**67**	
Chronic non specific infection	38	21.1
Inflammatory bowel disease	22	12.2
Colon cancer	3	1.7
Carcinoma rectum	2	1.1
Solitary rectal ulcer	2	1.1

The commonest symptom overall was pain in abdomen (31.7%) and diarrhoea 13.9%, dysphagia 13.9%. The commonest sign and symptom in esophageal lesions were dysphagia and loss of weight whereas pain in abdomen and diarrhoea was the commonest sign and symptom in gastric lesion. Bleeding per rectum and constipation were the commonest signs in intestinal lesions. Dysphagia (100%) was the commonest symptom of esophageal carcinoma. Dysphagia 42.8%, Loss of weight 28.5%, vomiting 14.2%, were the most common features of Gastric Carcinoma.Bleeding per Rectum (33.5%), Flatulence (33.3%), and pain abdomen (33.3%) are associated with colon Carcinoma.Occasionally cases of esophagitis also showed patients suffering from hematemesis. Gastritis cases presented with pain in abdomen i.e. epigastric pain and vomiting with loss of appetite.In patients with gastric polyp the most commonly encountered symptom was pain in abdomen.

In this study, total malignancies reported were 17 which included 5 cases of esophageal malignancy; Gastric malignancy comprised 7 cases, colon and rectum comprised 3 and 2 cases respectively. The age wise and sex wise distribution has been tabulated **(Table - 4)**.

Eighty percent (4 cases) of the total esophageal carcinoma (5) were squamous cell carcinoma were whereas adenocarcinoma were 20% (1 case). Histological typing with endoscopic findings is tabulated in **Table - 5**.

Gastric carcinoma was seen in 7 cases. All were adenocarcinomas .Endoscopically out of 7 cases, 4 cases showed ulcero-proliferative growth, 1 showed papillary folds in fundus and 2 were undifferentiated. Histological grading of the stomach carcinoma is tabulated in **Table - 6.**

The upper and lower esophagus were the commonest sites for esophageal carcinoma i.e. 4 out of 5 cases (80%) whereas antrum was the common site for gastric carcinoma, 4 cases out of 7 cases (57.14%).

Table - 4: Age distribution of malignancy.

Age interval (Years)	Esophagus cancer	Gastric cancer	Colon cancer	Rectal cancer
21-30	1	1	0	1
31-40	1	1	0	0
41-50	2	1	0	0
51-60	1	2	1	0
61-70	0	2	2	1
71-80	0	0	0	0
TOTAL	**5**	**7**	**3**	**2**

Table - 5: Esophageal carcinoma-endoscopic and histopathlogical findings.

Lesion	Squamous cell carcinoma (%)	Adenocarcinoma (%)	Total cases
Ulcerated	2	1	3 (60%)
Proliferative	2	0	2 (40%)
Total	4 (80%)	1 (20%)	5 (100%)

Table - 6: Histological grading of stomach carcinoma.

	Cases	%
Well differentiated	4	57.14
Moderately differentiated	2	28.58
Poorly differentiated	1	14.28
Total	07	100.0

Non neoplastic lesions in this study, Esophagitis was seen in 5 cases (83.3%), Barrett's esophagitis in 1 (16.6%), of the total cases. Esophagitis was seen more in the age group of 31-40 yrs with Male to Female ratio of 2:1. Among the non neoplastic lesions of the stomach chronic diffuse gastritis was seen in 18 out of 28 cases i.e. chronic diffuse gastritis (64.2%). It was seen more commonly in 4^{th} to 6^{th} decades. 12 cases were male whereas 6 cases were female. 8 cases of polyps were encountered in study (28.5%). 4 cases showed gastric polyp (14.28%) and 4 were seen at gastro esophageal junction (14.28%). Among the 4 gastric polyps, 2 were in antrum and the 2 cases showed multiple polyps in the stomach. Endoscopically and clinically 28 lesions of the gastric biopsies were suspected as malignant lesions but only 7 (25%) turned out as carcinoma of stomach histopathologically. Endoscopically and clinically 8 lesions of the esophageal biopsies were suspected as malignant lesions of which 5 (62.5%) turned out as carcinoma of esophagus. Similarly 33 lesions of the colorectal biopsies were suspected as malignant lesions of which 6 (18.1%) turned out as carcinoma of colon and rectum on histopathology.

Discussion

Bozzini and others in 1795 performed the first endoscopy with help of a wax candle enclosed in a tin tube. He recognized the need to build a light source. Kussmaul and others in 1868 introduced the first rigid gastroscope after watching a sword swallower on whom he performed his first gastroscopy.

Nilze and others in 1887 introduced a miniature electric bulb as a light source. Chevalier Jackson performed gastric biopsy using forceps through rigid esophagoscope in 1906 [1]. The rigid scopes used had many disadvantages such as considerable skill was required to pass the scope, general anesthesia was a must, and there was added difficulty in passing the scope in cases with chest and neck deformities. Also, the overall biopsy rate was barely over 50%, therefore

newer developments were necessary [1].The fiber optic endoscope was introduced by Hirschovitz and others. The fiber optic endoscope is made up of thousands of 10 micrometer diameter glass fibers whose extreme ends are cemented by resin and the rest left unbound to allow flexibility [1] .A pan endoscope is a forward viewing fiber endoscope with complete tip control and sufficient length allowing examination of the esophagus, stomach, and duodenum. It has got all automatic controls for air and water suction providing a clear field in the presence of mucous, food particles or even in active bleeding. Now recently capsule endoscopes have been introduced which are swallowed by the patient. These then take multiple pictures as they pass along GIT. These pictures are later visualized and diagnosis can be made.

Maximum number of cases was seen in the 3rd - 5th decade of life (38.1%) and only one case was found in 8th decade (1.21%). Majority of cases were seen in 51-70 yrs age group (51.80%).

A study conducted by Mustapha, et al. [2] found maximum number of cases in the age group of 40-49 yrs. The difference in the age related finding trend could be attributed to the tobacco and alcohol habits seen in this age group. The male to female ratio was 1.2:1. (Males 99, females 81).

According to Mustapha, et al. [2] the sex ratio was M: F=1.07:1, which also shows male predominance. The reason could be because large number of male patients attending the outpatient department of the hospital compared to the female patients. In gastric lesions M: F ratio – 1.4:1 whereas esophageal lesion 1:1.2. Out of 180 patients only 81 were females (45%), small intestine M: F- 1.1:1, large intestine M: F- 1.03:1. Among esophageal lesions, commonest was found to be esophagitis (3.3%) whereas among gastric lesions commonest was chronic diffuse gastritis (10%). Other esophageal lesions were acute & chronic esophagitis, chronic nonspecific ulcer, dysplasia. Other gastric lesions were gastric carcinoma & gastric polyp .A study conducted in Nigeria by Mustapha, et al. [2] showed lesions in descending order of their frequency of occurrence as reflux esophagitis, gastritis, gastric ulcer, duodenal ulcer & gastric cancer. Thus gastritis was the second commonest lesion (**Table – 7**).

Table - 7: Comparison of lesions in order of frequency of occurrence.

Kateralis, et al. (1992) [3]	**Mustapha, et al. (2007) [2]**	**Present study**
Gastritis	Reflux esophagitis	Gastritis
Peptic ulcer	Gastritis	Esophagitis
Gastric carcinoma	Gastric ulcer	Esophageal carcinoma
	Duodenal ulcer	Esophageal dysplasia

Out of 180 cases, 57 (31.7%) were presented with pain in abdomen. The commonest signs and symptoms in esophageal lesions were dysphagia (81.9%) & loss of weight (18.1%).4 out of 5 esophageal carcinoma patients presented with dysphagia (80%). Among the esophageal carcinoma cases 1 case presented with low odynophagia, 2 cases presented with dyspepsia and 6 with loss of appetite. Dysphagia was the most common symptom of esophageal carcinoma seen in our study. The same was reported by Kumar MK [4], Gadour, et al. [5], Verma, et al. [6], Durrani, et al. [7]. Other modes of presentation were loss of appetite, vomiting and loss of weight (4), pain in epigastrium, mass in epigastrium [7]. Thus dysphagia is commonest symptom of esophageal carcinoma in all the studies. The commonest signs and symptoms in gastric lesion were pain in abdomen (31.7%) and Diarrhea (13.9%). Dyspepsia, loss of weight, loss of appetite, hematemesis were other symptoms.The patients with gastric adenocarcinoma presented with pain abdomen (57.14%), loss of weight (28.5%) and vomiting (14.2%).The atypical /rare presentations in gastric carcinoma cases comprised of diarrhoea and belching .Similar symptoms were reported by Gadour, et al. [5], Durrani, et al. [7],

Sivagamani, et al. [8]. Dyspepsia and weight loss are common symptoms in Gadour et al (5) study. Pain in epigastrium, vomiting and hematemesis, mass abdomen, dysphagia, malena and anemia were observed in study conducted by Durrani, et al. [7].

History of consumption of tobacco (chewed or inhaled form) was observed in 2 (40%) cases of esophagitis, 3 (60%) cases of esophageal carcinoma and 6 (33%) cases of gastritis. History of alcohol intake was seen in 2 (20%) cases of esophagitis, 1 (20%) cases of esophageal carcinoma, 2 (11%) cases of gastritis and 2 (28.5%) cases of gastric carcinoma, colon cancer 1 (33%). History of both alcohol & tobacco was seen in 1 (20%) cases of esophageal carcinoma, 7 (38%) cases of gastritis and 4 (57.14%) cases of gastric carcinoma, rectal carcinoma 1 (50%), colon carcinoma 2 (66.6%).

In esophageal carcinoma, the history of tobacco and/or alcohol consumption was seen in 5 cases (100%). Similar observations were made by Chitra, et al. [9] and Joshi SC [10]. The study conducted by Chitra, et al. [9] concluded that the risk of esophageal Carcinoma is 3.5 times higher with alcohol, 2.5 times higher with tobacco users, 2.8 times higher with betel nut chewers and smokers. A study conducted by Joshi SC [10] concluded that alcohol, smoking and tobacco chewing play a significant role in esophageal carcinoma along with nutritional factor which is a major contributing factor for malignancy. Non dietary factors like betel nut and tobacco chewing and "bidi" smoking especially reverse bidi smoking have a significant association with esophageal cancer according to the author Marjani, et al. [11]. Gastric cancer is the second most deadly malignant neoplasm of the world (Durrani, et al. 2009) [15] and it is showing a declining trend in India [11]. Gastric cancer has a wide geographic variation. Countries in Asia with a high incidence include Japan, China, and South Korea; those with a low incidence include India, Pakistan, and Thailand. Until recently gastric cancer was the second most common cancer worldwide. Now it has moved to the third place, behind breast cancer. It is the second most common cause of death from cancer (734 000 deaths annually). Two-thirds of the cases occur in developing countries. Incidence rates in men are twice those in women, in both low-risk and high-risk areas. The incidence rate of gastric cancer is four times higher in Southern India compared with Northern India [11] as per **Table - 8**.

Table - 8: Malignant tumours of esophagus and stomach. Frequency as reported by various authors.

	Esophageal Ca	**Gastric Ca**
INTERNATIONAL STUDIES	5	7
Gadour, et al. [5], Saudi Arabia	2.8%	3.8%
Yeh, et al. [12], Japan	2.8%	3.8%
INDIAN STUDIES		
Joshi, et al. [10]	2.8%	
Sivagamani, et al. [8]		3.8%
Leena Devi, et al. [13]	2.8%	3.8%
Malik GB, et al. [14]	2.8%	3.8%
Present study	2.8%	3.8%

Endoscopic and histopathological findings of esophageal carcinoma were as follows. Squamous cell carcinomas were 80% (4 cases) of the total esophageal carcinoma (5 cases) whereas adenocarcinomas were 20% (1 case) of the total esophageal carcinoma (**Table - 9**).

Endoscopic and histopathological diagnosis of stomach

Gastric carcinoma was seen in 7 cases (3.8%). All were adenocarcinomas. Out of 7 cases, 4 cases showed ulceroproliferative growth, 1 showed papillary folds in fundus and 2 was undifferentiated patient. Most of the cases of carcinoma stomach had fungating, cauliflower or polypoidal growth, very few ulcerative lesions were observed by Durrani, et al. [7]. Most of the authors reported adenocarcinoma as the major histological type (50%-99%) as shown in the table no 10. Similar observation is made in our

study (100%). Gastric cancer was reported as adenocarcinoma in 960 patients, gastric lymphoma in four, and leiomyosarcoma in two cases in a study by Khuroo, et al. [16]. Gastric adenocarcinomas were 85%, lymphomas were 13% and gastric leiomyosarcoma were 2% in a study by Durrani, et al. [7] as per **Table - 10**.

Table - 9: Comparative study for different histological type of esophageal carcinoma.

Author (year)	Joshi, et al. [10]	Kumar, et al. [15]	Verma, et al. [6]	Durrani, et al. [7]	Khuroo, et al. [16]	Present study (2009)
Histological type						
Squamous cell carcinoma	92.5%	67.39%	94.02%	69%	85.3%	80%
Adenocarcinoma	6.3%	19.56%	1.49%	28%	14.6%	20%

Table – 10: Comparative analysis of different histologic types of gastric carcinoma.

Histological type	Sivagamani, et al. [8]	Gadour, et Al. [5]	Khuroo, et al. [16]	Durrani, et al. [7]	Marjani, et al. [11]	Present study
Adenocarcinoma	90%	50%	99.37%	85%	95%	100%
Anaplastic tumor		21%		0		
Lymphoma		29%	0.42%	13%		
Others	10%		0.21%	2%	5%	

Thus majority of esophageal cancers are squamous cell carcinoma and gastric are adenocarcinomas which hold well in present study as well.

Conclusion

In conclusion, endoscopy and subsequent biopsy for histopathology can detect early malignant lesions. In the absence of endoscopic screening, detection of these lesions may be missed. Such patients may present with advanced stage of disease in later life. In endoscopic biopsy only mucosa is seen, the level of invasion cannot be ascertained.

References

1. Mohammad A, Makaju R. Retrospective histopathological analysis of various neoplasms of different parts of the gastrointestinal tract seen at the Kathmandu University Teaching Hospital (KUTH). Nepal, Kathamandu University Medical Journal, 2005; 4: 474-8.
2. Mustapha SK, Bolori MT, Ajayi NA, Nggadda HA, Pindiga UH, Gashau W, et al. Endoscopic findings and the frequency of Helicobacter pylori among dyspeptic patients in north eastern Nigeria. The internet journal of gastroenterology, 2007; 6: 1.
3. Latha V. Prabhu, Arunachalam Kumar. Textbook of Histology, 1st Edition, Emmess Medical Publishers, 2006, p. 115-132.
4. Kumar MK, Ramachandran P. Carcinoma esophagus in north Kerala. Theindian J of Cancer, 1973; 183-187.
5. Gadour MO, Ayoola EA. The frequency of upper gastrointestinal malignancyin Gizan. Saudi J Gastroenterol., 2004; 10(1): 16-21.
6. Verma P, Sinha BB, Zaman N. Carcinoma of oesophagus: an epidemiologicalstudy. Indian J of Surg., 1979; 8: 437-444.
7. Durrani AA, Yaqoob N, Abbasi S, siddiqm, Moin S. Pattern of

uppergastrointestinal malignancies in northern Punjab. Pak J Med Sci., 2009; 25(2): 302-307.

8. Sivangamani K, Reddy B, Changal R. Carcinoma of the stomach – A study of 200 cases. The Indian J of Cancer, 1974; 437-443.
9. Chitra S, Ashok L, Anand I, Srinivasan V, Jayanthi V. Risk factors for esophagealcancer in Coimbatore southern India –A hospital based case control study. Ind J gastro-enterology, 2004; 23: 19-21.
10. Joshi SC, Saxena SR, Satyawali VN, Joshi A, Nigam P, Singh VK, et al. Esophageal carcinoma – a study of risk factors (emphasis on nutrition) in a teaching hospital of Kumaon region of Uttarakhand. JAPI, 2009.
11. Marjani HA, Firouzeh BF, Nezhad A, Islami F, Pourshmas A, Semnan S. Prevalence of esophageal cancer risk factors among Turkmen and non-Turkmen ethnic groups in a high incidence area in Iran. Arch Iran Med., 2010; 13(2): 111 – 115.
12. Robert N., Allen, H.J.F. Hodgson. IBD in 'Recent advances in Gastroenterolgy. Edited by R.E. Pounder.
13. Devi Leena KR, Suvarna N. Pattern of gastrointestinal tumours in northkerala. Indian J of Cancer, 1980; 17: 159-163.
14. Malik GB, Lal N. Malignant tumours of the digestive Tract. A 25 Year study. Indian J Pathol Microbiol., 1989; 32(3): 179-185.
15. Kumar, Abbas, Aster. Small intestine and colon ,Robbins and Cotran Pathologic basis of disease,South Asia edition, vol II, 9th Edition – Elsevier 2014: 781-785.
16. Khuroo MS, Zargar SA, Mahajan R, Banday MA. High incidence of esophagealand gastric cancer in Kashmir in a population with special personal and dietary habits. Gut, 1992; 33: 11-15.