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Evaluation of Endoscopic Biopsies of Gastro Intestinal Tract- A Clinico Pathological Study

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***Abstract**: Aims and objectives: To study the endoscopic biopsies of gastrointestinal lesions, to assess the overall utility of endoscopic biopsy in gastro- intestinal lesions and to study the various gastro intestinal lesions in relation to age and sex of the patients, site of occurance and distribution. Materials & methods: A total number of 100 cases of esophageal lesions are clinically identified and subjected to endoscopic biopsy, the departments of Gastroenterology and Pathology, Government General Hospital, Rangaraya Medical College, Kakinada, over a period of two years from 1999 to 2001.Observations: Out of 100cases of gastro intestinal lesions, male patients are 64 and female patients are 36 with male to female ratio of 1.8:1. In the100 cases of gastro intestinal lesions 43(43%) cases were esophageal lesions, 34(34%) cases were gastric lesions, 5(5%) cases were duodenal lesions and 18 (18%) cases were colo rectal lesions. Conclusion: Endoscopic biopsy is the safest, non-invasive, affordable and time saving investigating procedure of choice to obtain a preoperative diagnosis in both neoplastic and non neoplastic lesions of gastro intestinal tract.*

***Key words:** Endoscopic biopsies, gastro intestinal lesions, Pathological study.*

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I. Introduction

The procedure of endoscopy was started way back in the 18th century. Endoscopy, a Greek word means endo-within and skopein- to view or observe.

With the introduction of upper gastrointestinal endoscopy, a new era entered into the field of gastroenterology. The main advantage of this procedure edges over the routine radiological examination in direct visualization of the lesion and to detect even the minute lesions with the help of biopsies[1].

Previously endoscopy was used to inspect gastro intestinal lesions and diagnosing them by their endoscopic appearances[2,3]. Later with the introduction of forceps, the process of taking biopsies has also been in use. It is a simple outpatient procedure done under local anaesthesia. It can be repeated if necessary and the complications are less, thus enabling diagnosis without laporatomy. The diagnostic accuracy is upto 95% for malignant lesions when combined with brush cytology[1].

The indications for endoscopic biopsy in clinical practice are to obtain a preliminary preoperative diagnosis for all kinds of inflammatory, non-neoplastic and neoplastic lesions of gastrointestinal tract and to arrive at a definitive specific diagnosis in inoperable cases as aguide to rational treatment[4,5]. It is also used for the analysis of gastrointestinal enzymes and to obtain sampling of bacterial flora which inhabit the gastrointestinal lumen[6].

The purpose of endoscopic biopsy is to confirm the clinical impression of the lesion and to exclude other diseases that have a similar endoscopic appearance[7].

II. Materials And Methods

A total number of 100 cases of gastro intestinal lesions are clinically identified and subjected to endoscopic biopsy, the departments of Gastroenterology and pathology, Government General Hospital, Rangaraya Medical College, Kakinada, over a period of two years from 1999 to 2001.

The following are the materials required for endoscopic biopsy:
1.Endoscope- Olympus G I F-100(flexible videoendoscope)
2.Biopsy forceps
3.Localanaesthesia (2%xylocaine)
4.Fixative – 10% buffered formalin
5.Stains- Hematoxylin and Eosin

After obtaining detailed clinical data, consent is taken from the patient and is subjected for evaluation and biopsy. The endoscopic biopsy technique is as follows: first the patient is not to take any food for 8hrs prior to the procedure. Xylocaine gel is used for local anaesthesia of the pharynx and hypopharynx just before passing endoscope. Anticholinergics are used to reduce the secretions and motility. The patient is instructed to lie down in the left lateral position. The endoscope is passed through a bite guard, and evaluated for any abnormalities such as erosions, thickened irregular mucosa or any growth. If any abnormality is seen, the biopsy forceps is passed through the endoscope and biopsy is taken from that area. This material is fixed immediately in 10% formalin fixative , routine processing was done and sections are stained with hematoxylin and eosin.

Observations

Esophageal lesions : A total number of 43 cases of esophageal lesions are subjected for endoscopic biopsy. Detailed clinical history and endoscopic findings are taken into consideration prior biopsy.

Age and sex of the patient, presenting complaint, endoscopic findings and site of lesion are taken and correlated with histopathological features.

In the present study majority of malignant lesions of esophagus have occurred in 51 to 60 years. Age incidence was shown in table-1. Out of 43 cases of esophageal lesions, male patients were 25 and female patients were 18 with male to female ratio of 2:1.5.sex incidence was shown in table-2. Dysphagia was the major complaint in 30 cases, pain , vomiting was the chief complaint in 5 cases respectively, and 3 cases was presented with anorexia.

In the presented study most of the (33 out of 43) esophageal lesions were presented as fungatingpolypoid lesions and diffuse infiltrative growths. In the remaining cases 8 were presented as ulcerated lesions and 2 as superficial erosions.

In 43 cases of esophagus 33 were esophageal malignancies. Of these 33 cases 11(33%) cases were at upper 1/3, 13 (40%) cases at middle 1/3, 8(24%) cases at lower 1/3 of esophagus and 1 (3%) case at gastro esophageal junction was seen. 2 cases were found to be exhibiting dysplasia one at upper 1/3 and other at lower 1/3 of esophagus.

Of the 43 cases studied histopathologically, 33(76%) cases were reported as malignant lesions, 2(5%) as dysplasia, and 8(19%) as nonspecific inflammation. Out of 33 malignant lesions, 31 cases(94%) were reported as squamous cell carcinoma, in which 10 cases(30.4%) were well differentiated squamous cell carcinoma, 17 cases (51.6%)were moderately differentiated squamous cell carcinoma, 4 cases(12%) were poorly differentiatedsquamous cell carcinoma and 2 cases (6%)were diagnosed as well differentiated adenocarcinoma probably from barret's esophagus or cardiac end of stomach. All these 33 cases were presented as fungating, polypoid and diffusely infiltrating growths endoscopically.2(5%) cases presented as ulcerative lesions on endoscopy, showed the features of dysplasia on histopathology.

In one(3%) case, the patient is HIV positive and clinically presented with loss of appetite and abdominal pain. Endoscopy revealed superficial erosions and is histopathologically diagnosed as nonspecific inflammatory lesion. 7cases (16%) were clinically and endoscopically suspected as malignant, but histopathology showed the features of nonspecific inflammatory lesions. The histopathological details of lesions were showed in table-3

Table -1 Showing age distribution of lesions.

Age	Esophagus	Stomach	Duodenum	Colon & Rectum	Total
1-10	-	-	-	07	07
11-20	-	-	-	-	-
21-30	04	02	03	01	10
31-40	08	12	01	04	25
41-50	12	07	01	-	20
51-60	13	08	-	03	24
61-70	04	05	-	02	11
71-80	01	-	-	01	02
81-90	01	-	-	-	01
TOTAL	43	34	05	18	100

Table-2 showing sex incidence of the lesions

Site of lesion	Males	Females	Total
Esophagus	25	18	43
stomach	27	07	34
duodenum	04	01	05
Colon and rectum	10	08	18
Total	66	34	100

Table-3 showing histopathological details of esophageal lesions

DIAGNOSIS	NO.OF CASES	%
Malignant lesions	**33**	**76**
➢ Well differentiated squamous cell carcinoma	10	30.4
➢ Moderately differentiated squamous cell carcinoma	17	51.6
➢ Poorly differentiated squamous cell carcinoma	04	12
➢ Well differentiated adenocarcinoma	02	06
Dysplasia	**02**	**05**
Nonspecific inflammation	**08**	**19**
Total	43	100

Stomach lesions: A total number of 34(34%) cases of gastric lesions were studied endoscopically and histopathologically. In the present study patients age varied from 22 to 70 years. Most of the malignant lesions occurred in 4^{th}, 5^{th} and 6^{th} decades. Out of 34 cases males were 27 and females were 7. Male to female ratio is 4:1.

Of the 34 cases, 11 cases are presented with mass in epigastric region, 6cases with loss of appetite, 6 cases with abdominal pain, 4 cases with vomiting, 4 cases with haematemisis and melaenaand 3 cases presented with gastric outlet obstruction.

Out of 34 cases, 10 cases presented as polypoid masses, 9 cases as flat, friable growths, 7 cases as ulcerative lesions, 6 as fungating growths and 2 cases are presented as congested mucosa.

Out of 34 cases of gastric lesions, 25 cases were malignant lesions. The malignant lesions have mostly occurred in the pyloric antrum and nextly in the cardia and lesser curvature of the stomach. One case was inflammatory lesion which occurred in pyloric antrum and 7 cases were nonspecific inflammation located in pyloric antrum, body and periampullary area.

Among the 34 cases, 25(73.5%) cases were presented as flat friable, polypoid, fungating and ulcerative growths on endoscopy and are diagnosed as malignant on histopathology. In the 7(28%) cases were diagnosed as well differentiated adenocarcinoma, one of which is of mucin secreting type, 13(52%) cases were reported as moderately differentiated adenocarcinoma and one case (4%) as moderately differentiated squamous cell carcinoma probably from lower end of esophagus. 3(12%) cases were diagnosed as poorly differentiated adenocarcinoma, in which 2 cases showed the signet ring pattern. One (4%) case was gastric carcinoma with neuroendocrine differentiation.

Duodenal lesions: A total number of 5 cases of duodenal lesions were studied endoscopically and histopathologically. Out of 5 cases, one case was Brunner's gland adenoma which occurred at the age of 35 years. The remaining 4 cases were inflammatory lesions which occurred in the 3^{rd} and 4^{th} decades. Of 5 cases 4 were males and 1 was female, with male to female ratio of 4:1.

Clinically all the cases presented as burning pain in the abdomen relieved by taking food. Out of the 5 cases, 4 were presented as superficial erosions and 1 case as circumscribed nodular lesion on endoscopy. Among the 5 cases, 4 cases diagnosed as inflammatory lesions and are located in the 2^{nd} and 3^{rd} part of duodenum and one case diagnosed as Brunner's gland adenoma which is located in the 2^{nd} part of duodenum.

Colorectal lesions: A total number of 18 cases of colorectal lesions were studied endoscopically and histopathologically. In the present study, majority of the lesions were polyps in the children of first decade, ulcerative colitis in the 3^{rd} decade and malignant lesions in the 6^{th} and 7^{th} decades. Among 18 cases, 10 cases were males and 8 cases were females with male to female ratio of 1.2:1. Out of 18 cases, 8 cases were presented with altered bowel habits, 5 cases with lower abdominal pain and bleeding per rectum and 5 cases with diarrhea.

Endoscopically, 8 cases were single polypoid lesions of sizes varying from 1-2cm diameter, 8 cases appeared as thickened irregular mucosa suggesting malignancy, one case as stricture and another case as a granular, friable rectal mucosa. In the present study out of 18 colorectal lesions 17 were located in the rectum and 1 in colon.

Of the 18 cases , 5(28%) cases were diagnosed as malignant lesions, one (5.5%) as dysplasia, 8(44%) as polyps, 1(5.5%) as ulcerative colitis and 3(17%) cases were non specific inflammatory lesions. Table -4 showing histopathological features of colorectal lesions.

Table -4 showing histopathological features of colorectal lesions:

Diagnosis	No. of cases	Percentage
Malignant lesions	**5**	**28**
Well differentiated adenocarcinoma	2	40
Moderately differentiated adenocarcinoma	1	20
Poorly differentiated adenocarcinoma	1	20
Diffuse NHL	1	20

Dysplasia	**1**	**5.5**
Polyps	**8**	**44**
Ulcerative colitis	**1**	**5.5**
Non specific inflammation	**3**	**17**
Total	18	100

III. Discussion

In the present study of 43 esophageal lesionsof which 76% were malignant. In that 94% were squamous cell carcinoma and only 6% were adenocarcinoma. So it is evident that squamous cell carcinoma is the most common malignant lesion of esophagus.

Similarly in the study conducted by Turnball and Goodner, majority of the esophageal malignancies are squamous cell carcinoma(94%) and only few are adenocarcinoma(3%)[8]. Ellis et al studied 268 esophageal lesions, in which 93% were squamous cell carcinoma and 3% were adenocarcinoma.[3]Where as in a study of 91 cases of esophageal cancer by David B.skinner et al 47.25% were squamous cell carcinoma, 47.25% were adenocarcinoma and 5.5% sarcoma.[9] The incidence is comparable with most of the other studies as illustrated in table-5.

In our study 31 cases of squamous cell carcinoma of esophagus 42% were located in middle 1/3, 35.5% in upper 1/3, and 22.5 % in lower 1/3 of esophagus. These results are compared with studies of Bogomortez WV et al. Where in a study of 76 cases of esophageal lesions, squamous cell carcinoma appeared mostly in the middle 1/3 of esophagus(43%).[10] Coetzee et al studied 244 cases, in which 39% occurred in upper 1/3, 50% in middle 1/3 and 11% in lower 1/3 of esophagus.[11] Lu et al studied 217 cases, in which 9% occurred in upper 1/3, 63% in middle 1/3 and 28% in lower 1/3 of esophagus.[2]Location of squamous cell carcinoma of esophagus studied by various workers are shown in table-6.

The incidence of adenocarcinoma of esophagus is much less when compared to squamous cell carcinoma and its usual location is lower 1/3 of esophagus. In our study 2cases(6%) are diagnosed as adenocarcinoma of esophagus, one of which is located in the lower 1/3 and another at the gastroesophageal junction.

Ellis et al, studied 300 cases of adenocarcinoma of esophagus, in which 93% were located in the gastroesophageal junction, 3.7% in lower 1/3, 2.7% in middle 1/3 and 0.6% in upper 1/3 of esophagus.[3]Turnball and Goodner reported 45 cases of primary adenocarcinoma. Most of them(47%) have occurred in gastroesophageal junction, 28% in lower 1/3, 16% in middle 1/3 and 9% in upper 1/3 of esophagus. Lortal – Jacob. J.L et al, in 1986 reported 16 cases of esophageal adenocarcinoma, 56% of which have occurred at the gastroesophageal junction.[12]

Blot WJ, et al[13] and Peran, Cameron AJ et al[14] reported that there is an increase in the incidence of adenocarcinoma at gastroesophageal junction. Location of adenocarcinoma of esophagus studied by various workers were shown in table-7.

Depending upon the microscopic features squamous cell carcinoma is graded as well differentiated, moderately differentiated and poorly differentiated. Most of the squamous cell carcinomas were well differentiated or moderately differentiated. In our series 30% were well differentiated , 52% were moderately differentiated and 12% were poorly differentiated.

The features of well differentiated tumours are abundant keratin, easily demonstrable intercellular bridges and minimum nuclear and cellular pleomorphism of the squamous epithelium. Poorly differentiated tumours havemarked cellular atypia, nuclear pleomorphism, hyperchromatism and no keratin or intercellular bridges. Moderately differentiated tumors stand between well and poorly differentiated tumours.

Dysphagia of esophagus is a well recognized condition particularly in areas with high incidence of invasive esophageal carcinoma. Present series included 2 cases of dysplasia, one of which is located in upper 1/3 and other in lower 1/3 of esophagus. 8(19%) cases were diagnosed as nonspecific inflammatory changes.

Among the total 100 gastrointestinal lesions studied by endoscopy, 34(34%) were gastric lesions. The predominant lesions in the present study were malignant(73.5%) which can be compared with the study of Chia M.M. et al, where 60% of the gastric lesions were malignant[18].Rolf Jorde, Haraldostensen et al, studied 1938 cases of gastric lesions from 1974 to 1983, in which 6.5% were malignant lesions, 83.2% were inflammatory lesions, 2.7% were polyps.[19]

In the present study, out of 25 cases of gastric carcinoma, 40% occurred in the pyloric region, 20% in the lesser curvature, 24% in the cardiac region and 16% in the body of stomach.Borrman et al, studied 500 cases of gastric carcinomas, among which 60% occurred in the pyloric region, 18% in lesser curvature, 15% in cardiac region and 7% in the body of stomach.[20]

In the present study, 28% were diagnosed as well differentiated adenocarcinoma 56% as moderately differentiated and 16% as poorly differentiated adenocarcinoma which is in correlation with the studies of

Paulino F, Roselli A et al.[21] In their study there were 85 cases of gastric lesions where 29.5% were well differentiated, 49.5% moderately differentiated and 21% were poorly differentiated adenocarcinoma.

In the present study, 5 duodenal lesions were subjected to endoscopic biopsy. 4(80%) cases were diagnosed as duodenitis and one (20%) case was diagnosed as Brunner's gland adenoma, which is endoscopically presented as circumscribed nodular lesion, occurred in 2nd part of duodenum at the age of 35 years.

In the present study of 100 gastrointestinal lesions, 18 cases were colorectal lesions. Of these 18 cases of colorectal lesions, 28% were malignant lesions, 5.5% were dysplasia, 44% were polyps and 5.5% were ulcerative colitis and 17% were nonspecific inflammatory lesions. Okita K Kodama T. et al, studied 71 lesions of colorectum, 34% were malignant lesions,64.5% were benign lesions and 1.5% were polyps[22].

Out of 5 lesions of malignancy, 4(80%0 were adenocarcinoma and one(20%) was diffuse NHL. In the 4 cases of adenocarcinoma 50% were well differentiated, 25% were moderately differentiated and 25% were poorly differentiated. Ambex, Morin M et al studied 200 cases of colorectal malignant lesions. Among which 20% were well differentiated, 60% were moderately differentiated and 20% were poorly differentiated adenocarcinoma[23] .

In the present study, out of 100 cases of gastrointestinal lesions, 82 cases were suspected as malignant by endoscopy and 63 cases (76.8%) were confirmed as malignant lesions. In on study by Jorde et al, the diagnostic accuracy for detection of cancer through specimens obtained endoscopically was 86% which is slightly higher than our study. The major reason for negative biopsy findings in remaining cases seem to be inaccurate representative material.

Table -5 showing comparision of incidence with other studies.

Study	**No.ofCases**	**Squamous cell carcinoma %**	**Adenocarcinoma%**	**Others**
David B Skinner et al	91	47.25	47.25	5.5
Turnball&Goodner	100	94	03	33
Ellis et al	268	93	03	04
Present study	33	94	06	-

Table -6 showing location of squamous cell carcinomas by various studies.

Study	**No.ofCases**	**Upper 1/3 %**	**Middle 1/3%**	**Lower 1/3%**
Skinner et al	43	25.5	39.5	35
Coetzee et al	244	39	50	11
Ellis et al	249	30	52	18
Gynning et al	250	07	54	39
Lu ey al	218	09	63	28
Leborbnee et al[15]	541	18	44	38
Marcialey al[16]	408	17	55	27
Nealon[17]	316	19	47	34
Voluntilainen	519	09	58	33
Present study	31	35.5	42	22.5

Table -7 showing location of adenocarcinoas by various studies

Study	**No. of cases**	**Upper 1/3%**	**Middle 1/3%**	**Lower 1/3%**	**G.E junction%**
Skinner et al	43	2.3	11.7	86	-
Ellis et al	300	0.6	2.7	3.7	93
Turnball&Goodner	45	09	16	28	47
Lortal-Jacob	16	08	10	26	56
Present study	02	-	-	50	50

IV. Summary And Conclusion

A total number of 100 gastrointestinal lesions were subjected to endoscopic biopsy. Present study included 43% of esophageal lesions, 34% gastric lesions, 5% duodenal and18% colorectal lesions.

Out of 100 gastrointestinal lesions 63% were diagnosed as malignant, 3% as dysplasia, 9% as benign, 6% inflammatory and 19% were nonspecific. In the present study, out of 63% malignant lesions 33% were esophageal, 25% were gastric and 5% were colon and rectum.

Out of 100 cases of gastrointestinal lesions studied, 82 cases were suspected as malignancy by endoscopy, and63(76.8%) were confirmed by biopsy as malignant.

The most common age group for malignant lesions was between 4th to 7th decades. Males were affected more than females showed the male to female ratio of 2:1 in the above said malignant lesions. There were no significant complications following endoscopic biopsy.

In conclusion, it is evident from the above study that endoscopic biopsy is the safest, non-invasive, affordable and time saving investigating procedure of choice to obtain a preoperative diagnosis in both neoplastic and non neoplastic lesions of the gastrointestinal tract.

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