

## ORIGINAL RESEARCH

# UPPER GASTROINTESTINAL TRACT LESION: A HISTOPATHOLOGICAL STUDY

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## ABSTRACT

**Introduction:** Upper gastrointestinal disorders are one in all the foremost commonly encountered problems in clinical practice with a high degree of morbidity and mortality. Various pathology involving the upper alimentary canal manifest with identical group of symptoms where endoscopy is performed because the initial diagnostic assay. It is straightforward safe and well tolerated procedure with direct visualisation of the pathological site and biopsy resulting in early detection of pathological changes and so helps to begin appropriate treatment.

**Aims and Objectives:** To determine the histopathological pattern of lesions of endoscopic biopsies of upper gastrointestinal tract.

**Materials and Method:** All endoscopic biopsies taken from upper gastrointestinal tract are brought in 10% buffered formalin. After fixation in formalin, the tissue was processed in automated tissue processor for dehydration, clearing, and paraffin embedding. Sections were cut in rotary microtome at 4 micrometer thickness. The section was stained for Hematoxylin and Eosin stain.

**Observations:** In the study conducted among all the GIT biopsies, the maximum number of biopsies were from gastric lesion with 53.84%, followed by duodenum with 36.75% and then esophageal biopsies which were 9.4%.

**Conclusion:** Commonest lesion was chronic gastritis. Majority of esophageal tumors were squamous cell carcinoma whereas gastric carcinoma most were adenocarcinomas.

## INTRODUCTION

Upper gastrointestinal disorders are one in all the foremost commonly encountered problems in clinical practice with a high degree of morbidity and mortality. Various pathology involving the upper alimentary canal manifest with identical group of symptoms where endoscopy is performed because the initial diagnostic assay. It is straightforward safe and well tolerated procedure with direct visualization of the pathological site and biopsy resulting in early detection of pathological changes and so helps to begin appropriate treatment.[1]

The upper gastrointestinal flexible fiber optic endoscope was first used in 1968 and proved to be a major breakthrough in the diagnosis of gastrointestinal tract (GIT) lesions.(2)

Endoscopy provides a unique opportunity to visualize the mucosal surface of the GI tract and examination by a qualified pathologist of specimens obtained at endoscopy is a routine and critical part of managing disorders of the alimentary tract.(3)

It is a simple safe and well tolerated procedure with direct visualization of the pathologic site and biopsy leading to early detection of pathologic changes and therefore helps to start appropriate treatment.(2)

Endoscopic examination and biopsy is a convenient procedure for accurate objective assessment of patients with symptoms of gastrointestinal tract. Endoscopy is incomplete without biopsy and histopathology is the gold standard for the diagnosis of endoscopically detected lesions.(4)

The esophagus and stomach can be sampled for a wide variety of infections, inflammatory disorders, vascular disorders, mechanical conditions, toxic and physical reactions, including radiation injury and neoplasms.(5)

Gastritis is the commonest non-functional cause for dyspepsia. The classification of gastritis has evolved over the years taking into account morphology, topography, epidemiology, & endoscopy. A classification based on etiology is ideal; this was not forthcoming since most of the gastritis were deemed idiopathic until the discovery of *Helicobacter pylori*. In 1990, the Sydney system for classifying gastritis, was published which was upgraded in 1994 & is presently followed globally for classifying gastritis. (6)

*Helicobacter pylori* is an important pathogen in human causing chronic gastritis and playing a major role in the development of peptic ulcers and gastric cancer. (7)

## AIMS AND OBJECTIVES

To determine the histopathological pattern of lesions of endoscopic biopsies of upper gastrointestinal tract

## MATERIALS AND METHOD

Setting and type of study: The study was conducted in Mahatma Gandhi Medical College and hospital, Jaipur. The study has included all biopsies which will be done for various chronic upper abdominal symptoms abdominal pain, dyspepsia, heartburn, nausea, vomiting and also for associated systemic manifestations like anorexia, weight loss. Autolyzed specimen were excluded. Study Sample Design: Retrospective Study. All endoscopic biopsies taken from upper gastrointestinal tract are brought in 10% buffered formalin. After fixation in formalin, the tissue was processed in automated tissue processor for dehydration, clearing, and paraffin

embedding. Sections were cut in rotary microtome at 4 micrometer thickness. The section was stained for Hematoxylin and Eosin stain. Bias: Selection Bias (Cases with Diarrhea)

## **OBSERVATIONS**

The present study included 117 cases of upper GIT biopsies (gastro esophageal duodenal biopsies) between period of June 2012 to November 2014.

In the study conducted among all the GIT biopsies, the maximum number of biopsies were from gastric lesion with 53.84%, followed by duodenum with 36.75% and then esophageal biopsies which were 9.4%.

Maximum Number of cases were seen in the 3<sup>rd</sup> decade of life (23.93%) and only two cases was found in 8<sup>th</sup> decade (1.70). The oldest patient was 76yearold and the youngest patient was 10year old.

The sex ratio was (1.85:1) (Male 76, Female 41). Maximum no. of female cases was in 5<sup>th</sup> decade and male cases were in 3<sup>rd</sup> decade. Minimum no. of female cases was in 7<sup>th</sup> decade and male cases were in 8<sup>th</sup> decade.

## **GASTRIC BIOPSY**

In Individual gastric lesion, site of distribution was antral, fundal and gastric body. Antral biopsy was taken in 82.5%, fundal biopsy in 11.1% and gastric body biopsy in 6.3%.

In most of gastric lesions superficial epithelium was normal in 51 cases (81%), atrophy in 8 out of 63 (12.7%), abnormal glands in 2 cases (3.1%), ulcerated in 1 case (1.6%), signet ring cells in 1 case (2.6%).

Degree of Inflammation refer to acute inflammation in various gastric lesions. There was no inflammation in 31 cases (49.2%), mild inflammation in 24 cases (38.1%) and moderate acute inflammation in 8 cases(12.7%).

In various gastric lesions, there was mild degree of chronic inflammatory infiltrate in 24 cases (38.1%), moderate in 26 cases (41.3%) and severe in 13 cases (20.6%) out of 63 cases.

Intestinal metaplasia was absent in 55 (87.3%) out of 63 gastric biopsies. In 8 cases intestinal metaplasia were seen.

In our study, common histological diagnosis among gastric biopsy was chronic gastritis in 58 cases(92.1%), moderately differentiated signet ring cell carcinoma in 03 cases (4.7%) and poorly differentiated signet ring cell carcinoma in 2 cases (3.2%).

## **DUODENAL BIOPSY**

Duodenal scalloping was seen in maximum number of cases(19 case, 44.19%) on upper gastrointestinal endoscopy. Other clinical features include chronic diarrhea and iron deficiency anemia. Chronic diarrhea was seen in 16 cases (37.21%), Iron deficiency anemia was present in 08 cases (18.60%).

23 cases show mild villous atrophy (53.49%) on microscopy of duodenal lesion. In 4 cases (9.30%) marked villous atrophy was seen. 16 cases (37.21%) show normal villous.

Out of 43 cases of duodenal biopsy, moderate lymphocytosis was seen in 27 cases (62.80%), There was equal no of cases of mild (18.60%) and severe lymphocytosis.

Celiac Disease was seen in 08 cases (18.60%) out of 43 cases of duodenal biopsy. 35 cases were of chronic duodenitis (81.40%).

## **ESOPHAGEAL LESION**

On microscopy of esophageal biopsy epithelial lesion is seen as Hyperplasia and dysplasia. Out of 11 cases mild hyperplasia is seen in 05 cases (45.45%), moderate in 5 cases (45.45%) and severe hyperplasia in 01 case (9.10%).

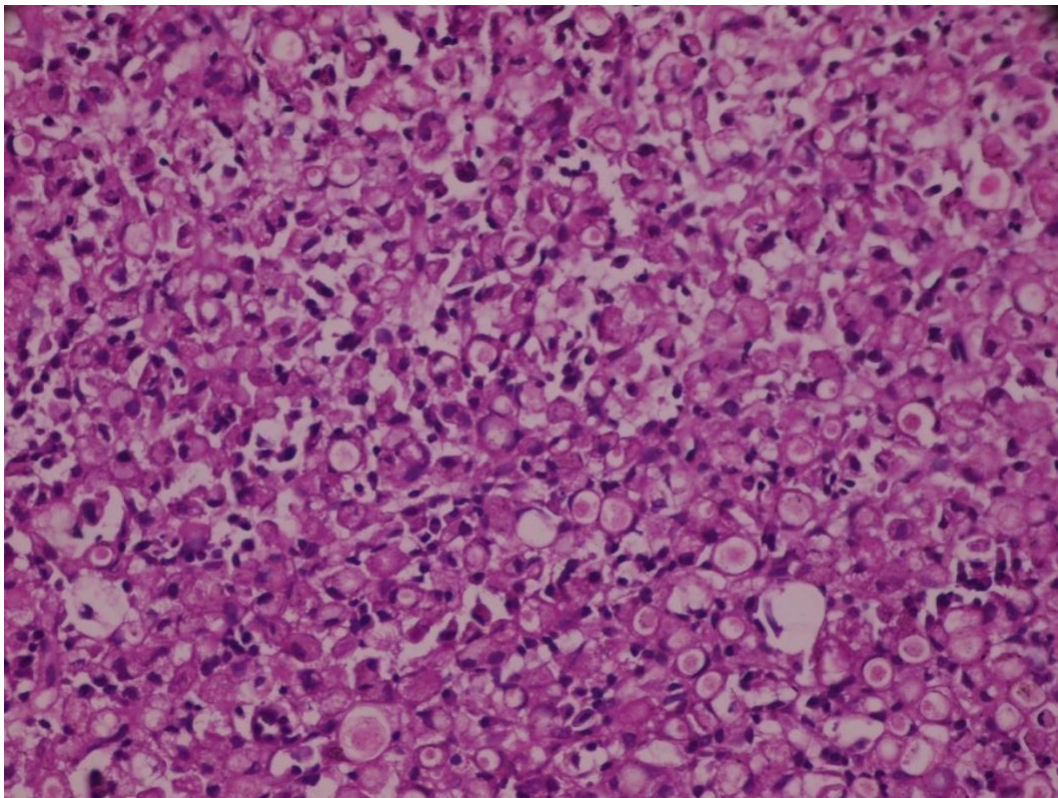
No dysplasia is seen in 9 cases (81.82%).

Moderate and severe dysplasia in 1 case (9.09%) each.

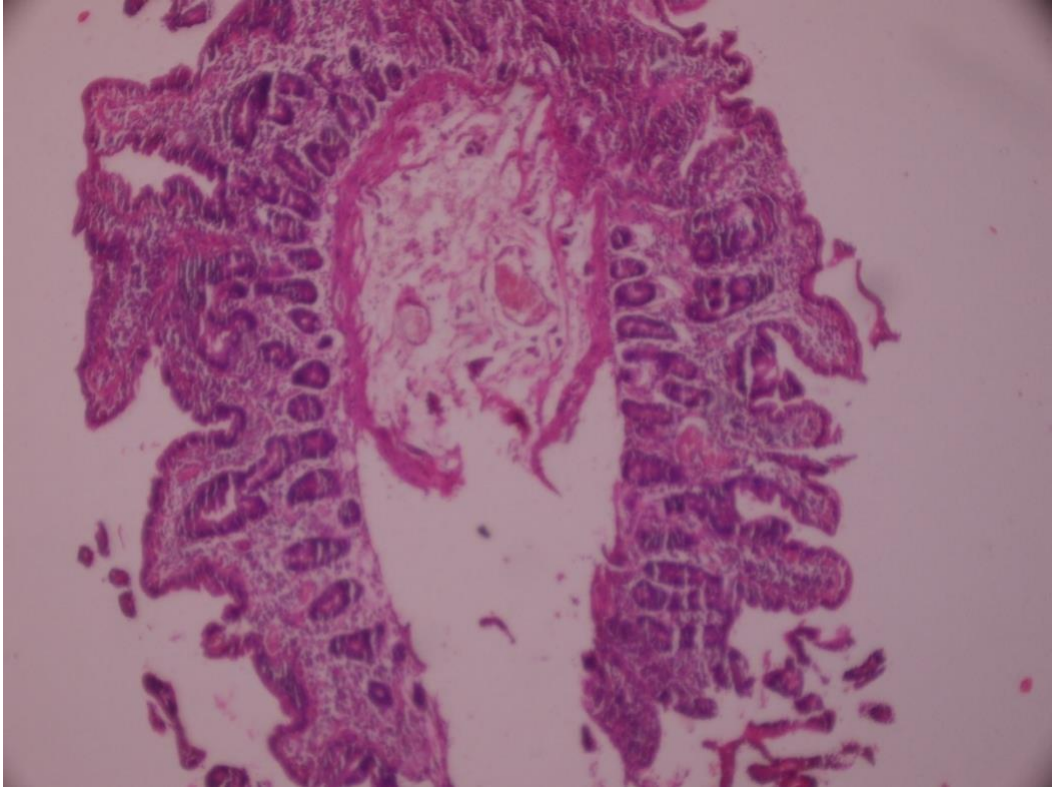
Subepithelial inflammation in esophageal mucosa was mild in 6 cases (54.54%) and moderate in 5 cases (45.46%).

In 9 cases there is no subepithelial invasion (81.82%). Only 2 cases show subepithelial invasion (18.18%)

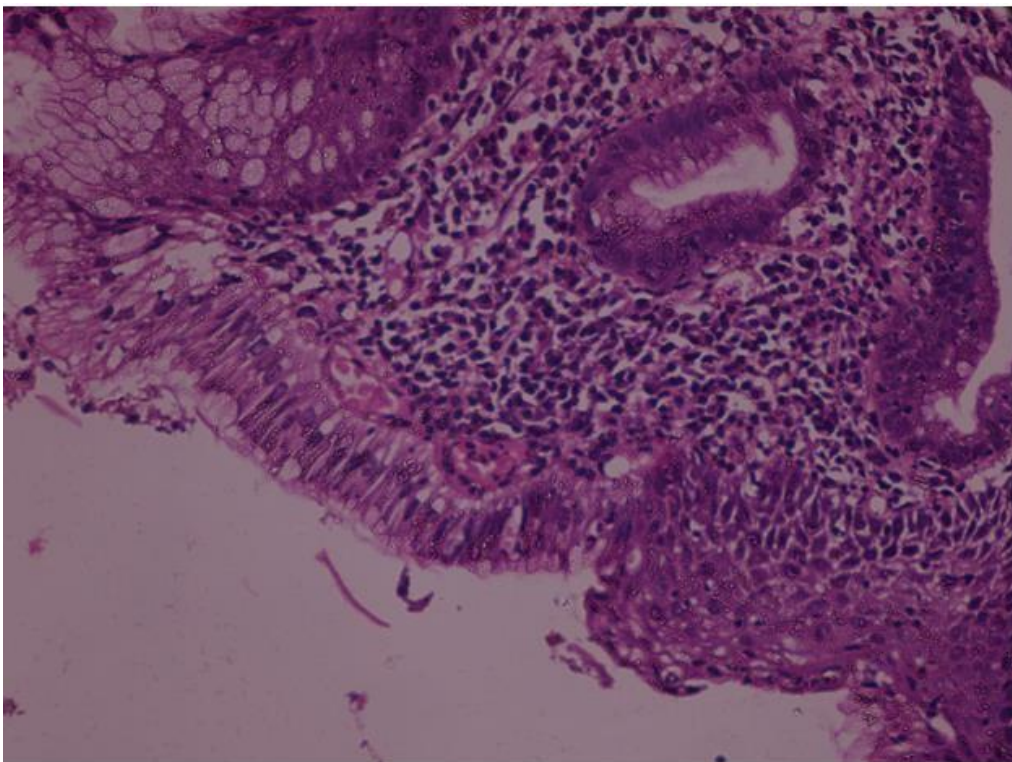
Common esophageal lesion was squamous epithelial hyperplasia (72.73%). Other esophageal lesions were chronic esophagitis (9.09%), moderately differentiated squamous cell carcinoma (9.09%), adenocarcinoma (9.09%).



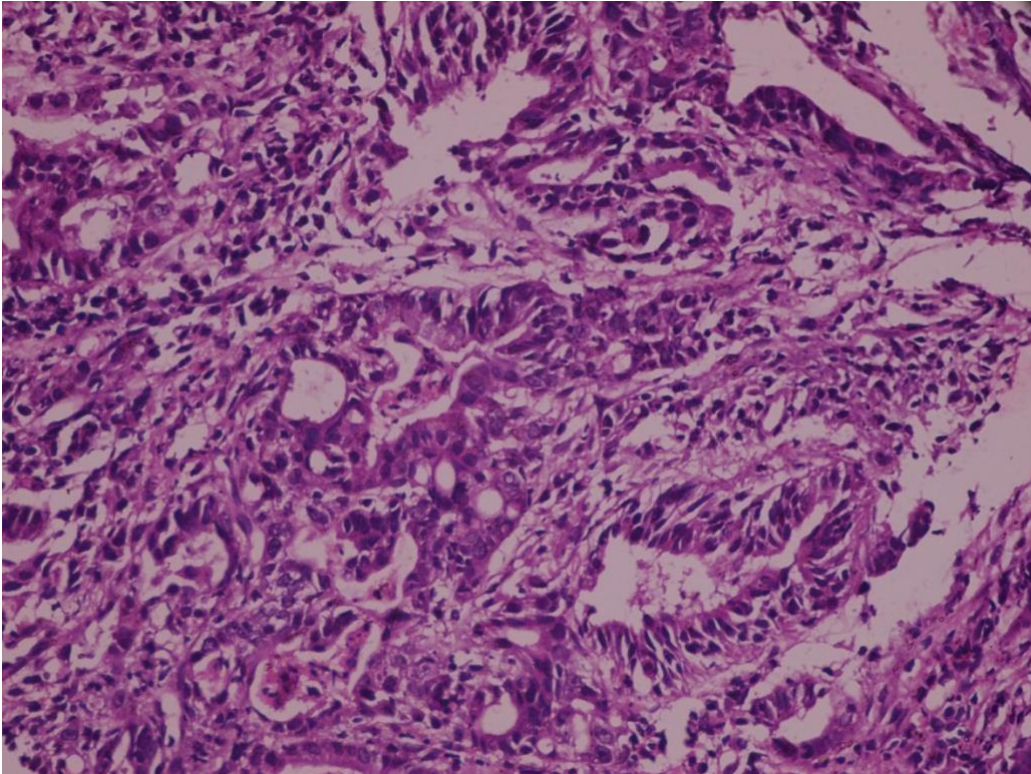
Signet ring cell carcinoma of stomach (H&E Stain 10X)



Mild atrophy of villus, Duodenum, Celiac disease (H & E stain, 10X)



Chronic esophagitis showing infiltration by chronic inflammatory cells at squamocolumnar junction (H & E stain 40X)



Moderately differentiated adenocarcinoma of esophagus ( H& E stain, 40 X)

## DISCUSSION

A total number of 117 cases were included in the study who were advised for biopsy of upper gastrointestinal tract in the Department of Gastroenterology and Department of Pathology of Mahatma Gandhi Medical College and Hospital, Jaipur, between the period of June 2012 to november2014.

Gastroscopy is a method of examination of the inside of gastrointestinal tract by using a thin flexible fibre optic instrument called as endoscope. It is currently the major method for diagnosis of gastrointestinal diseases. The number of gastrointestinal biopsies has increased after the invention of the flexible endoscope.

Histopathological examination has the major advantage of providing information on mucosal abnormalities.

This is particular useful in the case of gastric ulceration, when the exclusion of malignancy is important.

In the study conducted among all the GIT biopsies, esophageal biopsies were 11 (9.4%), gastric biopsies were 63(53.84%) & 11(36.75%) were from duodenum.

## INCIDENCE AS PER AGE

Maximum number of cases were seen in the 4<sup>th</sup> decade of life (23.93%) & only two cases were found in 1<sup>st</sup> and 7<sup>th</sup>decade (1.71%) each. Majority of cases were seen in 21-50 years age group(62.39%).

A study conducted by Mustapha et al in (2007)<sup>8</sup> found maximum number of cases in the age group of 40-49 yrs., and the age incidence is comparable to our present study.

### **INCIDENCE AS PER SEX**

In the present study, the male to female ratio was 1.85:1 (i.e. Males 76, and females 41)

According to Mustapha et al (2007)<sup>8</sup> the sex ratio was M:F = 1.07:1, which 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.

According to Sandhyapanjetagulia et al (2012)<sup>9</sup> out of 192 Gastrointestinal endoscopic biopsies, 122 (63.54%) were males and 70 (36.46%) were females; male: female ratio being 1.74:1.

### **INCIDENCE OF GASTRO ESOPHAGEAL DUODENAL DISEASES**

The lesions encountered were divided as esophageal lesion, gastric lesions and duodenal lesions. Maximum cases were diagnosed as chronic gastritis i.e. 58 out of 117 (49.57%). Next common lesion in the present study was duodenitis i.e. 35 out of 117 (29.91), followed by Celiac disease which was 8 out of 117 (6.83%).

Among esophageal lesions, commonest was found to be superficial epithelial hyperplasia i.e. 72.73%. Other esophageal lesions were esophagitis, esophageal adenocarcinoma and squamous cell carcinoma.

Among gastric lesions commonest was chronic gastritis with 92.1% Other gastric lesions were gastric carcinoma with incidence of 7.9%.

Chronic duodenitis was the most common among duodenal lesions 81.40 %. Celiac disease showed incidence of 18.60 %.

A study conducted in Nigeria by Mustapha et al (2007)<sup>8</sup> showed lesions in descending order of their frequency of occurrence as reflux esophagitis, gastritis, gastric ulcer, duodenal ulcer & gastric cancer.

But in study conducted endoscopic findings in 197 randomly selected subjects were gastritis- 89.7%, peptic ulcer-6.6%, gastric adenocarcinoma-1.01% (Kateralis et al 1992)<sup>10</sup>.

Out of 192 gastrointestinal endoscopic biopsies, 168 comprised of inflammatory lesions, 3 (1.54%) cases of chronic non-specific esophagitis, Barrett esophagus 3 (1.54%), GERD 3 (1.54%), all types of gastritis comprising 146 (76.04%) cases, gastric ulcer 7 (3.59%) and duodenitis 6 (3.13%); one case (0.51%) of premalignant lesion (esophageal dysplasia) and 12

Cases (6.25%) of malignant lesions of esophagus and stomach. 10 (5.62%) cases had normal histology whereas one case was inadequate for opinion. (Sandhya PanjetaGulia et al 2012)<sup>9</sup>.

Thus the prevalence of various upper GIT lesions varies among different studies. But gastritis predominates as the most common lesion as observed by us and the above authors.

### **CLINICAL SIGNS AND SYMPTOMS IN RELATION TO VARIOUS LESIONS**

The distribution of various lesions and the clinical symptoms in reference to the various cases and percentage of these presenting clinical signs and symptoms are out of 117 cases, some presented with pain in abdomen, a most common symptom seen in all the patients. the commonest signs and symptoms in esophageal lesions were dysphagia.

Dysphagia was the most common symptom of esophageal carcinoma seen in our study. The same was reported by Kumar MK (1973)<sup>11</sup>, Gadour et al (2004)<sup>12</sup>, Verma et al (1979)<sup>13</sup>, Durrani et al (2009)<sup>14</sup>.

Thus dysphagia is commonest symptom of esophageal carcinoma in all the studies.

The commonest signs and symptoms in gastric lesion were dyspepsia, pain in abdomen and anemia, loss of weight, loss of appetite, hematemesis were other symptoms.

The patients with gastric adenocarcinoma presented with pain abdomen, dyspepsia, loss of weight and loss of appetite. The atypical /rare presentations in gastric carcinoma cases comprised of diarrhea and belching.

Similar symptoms were reported by Gadour et al (2004)<sup>12</sup>, Durrani et al (2009)<sup>14</sup>. Dyspepsia and weight loss are common symptoms in Gadour et al (2004)<sup>12</sup> study. Pain in epigastrium, vomiting and hematemesis, mass abdomen, dysphagia, melena and anemia were observed in study conducted by Durrani et al (2009)<sup>14</sup>.

In patient with chronic duodenitis, the most common presenting symptoms is chronic diarrhea.

In celiac disease upper GI-endoscopy the most common finding is duodenal scalloping.

### **NON NEOPLASTIC LESIONS ESOPHAGUS**

These were squamous epithelial hyperplasia, esophagitis. Esophagitis was seen in age group of 61-70 years.

A study conducted by Mustapha et al (2007)<sup>8</sup> found prevalence of reflux esophagitis to be 67%.

### **NON NEOPLASTIC LESIONS STOMACH**

Amongst the non-neoplastic lesions (gastric) chronic gastritis was seen in 58 out of 63 cases (92.10%).

### **INTESTINAL METAPLASIA**

Atrophic gastritis and intestinal metaplasia are presumed to be important stages in the development of gastric adenocarcinoma. In our study, Eight cases of intestinal metaplasia were diagnosed.

### **GASTRO ESOPHAGEAL MALIGNANCY**

Gastric malignancy comprised of 7.93% cases in present study whereas esophageal malignancy was seen in 18.18% cases.

In the study conducted by Gadour et al(2004)<sup>12</sup> there were 1.5% cases of esophageal malignancy and 0.9% cases of stomach malignancy which is less compared to our study.

Esophageal cancer contributed 12.05% of all endoscopy biopsy population in the study conducted by Joshi et al (2009)<sup>15</sup> which is less compared to our study.

222 cases of esophageal carcinoma were seen in five years (44 cases per year which is more compared to our study (Verma et al 1979)<sup>13</sup>.

The incidence of esophageal malignancy was more compared to Gadour et al(2004)<sup>12</sup>, Joshi et al(2009)<sup>15</sup>.

The incidence of gastric carcinoma was more compared to Gadour et al(2004)<sup>12</sup>.

Gastric carcinoma was seen in 5 cases (7.9%). All were adenocarcinomas and signet ring cell carcinoma.

Most of the cases of carcinoma stomach had fungating, cauliflower or polypoidal growth, very few ulcerative lesions were observed by Durrani et al (2009)<sup>14</sup>.

Most of the authors reported adenocarcinoma as the major histologic type (50%-99%). Similar



observation is made in our study.

(66.66)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 (1992)<sup>16</sup>.

Gastric adenocarcinoma was 85%, lymphoma were 13% and gastric leiomyosarcoma were 2% in a study by Durrani et al 2009<sup>14</sup>.

## CONCLUSION

1. Lesions were divided as esophageal, gastric and duodenal
2. Majority of the cases were seen in the age group of 3rd decade of life
3. Males were more affected than females.
4. Commonest lesion was chronic gastritis.
5. Commonest lesion among esophageal group was superficial epithelial hyperplasia
6. Commonest lesion among duodenal group was chronic duodenitis
7. Histologically, majority of esophageal tumors were squamous cell carcinoma whereas gastric carcinoma most were adenocarcinomas.
8. Most common site for esophageal carcinoma was lower third whereas for gastric was antrum.

## SUMMARY

A study of 117 gastro esophageal duodenal endoscopic biopsies from the patients attending the Mahatma Gandhi Medical College and Hospital, Jaipur was conducted. Endoscopic biopsies were collected over a period of Two and half Years.i.e. June 2012 to November 2014.

In the study conducted among all the GIT biopsies,the maximum number of biopsies were from gastric lesion with 53.84%, followed by duodenum with 36.75% and then esophageal biopsies which were 9.4%.

Maximum number of cases were seen in the 3rd decade of life (23.93%) & only two cases were found in 8th decade (1.70%). Majority of the cases were seen in the age group of 31-40Years (28.07%).

The sex ratio was (1.85:1)(Male 76,Female41)

Commonest esophageal lesion was squamous epithelial hyperplasia(72.73%)

Commonest gastric lesion encountered was chronic gastritis. (92.1%)

Commonest duodenal lesion was chronic duodenitis. (81.40%)

Other esophageal lesions were esophagitis, carcinoma and other gastric lesions were gastric carcinoma. celiac disease was other duodenal lesion.

In both gastric & esophageal lesions commonest symptoms were pain in abdomenand vomiting.In esophageal lesions dysphagia & loss of weight were the commonest signs and symptoms whereas dyspepsia, pain in abdomen and vomiting was the commonest sign and symptom in gastric lesion. chronic diarrhea was common in duodenal lesion.

In esophageal carcinoma dysphagia was the commonest symptom. other symptoms were loss of appetite, vomiting and loss of weight.

Loss of appetite, loss of weight, dyspepsia and vomiting were the most common features of gastric carcinoma.

Gastritis cases presented with dyspepsia, epigastric pain and vomiting with loss of appetite.

Duodenitis case show chronic diarrhea as common symptoms

In the present study Gastroesophageal malignancies was noted in 7 cases(5.98%).

Carcinomas of the esophagus accounted for 2 cases (18.18%). Of this 9.09% were squamous cell carcinoma & 9.09% were adenocarcinoma.

Five cases of gastric carcinoma were seen 7.9%. Two were adenocarcinomas and other was signet ring cell carcinoma.

Antrum was the common site for gastric carcinoma

Chronic gastritis(92.1%) was the commonest lesion encountered in this study.

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.

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