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CIRRHOSIS;
HISTOLOGICAL CHANGES IN GASTRIC MUCOSA OF LIVER CIRRHOSIS PATIENTS.

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ABSTRACT… Objectives: To investigate the histological changes in gastric mucosa of liver cirrhosis patients. **Study design:** Cross sectional study. **Place and Duration:** Department of Anatomy and Medicine, Gastroenterology unit, Isra University Hospital (June to December 2012). **Subjects and Methods:** 85 diagnosed cases of liver cirrhosis were selected according to inclusion and exclusion criteria. Specimen of 2 mm thickness was taken by punch biopsy from gastric body and antrum by endoscope. Tissues were fixed in 10% formaldehyde, 3-5 μ sections were stained with H & E for microscopy. Data was analyzed on SPSS version 21.0. **Results:** Age (mean ±SD) was noted as 47±11.5 years. Of 85, 56 (65.8%) were male and 29 (34.1%) female. Frequency of mild, moderate, severe and no gastropathy were noted in 52.94%, 34.12%, 4.71%, and 8.24% respectively. 9.4% of cases show capillary dilation and edematous lamina propria. **Conclusion:** Microscopy shows gastropathy in majority of specimens. Thick gastric mucosa, increased gland size and mucosa capillary dilation was noted.

Key words: Liver Cirrhosis, Portal Gastropathy, Histology, Isra University.

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INTRODUCTION

Histologically stomach contains four functional layers, mucosa, sub mucosa, muscularis mucosa and serosa. The mucosa of stomach is made up of three components, the epithelium, a supporting lamina propria and a thin smooth muscle layer the muscularis mucosae, which produces local movement of the epithelium and folding of mucosa. The mucosa are terrified into major folds or rugae and contain gastric glands that lengthen from the muscularis mucosae to open into stomach lumen via gastric pits. The mucosa of the entire stomach has simple branched tubular glands and there are three distinctly different histological zones. In cardiac region, it's lamina propria contain simple or branched tubular mucus secreting glands, the mucosa of fundus and body form the major histological area which contain glands that secrete acid, pepsin, gastric fluid as well as some defensive mucus.[1] Stomach is an innocent bystander affected in much disease like that of liver. Liver cirrhosis is one disease in which stomach suffers a lot.[2] A previous study reported that the liver cirrhosis is a consequence of the shrinkage of hepatocytes after developing liver fibrosis and nodule configuration.[3] Gastric antral vascular ectasia are gastric mucosal lesions that can cause chronic gastrointestinal hemorrhage and chronic anemia in patients with cirrhosis.[4] More than a few studies have established that patients with portal hypertension build up amplified blood flow to the stomach.[5]

Gastric mucosal lacerations are common in portal hypertension, from these lesions there might be increased chance of loss of blood which possibly might be sluggish and sinister responsible for increase susceptibility of developing anaemia or may be unexpected or harsh causing deadly internal bleeding. In patients with portal hypertension, blood vessels that are found in the mucosa of stomach show central locale of defect consisting of shrinkage of capillaries and veins. Barrier in the drainage system of blood from the stomach can persuade revolutionize in the gastric mucosa.[6] Diameter of the antral mucosal

capillaries and the thickness of the fundus and antral capillary wall is also significantly greater in patients with portal hypertension and also it has been observed that gastric mucosal capillary dilatation was present in patients with portal hypertension.[7]

At present moment, few studies are available regarding the effects of liver cirrhosis on gastric glands. Also little work has been done to evaluate the severity of histological changes in regards to the severity disease. Therefore present study conducted to determine histological changes in gastric mucosa of body and pyloric antrum of stomach in liver cirrhosis patients.

SUBJECTS AND METHODS

A cross sectional study was conducted at the conducted at Department of Anatomy and Medicine Hepatology unit and Laboratory work was carried out at Postgraduate Laboratory, Isra University Hospital Hyderabad from June to December 2012. A sample of 85 subjects of liver cirrhosis was selected through non probability convenient sampling. Diagnosed cases of liver cirrhosis of age >18 years and <65 years of both sex undergoing upper GI endoscopy were included in study protocol. Different age, patients taking NSAIDS, and unwilling patients were excluded. Study protocol was explained to volunteers and written informed consent was taken. Study was approved by ethics committee of the institute. Patient data was recorded on a pre designed proforma.

Endoscopy

2 mm thick tissues were obtained from body and antrum of stomach by endoscope Olympus XQ 140 (version 3) through punch biopsy. Tissue samples were washed with normal saline and fixed immediately in 10% formaldehyde.

Gastropathy Grading

Gastropathy are divided in to four categories i.e. none, mild, moderate, and severe as per literature.

Tissue sections, staining and slide preparation

Dehydration was carried out in ascending grade of alcohol and cleared of Xylene. Impregnation was done in soft paraffin wax at ≤68^{0}C for 1 hour. 4 μ thick tissue sections were performed using a rotary microtome. Dewaxing was done using hot plate and then clearing in two changes of Xylene. Xylene was removed with absolute alcohol and finally before staining, hydration was done. H & E staining was used and the slides mounted in Canada Balsam. The slides were then evaluated under light microscope.

Data Analysis

Data was analyzed on SPSS version 21.0. The continuous and categorical variables were analyzed by student`s t-test and chi-square test respectively. The results were presented as mean± S.D and frequency (%) respectively. Significant p-value was defined at≤ 0.05.

RESULTS

Mean ±SD age was noted as 47±11.5 years. Of 85, 56 (65.8%) were male and 29 (34.1%) female. Mild, moderate, severe and no gastropathy were observed in 52.94%, 34.12%, 4.71%, and 8.24% respectively (Figure-1). An increase in gastric glands was observed. Mild, moderate and severe increase in number of gastric glands was noted in 38.82%, 21.18% and 3.53% respectively as shown in Figure-2. In 57.65% of cases the size of gastric glands was normal while rest revealed different grades of gland enlargement. Enlargement of gastric glands, graded as mild, moderate and severe, was observed in 23.54%, 9.41% and 9.41% of cases respectively. Infiltration of lamina propria was by inflammatory cells was observed in the pyloric antrum in majority of study subjects. Mild, moderate and severe infiltration of lamina propria with inflammatory cells was noted in 48.24%, 38.82% and 10.59% of cases respectively (Figure-3). Most common cells were, found 95.2%, lymphocytes in the lamina propria of the body of stomach. Similarly gastric mucosa thickness as mild, moderate and severe was noted in 11.8%, 8.2% and 6.4% of cases respectively (Figure-1). Capillary dilatation and edema of lamina propria was noted in 9.4% of cases, rest revealed no such observation.

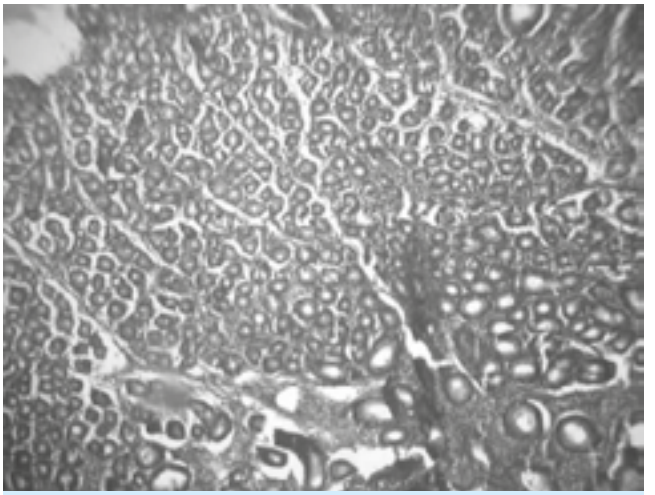

Figure-1. Photomicrograph showing congestion of gastric mucosa H& E x 100

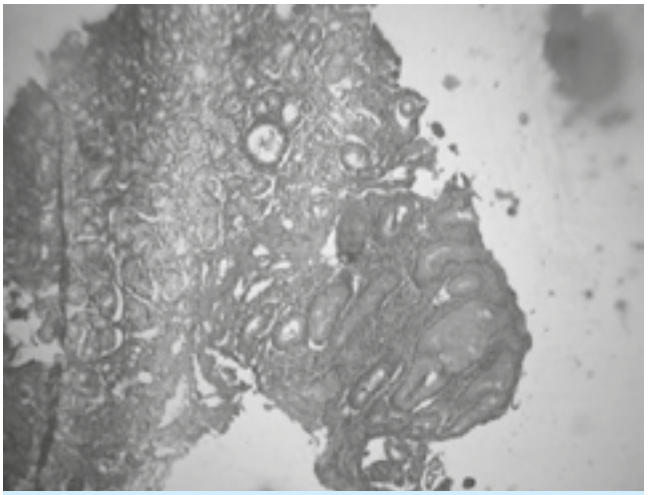

Figure-2. Photomicrograph shows an increase in size of gastric glands H& E x 100

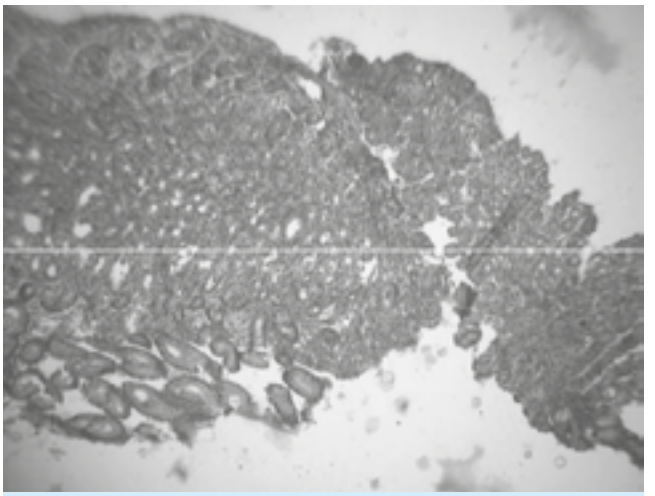

Figure-3. Photomicrograph shows inflammatory infiltration of gastric mucosa H & E x 100

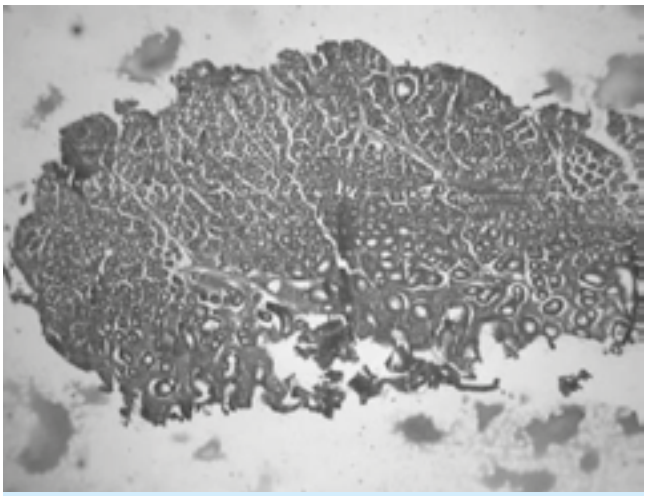

Figure-4. Photomicrograph showing inflammatory infiltrate in gastric mucosa H & E x 100

DISCUSSION

Liver cirrhosis is major health concern and found in both genders. People belonging to any social class, any ethnic groups, and any age are suffering. Alcohol causing liver cirrhosis is most common cause in developed countries while viral hepatitis accounts most for liver cirrhosis in developing countries.[8] It is a most important cause of deaths and morbidity all over the worlds.[9] It is also a common cause of mortality amongst Pakistani population[10] and frequent cause of admission in our hospitals.[11] Portal hypertensive gastropathy is defined by mucosal and submucosal vascular ectasia in the absence of Inflammation. A lot of reasons counting modification in blood circulation in the spleen, humoral aspects and confined dysregulation of vascular quality have been concerned in the pathophysiology.[12] Findings of gastropathy are consistent previous studies. In liver cirrhosis there is damaged endothelium depended relaxation in the liver microcirculation and this put in to an amplified intrahepatic vascular resistance leading to portal hypertension[13] and this is also in agreement with findings of present study. Another previous study reported the endoscopic versus microscopic changes in the gastric mucosa of liver cirrhosis patients. Findings of both procedures showed similar findings.[14] The endoscopic findings are in agreement with previous study. Mucosal changes were found often in body and antrum of stomach and findings are consistent with previous studies.

In present study gastropathy was observed in 91.77% of cases, and findings are consistent with previous studies.[15,16]

Mild gastropathy was observed in 52.94% which is in close approximation to previous study which has reported 65%.[5] The histological studies comprehend on biopsies taken from fundus and antrum of the stomach mucosa in patients suffering from liver cirrhosis has revealed that thickness of capillary walls from gastric mucosa symbolize the occurrence of portal hypertension with exactness of 85%.[17] Present study reports capillary dilatation in 9.41% of cases and mucosal edema in 8% of cases, the findings are in agreement with previous study.[18] The presence of lymphocytes in mucosa are also in agreement with previous study.[19] Strength of present study lies in its study designs and patient's selection according to inclusion criteria; however, it has limitation like concomitant use of drugs like proton pump inhibitors and beta blockers which might have biased results.

CONCLUSION

Stomach revealed changes in gastric mucosa and its thickness, gland size and number and presence of inflammatory infiltrate was observed. The findings suggest that the liver cirrhosis patients should be screened for gastric erosions, ulcerations, and mucosal bleeds which may increase mortality and morbidity of patient. Further studies are recommended.

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Stay away from negative people.
They have a problem for every solution.

– Albert Einstein –

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Afroz S Kazi	Concept, Materials handling, Performing lab investigations, Manuscript write up, Proof reading.	
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3	Sana Naz	Concept, Materials handling, Collection of Biopsy materials, Staining, Micriscopy, Compilation of resutls, Statistical analysis, manuscript write up.