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PORTAL GASTROPATHY;

CHARACTERISTIC HISTOLOGICAL FEATURES OF PORTAL GASTROPATHY IN LIVER CIRRHOSIS AND ITS CORRELATION WITH CHILD-PUGH SCORE.

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ABSTRACT... Objectives: To study the characteristic histological features of Portal gastropathy and its correlation with Child-Pugh Score in liver cirrhosis patients. **Study Design:** Cross sectional study. **Place and Duration:** Department of Anatomy and Gastroenterology Unit, Isra University Hospital from June to December 2012. **Subjects and Methods:** Gastric biopsies from 85 cases of liver cirrhosis with portal gastropathy were collected by non probability convenient sampling. Olympus XQ 140 (version 3) was used for 2 mm thick tissue specimens by punch biopsy. Tissue pieces were preserved in 10% formalin. 3-5 μ thick tissue specimens were stained with H & E for microscopic examination. **Results:** Portal Gastropathy was noted in 91.7% of total study subjects. Gastric glands showed increase counts and increased size noted in 60.12% and 57.65% of cases respectively. Pyloric antrum revealed inflammatory cell infiltration of lamina propria. 95.2% inflammatory cells comprised of lymphocytes. Capillary congestion and edema was noted in 9.4% of cases. Spearman correlation showed positive correlation of Portal gastropathy and Child Pugh Class (CPC) score (R^2=0.5244, p=0.0001). **Conclusion:** Portal Gastropathy was noted in 91.7%. Histological showed increase in size, length and count of gastric glands, capillary congestion and inflammatory cell infiltration. Spearman correlation showed positive correlation of Portal gastropathy and Child Pugh Class (CPC) score (R^2=0.5244, p=0.0001).

Key words: Portal Gastropathy, Histology, Child Pugh Score, Liver Cirrhosis.

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INTRODUCTION

Gastric histology shows the stomach wall comprises of four distinct regions from inside to outside termed as; mucosa, submucosa, muscular layer and serosa. Mucosa is physiologically active site of gastric juice formation as it contains gastric glands. Gastric mucosa comprises of gastric epithelium, lying on the lamina propria, and a thin muscle layer called the muscularis mucosae.[1,2] The muscularis mucosae increase gastric mucosal folding and local motility around glands to facilitate the secretions. Gastric mucosa shows major folds called rugae. The gastric glands open onto the pits between the rugae. Histologically, the gastric glands are of "simple branched tubular type." In cardiac part of stomach, glands are of simple or branched tubular type which secretes excessive mucus secretions. Body and fundus of stomach shows glands which secrete the hydrochloric acid and enzyme pepsin. Gastric secretions provide defense functions also.[1,2] The venous blood of stomach enters into the portal vein. High venous pressure in the portal vein is termed as the portal hypertension (PH).[3,4] Gastric vessels show dilatation and congestion of capillaries and venules in portal hypertension (PH).[3,4] Portal gastropathy (PG) is a clinical condition characterized by severe venous congestion, damming of blood in the gastric wall, particularly in the mucosa and submucosa. Vascular ectasia may rupture resulting in the severe intra-gastric bleeding. This bleed may be vomited out or may go into the feces.[5,6] Lesions of PG appear as mosaic pattern of mucosa, cherry-red spots and may even appear as black-brown mucosa spots,[5] PG carries a life time risk of gut bleeding and chronic blood loss resulting in iron deficiency. Histological data on the PG is scarce

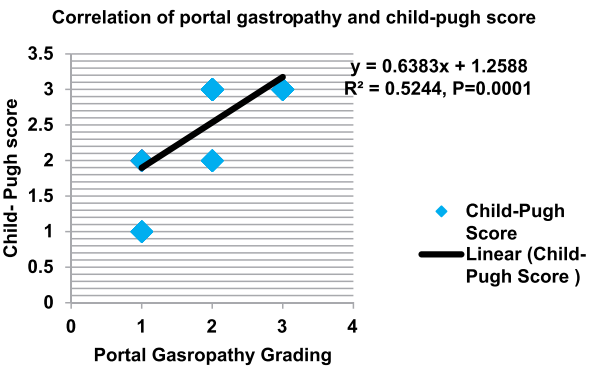
and lacking particularly in countries like Pakistan where large number of cirrhotic patients are being presented in the medical wards on daily basis.[7,8] A search of literature shows, currently a few studies had been reported on the PG in liver cirrhosis and its correlation with clinical scoring systems such as the Child- Pugh (CPC) score. The Gastroenterology unit of Isra University is very busy round the clock, receiving many cases of liver cirrhosis and portal gastropathy. Hence, the present study was designed to study the characteristic histological features of Portal gastropathy in liver cirrhosis and its correlation with Child-Pugh Score.

SUBJECTS AND METHODS

Ethical permission for the present cross sectional study was taken from the institutional committee before conducting the study. The materials for the present cross sectional study were the diagnosed cases of liver cirrhosis presenting at the Gastroenterology unit, Department of Medicine, Isra University Hospital, Hyderabad. The study was conducted at the Department of Anatomy and Postgraduate Laboratory, Isra University Hospital Hyderabad. Study covered period from June to December 2012. 85 diagnosed cases of liver cirrhosis presenting in the Endoscopy suit were approached and collected by non-probability convenient sampling. Inclusion criteria were; diagnosed liver cirrhosis cases, age 18- 65 years, either gender and undergoing upper GI endoscopy for the variceal bleeding. Patients not fulfilling the inclusion criteria were excluded. Gastric biopsies from 85 cases of liver cirrhosis with portal gastropathy were collected by non probability convenient sampling. Endoscope Olympus XQ 140 (version 3) was used for 2 mm thick tissue specimens by punch biopsy. Tissue pieces were preserved in 10% formalin. 3-5 μ thick tissue specimens were prepared on rotary microtome, stained with H & E and microscopic findings were noted. Child- Pugh score of severity of liver cirrhosis was defined as i.e. none, mild, moderate, and severe. CPC was graded as referenced.[3] Tissue dehydration was performed in alcohol (ascending grades) and cleared by Xylene. Prepared tissue slides were mounted in Canada balsam. Light microscopy was used for the histological examination. Written informed consent was mandatory for those who gave consent for tissue for the study purpose. Study protocol was explained to the volunteers or legal heirs. A proforma was designed for the collection of patient's biodata, CPC score and histological findings. Statistical software SPSS 21.0 ver was used for data. Continuous (e.g. age) and categorical (e.g. gender) variables were analyzed by "Student`s t-test" and "Chi-square" test respectively. Correlation of Portal gastropathy and Child Pugh score was performed on Microsoft Excel data sheet. Data was analyzed at 95% confidence level of statistical significance was (P-value at ≤ 0.05).

RESULTS

Age (mean $\pm$SD) of total 85 subjects was found as 47.9$\pm$11.5 years. Male predominated with male to female frequency of 56 (65.8%) and 29 (34.1%) respectively. Portal Gastropathy was noted in 91.7% of total study subjects. Grading of portal gastropathy, increase in gastric glands, enlargement of gastric glands, inflammatory cell infiltration and gastric mucosa thickness are shown in Table-I. Gastric glands showed increase counts and increased size noted in 60.12% and 57.65% of cases respectively. Pyloric antrum revealed inflammatory cell infiltration of lamina propria. 95.2% inflammatory cells comprised of lymphocytes. Capillary congestion and edema was noted in 9.4% of cases. Spearman correlation showed positive correlation of Portal gastropathy and Child Pugh Class (CPC) score (R^2=0.5244, p=0.0001) (Scatter plot 1).



Graph I. Correlation of portal gastropathy and Child-Pugh score

Portal Gastropathy	No. %	P-value
No Gastropathy	10 (8.2)	0.0001
Mild Gastropathy	52 52.9)	
Moderate Gastropathy	13 (15.29)	
Severe Gastropathy	5 (4.7)	
Gastric Gland Increase		
Mild gland increase	45 (38.82)	0.0001
Moderate gland increase	25 21.18)	
Severe gland increase	4 (3.53)	
Gastric Gland Enlargement		
Mild gland enlargement	27 (23.54)	0.0001
Moderate gland enlargement	11 (9.40)	
Severe gland enlargement	11 (9.40)	
Inflammatory Cell Infiltrate		
Mild inflammatory	56 (48.24)	0.0001
Moderate inflammatory	45 (38.82)	
Severe inflammatory	12 (10.5)	
Gastric Mucosa Thickness		
Mild thickness	14(11.8)	0.0001
Moderate thickness	9 (8.2)	
Severe thickness	7(6.4)	

Table-I. Portal gastropathy and histological findings (n=85)

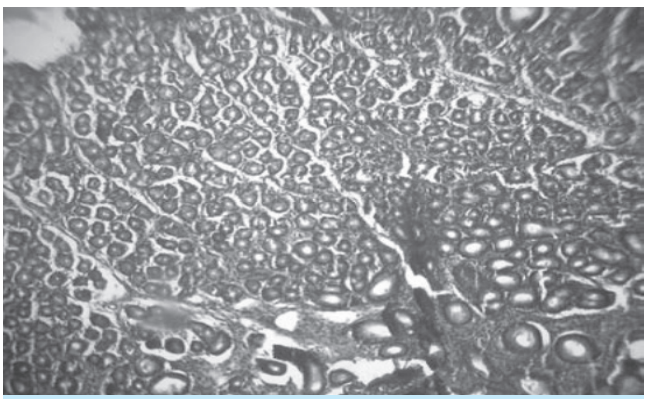


Figure-1. Severe congestion of Gastric mucosa (H& E x 100)

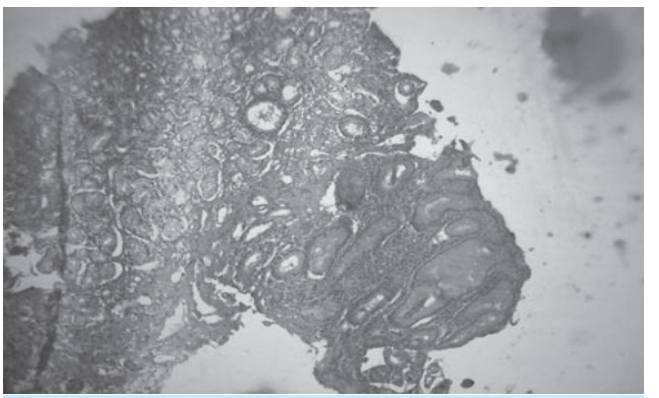


Figure-2. Microscopy shows excessive number of gastric glands (H& E x 100)

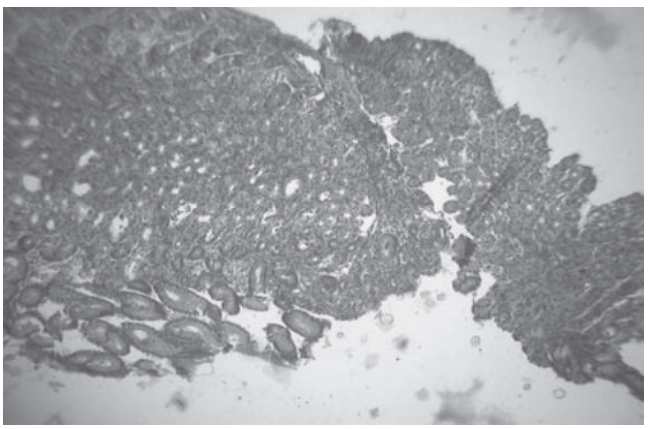


Figure-3. Microscopy shows inflammatory exudate within the gastric mucosa (H & E x 100)

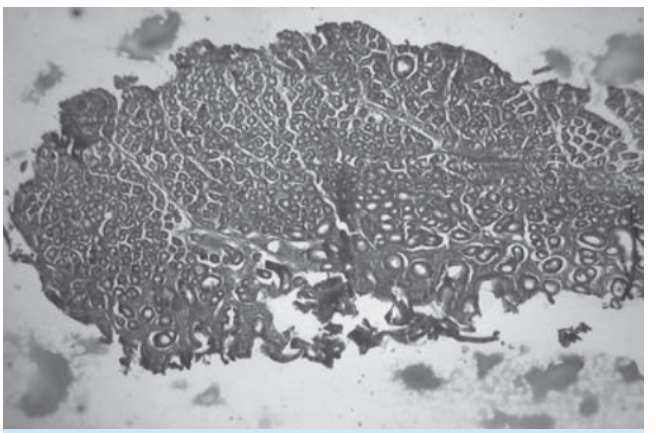


Figure-4. Microscopy shows inflammatory exudate within the gastric mucosa (H & E x 100)

DISCUSSION

Currently, the post necrotic viral liver cirrhosis is very common health problems presenting at the Gastroenterology units of tertiary care hospitals of Sindh, Pakistan. Viral liver cirrhosis has emerged as one of most challenging medical problems in the country.[8,9] Many new cases of liver cirrhosis are being diagnosed on daily basis, multiplying the total cases exponentially. Liver cirrhosis does not distinguish among of any social class, ethnic group, race and age. It may occur at any age, in any social class and ethnic group.[9,10] In developing countries, the post-necrotic viral hepatitis accounts for majority of cases of liver cirrhosis contrary to the alcohol induced liver cirrhosis in developed countries.[10] Liver cirrhosis is responsible for morbidity and mortality.[11] Currently, liver cirrhosis mortality accounts seriously for the related mortality in the Pakistani population[12]

Liver cirrhosis is most common cause of hospitalization in the medical wards.[13] The present is the first from our tertiary care hospital addressing the problem of portal gastropathy in cirrhotic patients and its correlation with CPC score. Age (mean ±SD) of total 85 subjects was found as 47.9±11.5 years. Male predominated with male to female frequency of 56 (65.8%) and 29 respectively. These findings are in keeping with previous studies.[13,14] Portal Gastropathy was noted in 97.7%. Grading of portal gastropathy, increase in gastric glands, and enlargement of gastric glands, inflammatory cell infiltration and gastric mucosa thickness. These findings are in keeping with previous studies.[15,16] PG is one of the common complications of portal hypertension in cirrhotic patients. A range of 4% - 98% of PG prevalence has been reported.[17-19] Present study observed PG in 91.7% of cases, the findings are comparable to above studies.

A multi center study, studied 2720 adult patients (21% cirrhotic, 79% non-cirrhotic) and reported a prevalence of 63.3% in cirrhotic versus 16.9% in non-cirrhotic.[20] Another study reported PG was present in 61%.[21] This prevalence is low compared to present and previous studies.[17-19] Aydogan[4] studied 51 cirrhotic patients and reported high prevalence of PG. The findings of Aydogan[4] are in support to the present study as the findings are comparable. Many pathophysiological mechanisms are responsible for the portal gastropathy in cirrhotic patients.[22] Gastric glands showed increase counts and increased size noted in 60.12% and 57.65% of cases respectively. Pyloric antrum revealed inflammatory cell infiltration of lamina propria. 95.2% inflammatory cells comprised of lymphocytes. Capillary congestion and edema was noted in 9.4% of cases. A previous study[23] reported no correlation of PG and CPC in childhood liver cirrhosis population. The findings of above study disagree the present and previous studies.[11-17] The present study noted positive correlation of Portal gastropathy and Child Pugh Class (CPC) score (R^2=0.5244, p=0.0001). These findings are consistent with previous studies.[24,25] Child-Pugh class B or C showed positive correlation with PG which is in keeping with a previous study.[17-19] While other studies[24,25] failed to find positive correlation of esophageal varices with PG that is inconsistent with our findings. Histological findings of present study are in agreement with previous studies.[15,20] Capillary congestion was noted in 9.4% of cases of present study, this finding agrees with previous reports.[15-21] The evidence based findings of present study suggest the portal gastropathy may be predicted from Child Pugh score and is portal gastropathy is very common in liver cirrhosis patients.

CONCLUSION

The present study reports the characteristic histological findings of increase in size, length and count of gastric glands, capillary congestion and inflammatory cell infiltration in Portal Gastropathy that was noted in 91.7%. Spearman correlation showed positive correlation of Portal gastropathy and Child Pugh Class score.

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REFERENCES

1. Ma C, Chen CH, Lium TC. **The spectrum of gastric pathology in portal hypertension— An endoscopic and pathologic study of 550 cases.** Pathol Res Prac 2016; 212 (8): 704-709.

2. Young B, O`Dowd G, Woodford P. **Wheater`s functional**

histology- A text and Colour Atlas. 6th ed. Churchill Livingstone, Elsevier Philadelphia 2011:346-58.

3. Friedman LS. **Liver, Biliary tract and Pancreatic disorders. In: Mc Phee SJ, Papadaskis, MA, Rabow MW. Current medical diagnosis and treatment.** 51st edition. Mc Graw Hill companies USA 2016; 645-73.

4. Aydogan A, Gulluoglu M, Onder SY, Gokce S, Celtik C, Durmaz O. **Portal gastropathy and duodenopathy in children with extrahepatic and intrahepatic portal hypertension endoscopic diagnosis and histologic scoring.** JPGN 2011; 52 (5):612-6.

5. Kumar A, Mishra SR, Sharma P. **Clinical, laboratory, and hemodynamic parameters in portal hypertensive gastropathy: A study of 254 cirrhotic.** J Clin Gastroenterol 2010; 44:294–300.

6. Stewart CA, Sanyal AJ. **Grading portal gastropathy: Validation of a gastropathy scoring system.** Am J Gastroenterol 2003; 98:1758–65.

7. Burak KW, Lee SS, Beck PL. **Portal hypertensive gastropathy and gastric antral vascular ectasia (GAVE) syndrome.** Gut 2001; 49:866–72.

8. Barakat M, Mostafa M, Mahran Z. **Portal hypertensive duodenopathy:clinical, endoscopic, and histopathologic profiles.** Am J Gastroenterol 2007; 102:2793–802.

9. Fleming KM, Aithal GP, Solaymani-Dodaran M, Card TR, West J. **Incidence and prevalence of cirrhosis in the United Kingdom, 1992-2001: A general population-based study.** J.Hepatol. 2008;49:732-8.

10. Maddrey WC. **Update in hepatology.** Ann Intern Med 2011;134:216-23.

11. Parkash O, Iqbal R, Azam I, Jafri F, Jafri W. **Frequency of poor quality of life and predictors of health related quality of life in cirrhosis at a tertiary care hospital Pakistan.** BMC Res Notes 2012; 5:446.

12. Ismail FW, Mumtaz K, Shah HA, Hamid S, Abbas Z, Abid S, et al. **Factors predicting in-hospital mortality in patients with cirrhosis hospitalized with gastro-esophageal variceal hemorrhage.** Indian J Gastroenterol 2006; 25:240-3.

13. Merkel C, Schipilliti M, Bighin R. **Portal hypertension and portal hypertensive gastropathy in patients with liver cirrhosis: A haemodynamic study.** Dig Liver Dis 2003; 35:269–74.

14. Duche´ M, Ducot B, Tournay E. **Prognostic value of endoscopy in children with biliary atresia at risk for early development of varices and bleeding.** Gastroenterology 2010; 139:1952–60.

15. Poudyal S, Sharma S, Khadga PK, Pathak R, Jha A, Shrestha R. **Frequency and severity of portal hypertensive gastropathy in cirrhosis.** J Inst Med 2017, 39:43-48.

16. Abbas Z, Yakoob J, Usman MW, Shakir T, Hamid S, Jafri W. **Effect of Helicobacter pylori and its virulence factors on portal hypertensive gastropathy and interleukin (IL)-8, IL-10, and tumor necrosis factor-alpha levels.** Saudi J Gastroenterol. 2014; 20(2): 120-7.

17. Burak KW, Lee SS, Beck PL. **Portal hypertensive gastropathy and gastric antral vascular ectasia (GAVE) syndrome.** Gut 2001; 49:866–72.

18. Kumar A, Mishra SR, Sharma P. **Clinical, laboratory, and hemodynamic parameters in portal hypertensive gastropathy: A study of 254 cirrhotics.** J Clin Gastroenterol 2010; 44:294–300.

19. Barakat M, Mostafa M, Mahran Z. **Portal hypertensive duodenopathy: Clinical, endoscopic, and histopathologic profiles.** Am J Gastroenterol 2007; 102:2793–802.

20. Carpinelli L, Primignani M, Preatoni P. **Portal hypertensive gastropathy: Reproducibility of a classification, prevalence of elementary lesions, sensitivity and specificity in the diagnosis of cirrhosis of the liver. A NIEC multicentre study.** New Italian Endoscopic Club. Ital J Gastroenterol Hepatol 1997; 29:533–40.

21. Amarapurkar DN, Dhawan PS, Chopra K. **Stomach in portal hypertension.** J Assoc Phys India 1993; 41:638–40.

22. Buos S, Johnston AN, Webster CR. **Portal hypertension: pathophysiology, diagnosis, and treatment.** JVet Intern Med 2011;25:169-86.

23. El-Rifai N, Mention K, Guimber D. **Gastropathy and gastritis in children with portal hypertension.** J Pediatr Gastroenterol Nutr 2007; 45:137–40.

24. Curveˆllo LA, BrabosaW, Rhor R. **Underlying mechanismof portal hypertensive gastropathy in cirrhosis: a hemodynamic and morphological approach.** J Gastroenterol Hepatol 2009; 24:1541–6.

25. Merli M, Nicolini G, Angeloni S. **The natural history of portal hypertensive gastropathy in patients with liver cirrhosis and mild portal hypertension.** Am J Gastroenterol 2004; 99:1959–65.

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