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Research Artical

CORRELATION BETWEEN PORTAL HYPERTENSIVE GASTROPATHY WITH ETIOLOGY OF DECOMPENSATED CHRONIC LIVER DISEASE

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A B S T R A C T

Introduction: Portal hypertensive gastropathy (PHG) is a common complication of chronic liver disease and portal hypertension (PHTN). Many studies showed PHTN related hemodynamic changes play major role in development of PHG (1), due to contrary studies portal hypertension cannot be the sole factor[2,3]. Patho-physiology of PHG not well established till date (4). New hypothesis for PHG development are local and systemic inflammatory factors due to underlying CLD and etiology of CLD play the major role(5,9,10,11).

Aim: To find out prevalence of PHG across the common etiologies of DCLD and correlation between PHG and etiology of DCLD.

Methods: We conducted prospective cross-sectional analytic study. The study protocol was approved by the ethical review board. We included a total of 400 DCLD (CTP class B/C) patients with established etiology and also cryptogenic who underwent endoscopy in medical gastroenterology department from June 2016 to december 2018. Informed consent was taken from all patients. Among 400 patients of DCLD 130 alcoholic liver disease, 70 HBV, 60 HCV, 80 cryptogenic, 40 NAFLD, 10 wilson's, 6 autoimmune and 4 secondary biliary cirrhosis related patients were present. PHG was diagnosed according to NIEC classification by EGD(12). Prevalence of PHG in each group of patient calculated in percentage. Association between etiology of DCLD and PHG was assessed by logistic regression analysis. OR (odds ratio) with 95% CI calculated. Considered significant association when p value <0.05

Results: PHG were present in 76.9%(100/130), 64%(45/70), 70%(42/60), 32.5% (26/80), 70%(28/40), 40%(4/10), 66.6%(4/6) and 25%(1/4) of Ethanol, HBV, HCV, cryptogenic, NAFLD, Wilson's, autoimmune hepatitis, and secondary biliary cirrhosis related DCLD patients respectively. Logistic regression analysis shows ethanol, HBV, HCV, Autoimmune etiology of DCLD significantly associated with PHG.

Conclusion: PHG is one of the most common complications of DCLD with PHN but factors implicating in pathogenesis are inconclusive. Our study showed etiologies of DCLD like ethanol, HBV, HCV and autoimmune hepatitis having higher prevalence and significant association with PHG.

INTRODUCTION

Portal hypertensive gastropathy (PHG) is an important underappreciated cause of morbidity in patients with cirrhotic or non-cirrhotic PHTN. The etiology of PHG is inadequately understood. Portal hypertension is necessary but insufficient to develop PHG because many patients have portal hypertension without PHG (1). PHG increases in frequency with more severe portal hypertension, advanced liver disease, longer liver disease duration, presence of oesophageal varices, and endoscopic variceal obliteration. PHG pathogenesis is related to a hyperdynamic circulation(1), induced by PHTN, characterized by increased intrahepatic resistance to flow, increased splanchnic flow, increased total gastric flow, and most likely decreased gastric mucosal flow. New hypothesis for PHG development are local and systemic inflammatory factors due to underlying CLD and etiology of CLD play the major role. Nitric oxide, free radicals, tumor necrosis factor-alpha, and glucagon may contribute to PHG development (5-9,10,11).

Aim: To find out prevalence of PHG across the common etiologies of DCLD and correlation between PHG and etiology of DCLD.

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METHODS

We conducted cross-sectional analytic study. The study protocol was approved by the ethical review board. We included a total 400 patients of DCLD (CTP class B/C) with established etiology and also cryptogenic patients, who underwent EGD in Institute of Medical Gastroenterology, Madras Medical College, Chennai from June 2016 to December 2018. Informed consent was taken from all patients. Basal parameter and routine blood investigation were done (Table1). PHG was diagnosed according to the NIEC classification by EGD [(12)]. PHG is defined as mild when only a mosaic-like pattern of any degree is present and severe when red point lesions, cherry red spots, or black-brown spots are present. Out of 400 patient 130 ALD, 70 HBV, 60 HCV, 80 cryptogenic, 40 NAFLD, 10 wilson's, 6 autoimmune and 4 secondary biliary cirrhosis related patients were present. We excluded patients who had combined etiology , CKD, Grad 3/4 hepatic encephalopathy, autoimmune connective tissue disorders and patients suffering from any malignant diseases. Prevalence of PHG in each group of patient calculated in percentage. Association between etiology of DCLD and PHG analysed by logistic regression analysis. OR (odds ratio) with 95%CI was calculated and considered significant association when p value <0.05.

RESULTS

Out of 400 DCLD patients 62.5% (250) were having PHG. In 250 PHG patients 26% were having severe PHG according to NIEC classification. Basal parameter were compared between PHG patients with non-PHG. There was no significant difference observed between two groups (Table1).

Table 1 Basal parameters of all patients

Parameters	PHG	Non-PHG
Total number of patients[N]	250	150
Age[year]*	55.2	55.6
Hemoglobin(grams/dl)*	10	10.2
Platelat (10^9 per cmm)*	78	82
PT/INR*	16/1.2	17/1.29
Total bilirubin(mg/dl)*	3.2	2.9
Albumin(g/dl)*	2.8	2.9
Number of patients with Ascitis	238	144
Number of paients with Hepatic encephalopathy grade 1-2	58	54

*Mean of the parameters has been mentioned

Prevalence of PHG was 76.9%(100/130), 66% (45/70), 74%(42/60), 32.5% (26/80), 50%(20/40), 40%(4/10), 86%(6/7) and 25% (1/4) in ethanol, HBV, HCV, cryptogenic, NAFLD, Wilson's, autoimmune hepatitis, and secondary biliary cirrhosis related DCLD patients respectively. Association between etiology of DCLD and PHG were analysed by logistic regression analysis. Calculated OR with 95% CI for Ethanol 0.18 (0.11-0.2), HBV 0.33 (0.19-0.56), HCV 0.25 (0.14-0.46) and autoimmune hepatitis 0.10 (0.01-0.85) suggestive of significant association with of PHG with P value <0.05. Other etiology like cryptogenic, NAFLD, Wilsons, secondrary biliary cirrhosis were not significantly associated with PHG (Table2).

Table 2 Comparison between PHG and non-PHG patients in each group and significance

Etiology	PHG	NON-PHG	OR(95%CI)	Significance
Ethanol	100	30	0.18(0.11-0.2)	<0.0001
HBV	45	25	0.33(0.19-0.56)	<0.0001
HCV	42	18	0.25(0.14-0.46)	<0.0001
Cryptogenic	26	54	1.04(0.62-1.72)	0.86
NAFLD	20	20	0.6(0.31-1.15)	0.124
Wilson's	4	6	0.87(0.24-3.2)	0.87
Autoimmune hepatitis	6	1	0.10(0.01-0.85)	0.03
Secondry biliary cirrhosis	1	4	2.4(0.26-21.67)	0.43

DISCUSSION

PHG is well known complication of CLD and PHTN, but etiopathogenesis and factors implicating in development PHG is not well established. The morbidity associated with PHG underappreciated in patients with cirrhotic or non-cirrhotic portal hypertension. The reported prevalence of PHG varies greatly from 20% to 75% in patients of cirrhosis and portal hypertension [13,14,15]. Some studies showed no significant association between portal hypertension and development of PHG [16,17,18,19].

The frequency of PHG higher in portal hypertension with cirrhosis than in portal hypertension without cirrhosis. Sarin *et al*[16] reported that patients with cirrhosis had a significantly higher frequency of PHG (37.1%) than that in patientswith NCPF (16.7%; $P< 0.05$), or non-cirrhotic EHPVO (8.7%; $P < 0.01$) and had a more aggressive course of PHG with progression to more severe PHG with time and another study by Sarin *et al*[16] in a 50 patients with portal hypertension from various etiologies undergoing endoscopy, reported 6 (16.6%) of 36 patients with underlying cirrhosis had a mosaic pattern of PHG, whereas only 1 (8.5%) of 12 patients with EHPVO had a mosaic pattern of HPG.

In our study we found out prevalence of PHG were significantly higher in DCLD patients with etiology of ethanol (77%), HBV (66%), HCV (74%) and autoimmune hepatitis (86%) as compared to other etiology (<50%). Ethanol, HBV, HCV and autoimmune hepatitis were having significant association with development of PHG, odds ratio with 95% CI of 0.18 (0.11-0.2), 0.33 (0.19-0.56), 0.25 (0.14-0.46) and 0.10 (0.01-0.85) respectively with significant P value <0.05. This is suggestive of these etiological factors of DCLD play major role as independent risk factors in development of PHG.

Till now majority of studies reported etiology of cirrhosis did not affect PHG frequency or severity[20,21,19,22]. Abbasi *et al*[20] reported among 217 patients with cirrhosis that PHG was not associated with cirrhosis etiology ($r = 0.056$; $P = 0.414$), among 144 patients with hepatitis C, 36 patients with hepatitis B, 21 patients with cryptogenic cirrhosis, 15 patients with hepatitis C and hepatitis B co-infection, and 1 patient with hepatitis B and hepatitis D co-infection. Kim *et al*[21] similarly did not find a correlation between cirrhosis etiology and severity of PHG in a prospective study of 331 patients with cirrhosis, including cirrhosis etiologies of alcohol in 250, hepatitis B in 68, hepatitis C in 15, and cryptogenic cirrhosis in 8.

Gupta *et al*[19] in a study of 230 patients with cirrhosis and ooesophageal varices found no significant difference in the rate of PHG between patients with cirrhosis from alcohol [32 of 52 patients (62%)] *vs* cirrhosis from other causes [110 of 178 patients (62%), P = NS]. Iwao *et al*[22] in an endoscopic study of 47 patients with histologically proven cirrhosis reported no significant differences in etiology of cirrhosis between patients without PHG *vs* patients with mild or severe PHG. The etiologies of cirrhosis in this study included 7 from alcoholism *vs* 8 from chronic hepatitis in patients without PHG, 5 from alcoholism *vs* 10 from chronic hepatitis in

patients with mild PHG, and 8 from alcoholism *vs* 9 from chronic hepatitis in patients with severe PHG.

CONCLUSION

PHG is one of the most common complication of DCLD with PHN but factors implicating in pathogenesis are inconclusive. Our study showed etiology of DCLD like ethanol, HBV, HCV and autoimmune hepatitis were having significantly higher prevalence and association with PHG as compared to other etiology in contrary to other majority of studies. Regarding pathogenesis and factors implicating in PHG development needed further large scale study.

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