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PREVALENCE OF GALL STONE DISEASE IN HEPATITIS B AND HEPATITIS C VIRAL INFECTION

General Medicine

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ABSTRACT

The aim of this study was to evaluate the prevalence of gall stone disease in hepatic injury due to Hepatitis B and Hepatitis C viral infection and to know their association with gall stone disease.

Gall stone disease (GSD) is very common in developed and industrialized countries [1] .It is one of the most prevalent gastrointestinal disease leading to remarkable burden to healthcare system[2]. Some factors are well known and documented like four 'Fs'- female, fat, forty, fertile. Age and cigarette smoking are also an important risk factors of gall stone disease [3][4][5] .Impaired metabolism of cholesterol, bile acid, bilirubin causes recurrent hepatobiliary disease, leading to formation of gall stones[6]. Recent studies shows that gall stones are detectable in liver cirrhosis [7][8]. Patients affected with HBsAg and hepatitis C has increased risk of gall stone formation as viral hepatitis finally leads to liver cirrhosis [9][10][11][12]. Recent survey also documents that gall stone disease is more common in male as compared to female who suffers from chronic hepatitis C virus [13] .Hepatitis B is very common in India and represent as intermediate endemic level[14] .hepatitis C is also posing a major concern especially in Punjab. One out of hundred person in India may be chronically infected with hepatitis C [15] and its prevalence is relatively is higher in Punjab which is about 5.2%. Various risk factors acquiring HCV infection are sharing needle among injecting drug use, dental treatment, history of surgery and unprotected sex [16].Relationship between metabolic factors and Gall bladder stone and the impact of chronic hepatitis B and Hepatitis C on Gall bladder stone have been documented in some studies and needs further evaluation. Materials and Methods This is a cross sectional study conducted in AIMSR, Bathinda, Punjab and SGRRIM, Dehradun The study was carried out in 385 patients who attended either medicine OPD or surgery OPD either with already diagnosed hepatitis B or Hepatitis C or symptoms suggestive of liver disease or with digestive symptoms (other than hepatobiliary).Three groups were made – Group 1-patients infected with chronic HCV, Group 2- patient infected with HBsAg and Group 3- (control group) Patients without viral hepatitis for the purpose of study.Patients who had no clinical or biological signs of liver disease (hepatitis B or Hepatitis C) were taken as control group. The control group was representative of the population at risk of the outcome (gallstone disease) Serum biochemistry test LFT and hepatitis B surface antigen (HB_sAg) and antibody to hepatitis C (HCV) was done. An ultrasound abdomen (USG) was done to diagnose gall stone disease. Clearance from the institutional ethical committee was obtained for the study. Consent from the patients was taken who were subject of the study.

INCLUSION CRITERIA: Patient of both gender male and female aged between ≥20 years to ≤ 70 years were taken up for the purpose of study.Exclusion criteria- alcoholic liver disease, traumatic liver assault, fatty liver due to cause other than hepatitis B and C, patients suffering from hepatitis B and hepatitis C simultaneously.

CONCLUSION: There is increased prevalence of gall stone disease in HCV patients with chronic hepatitis as compared to patients positive for HBsAg and control. Gall stone disease is present in HCV patients at younger age and is more prevelent in men in the same age group as compared to control.

KEYWORDS

Aims and objective - The aim of this study was to evaluate the prevalence of gall stone disease in hepatic injury due to Hepatitis B and Hepatitis C viral infection and to know their association with gall stone disease.

Introduction

Gall stone disease (GSD) is very common in developed and industrialized countries [1] .It is one of the most prevalent gastrointestinal disease leading to remarkable burden to healthcare system[2]. Some factors are well known and documented like four 'Fs'- female, fat, forty, fertile. Age and cigarette smoking are also an important risk factors of gall stone disease [3][4][5] .Impaired metabolism of cholesterol, bile acid, bilirubin causes recurrent hepatobiliary disease, leading to formation of gall stones[6]. Recent studies shows that gall stones are detectable in liver cirrhosis [7][8]. Patients affected with HBsAg and hepatitis C has increased risk of gall stone formation as viral hepatitis finally leads to liver cirrhosis [9][10][11][12]. Recent survey also documents that gall stone disease is more common in male as compared to female who suffers from chronic hepatitis C virus [13].

Hepatitis B is very common in India and represent as intermediate endemic level[14] .hepatitis C is also posing a major concern especially in Punjab. One out of hundred person in India may be chronically infected with hepatitis C [15] and its prevalence is relatively is higher in Punjab which is about 5.2%. Various risk factors acquiring HCV infection are sharing needle among injecting drug use, dental treatment, history of surgery and unprotected sex [16].

Relationship between metabolic factors and Gall bladder stone and the impact of chronic hepatitis B and Hepatitis C on Gall bladder stone have been documented in some studies and needs further evaluation.

Materials and Methods

This is a cross sectional study conducted in AIMSR, Bathinda, Punjab and SGRRIM, Dehradun The study was carried out in 385 patients who attended either medicine OPD or surgery OPD either with already diagnosed hepatitis B or Hepatitis C or symptoms suggestive of liver disease or with digestive symptoms (other than hepatobiliary). Three groups were made – Group 1-patients infected with chronic HCV, Group 2- patient infected with HBsAg and Group 3- (control group) Patients without viral hepatitis for the purpose of study.

Patients who had no clinical or biological signs of liver disease (hepatitis B or Hepatitis C) were taken as control group. The control group was representative of the population at risk of the outcome (gallstone disease)

Serum biochemistry test LFT and hepatitis B surface antigen (HB_sAg) and antibody to hepatitis C (HCV) was done. An ultrasound abdomen (USG) was done to diagnose gall stone disease. Clearance from the institutional ethical committee was obtained for the study. Consent from the patients was taken who were subject of the study.

INCLUSION CRITERIA: Patient of both gender male and female aged between ≥20 years to ≤ 70 years were taken up for the purpose of study.

Detailed history was taken and thorough clinical examination was done in all the patients.

Exclusion criteria- alcoholic liver disease, traumatic liver assault, fatty liver due to cause other than hepatitis B and C, patients suffering from hepatitis B and hepatitis C simultaneously.

Observation and result

A total of 385 patients were taken for the purpose of study. Out of which 161 were male patients and 224 were female patients. Out of 385 patients, 109 (28.3%) were positive for chronic anti HCV, 59(15.3%) were positive for HBsAg . 217(56.3%) were neither positive for HBsAg nor for anti-HCV, which was taken as control group. In HCV group, 98 patients were male and 11 patients were female. In HBsAg Group 24 patients were male and 35 patients were female. In control group, male patients were 39 and female patients were 178. (Table 1) Ultrasound examination revealed the presence of gall stone disease in 71(18.4%) of total 385 patients. out of 109 Anti HCV patients, 29(26.6%) were positive for GSD. GSD was present in 27.5% cases of male patients and 18.1% cases of female patients in HCV group. Out of 59 patients in HBsAg group , 7(11.8%) were positive for GSD out of which GSD was present in 12.5% cases of male patients and 11.4% cases of female patients .Out of 217 of non hepatitis patients(control group) 35(16.1%) were positive for GSD, out of which 7.6% cases of male patients and 17.9% cases of female patients. (Table 1) and (Table2).

Table-1 Basic characteristics of patients in the study groups and the control group

HCV group N=109				HbsAg group N=59				Control Group N=217			
Male n=98		Female n=11		Male n=24		Female n=35		Male n=39		Female n=178	
GSD present	GSD absent	GSD present	GSD absent	GSD present	GSD absent	GSD present	GSD absent	GSD present	GSD absent	GSD present	GSD absent
27 (27.5%)	71 (72.4%)	2 (18.1%)	9 (81.8%)	3 (12.5%)	21 (87.5%)	4 (11.4%)	31 (88.5%)	3 (7.6%)	36 (92.3%)	32 (17.9%)	146 (82%)

Total No. of patients – 385, Total No of Male- 161, Total No. of Female-224, GSD=gall stone disease

Table –2 Age group distribution of GSD in Male and Female in study groups and control group

Age group	HCV Group		HBsAg Group		Control Group	
	Male(27) (93.1%)	Female(2) (6.8%)	Male (3) (42.8%)	Female(4) (57.1%)	Male(3) (8.5%)	Female(32) (91.4%)
20-40 years	11	1	1	3	1	13
41-60 years	13	1	2	1	2	18
>60 years	3	0	0	0	0	1
Total no. of GSD	29(26.6%)		7(11.8%)		35(16.1%)	

Total no .of GSD positive in all groups-71, GSD= gall stone disease

Fig-1 Gall stone disease in HCV, HBsAg and control group.

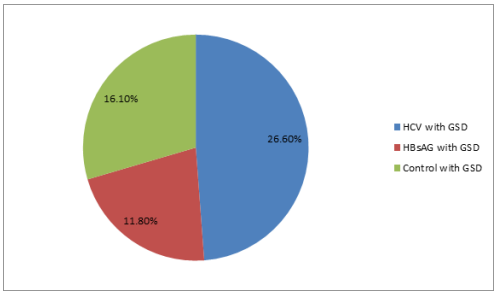


Fig-2 Age distribution of men and women with GSD in HBsAg, chronic HCV and control group

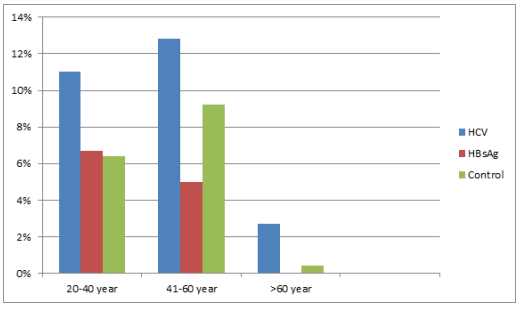
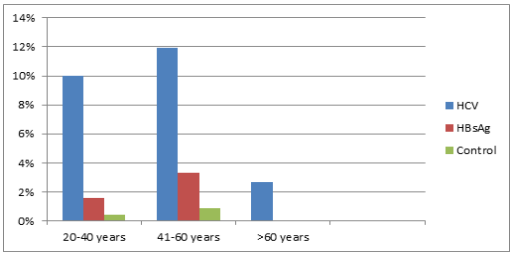
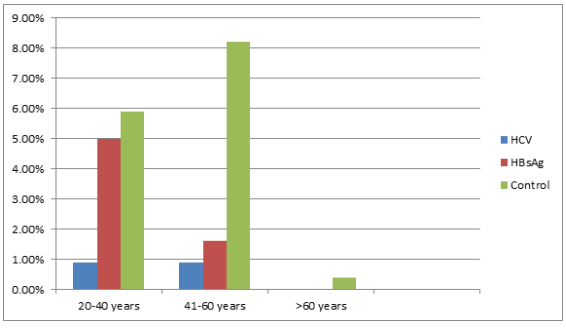


Fig-3 Age distribution in men with GSD in chronic HCV, HBsAg and Control group



The prevalence of GSD is significantly higher in male in HCV patients in two age groups: 20–40 years and 41–60 years.

Fig -4 Age distribution of women with GSD in chronic HCV , HBsAg and control



Relative risk of patients with chronic HCV and HBsAg to suffer from GSD and Relative risk of patients of control group to suffer from GSD as compared to patients infected with chronic HCV and HBsAg was calculated

Discussion-

HCV is one of the important factors leading to chronic liver disease. Several complex mechanisms are involved leading to inflammation, insulin resistance, steatosis, fibrosis and apoptosis which are further additive factors in the development of liver disease and thus formation of gall stones [17] .Chronic liver disease and liver cirrhosis poses significant risk factors for the development of gall stones[21] which includes mechanism like reduced bile synthesis and transport [18] .It also leads to diminished cholesterol secretion and reduced motility of gall bladder which further leads to gall stone formation [19][20] .Recent study done by Stroffolini et al. showed that prevalence of gall stone disease is higher in patients infected with chronic HCV than those who are infected with HBsAg [12] Acalovschi et al.also reported that HCV infection was risk factor for Gall stone as compared to controls[22] .

In our study also prevalence of Gall stone in HCV group (26.6%) is higher than HBsAg (11.8%) and Control group (16.1%. Chang et al. showed that gall stone in HCV existed in Male but not in female (23), which is also true in our study. GSD in HCV in male is (24.7%) and in female is (1.8%).

Many studies shows that age is an independent factor for the development of gall stone disease. In our study , prevalence of GSD is increasing in all the groups with age , where two peak values are noted in HCV group in male at 20- 40 years and 41- 60 years. In HBsAg group, prevalence is drastically low in both male and female in

advanced age. This may be because most of the adults approximately (90- 95%) fully recover within 6 months who are exposed to HBV and only a small percentage of patients suffering from HBV land up to chronic Hapatitis B, unless they are successfully treated with medication.

The mean age of patient with GSD in HCV group was lower as compared to the control group which suggest that GSD occur earlier in patients who get infected with HCV. NHANES survey found that GSD was more common in men infected with HCV as compared to control, whereas GSD in women in HCV group is not higher as compared to GSD in women in control group [24] .Insulin resistance is increased in chronic HCV infection and cholesterol gall stone. Insulin resistance causes bile saturation in cholesterol which may be the link between chronic HCV and gall stone disease [25][26] .In our study also men in HCV group suffering with GSD is significantly higher than men in control group in the same age group. (P= 0.010)(OR=2.108, 955 Cl 1.287-3 confirms an increased risk of men with HCV hepatitis Vs control to have GSD.

CONCLUSION: There is increased prevalence of gall stone disease in HCV patients with chronic hepatitis as compared to patients positive for HBsAg and control. Gall stone disease is present in HCV patients at younger age and is more prevelent in men in the same age group as compared to control.

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