ORIGINAL ARTICLE

Prevalence of Gallstone Disease in Patients of Hepatitis C Virus Infection

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ABSTRACT

Aim: To determine the association of HCV with gallstone disease in patients of hepatitis C virus infection.

Methods: This case control study was planned in Bakhtawar Amin Memorial Hospital. One hundred patients of hepatitis C within a duration of one year March-2016 to March-2017 was recruited. For HCV diagnosis, we used ELIZA test, as it is more accurate than kit screening methods. While the hundred patients in control groups were that who were not having any liver disorder. Diagnosis of gallstone disease was based on ultrasonography reporting.We noted all required patients variables and entered them in SPSS v23. For comparison of groups, we used chi-square test or paired sample t-test.

Results: Patients of cases and control groups were comparable regarding age, gender and Body mass index. The mean age was 46.2±7.4 years among cases and 44.9±6.8 among controls (p-value 0.2). There were 60 males in case group and 63 males in control group (p-value 0.4). Regarding prevalence of gallstone disease (GSD), GSD was diagnosed in only 8% patients in control group and 22% patients in cases group. While 92% patients in control group were of not having any gallbladder disorder and 78% patients in cases group were free of all gallbladder disorders (p-value 0.005).

Conclusion: HCV infection even in the absence of liver cirrhosis is an independent predictor of gallstone disease.

Keywords: hepatitis C virus, gallstone disease

INTRODUCTION

Prevalence of gallstone disease (GSD) is on the rise with a current rate of 2-15% depending upon different regions[1,2].Prevalence is high in industrialized regions[3]. Studies have described various risk factors of GSD, which include raised female sex hormones, hypercholesterolemia, obesity and sickle cell disease[4,5]. GSD has many adverse effects on health and quality of life and especially on health care cost. Pakistan has a 2nd highest prevalence of GSD with rate of 4.7% after 15% in Egypt[6].

Studies have found that liver disorders such as hepatitis C virus infection also have a significant effect in increasing the likelihood of GSD[7].Some authors concluded that alcohol intake also increases the risk and severity of GSD, while others found that alcohol intake have beneficial effects and it decreases the symptoms and severity of GSD.[8,9] Authors have also concluded that there is no effect of hepatitis B virus infection on the incidence of GSD.[10,11] One study found that GSD occurs in early life in patients of HCV infection and GSD mostly effects bile duct in these patients[12].

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Hepatitis C virus (HCV) infection is also highly prevalent in Pakistan with prevalence rate of 4.8%[13].

Therefore, it may be HCV infection that is responsible for higher prevalence of GSD in Pakistan. We found only one study from Pakistan on this critical issue and these authors found a significant positive correlation of HCV with GSD, with a higher prevalence rate in men and disease onset in younger age when compared with patients having no HCV[14].

Keeping in view the higher prevalence of HCV and GSD and complication of GSD and its effects on hospital burden and morbidity and mortality due to GSD.In this study, we evaluated the association of HCV with gallstone disease in patients of hepatitis C virus infection.

METHODS

This case control study was planned in Bakhtawar Amin Memorial Hospital. One hundred patients ofhepatitis C within a duration of one year March-2016 to March-2017 was recruited. For HCV diagnosis, we used ELIZA test, as it is more accurate than kit screening methods. While the hundred patients in control groups were that who were not having any liver disorder. Diagnosis of gallstone disease was based on ultrasonography reporting. All ultrasounds were done in our hospital and by two

consultants. Patients who were having liver disorders other than HCV and those with previous diagnosis of GSD were excluded.

We noted all required patients variables such as age, gender, BMI, prevalence of GSDand entered them in SPSS v23. For comparison of groups, we used chi-square test or paired (independent) sample t-test for analysis.

RESULTS

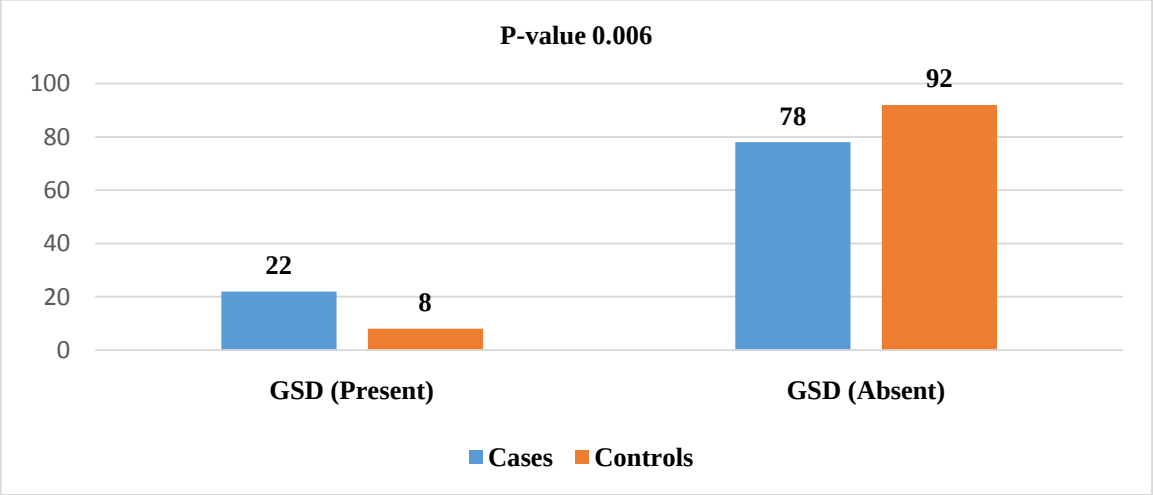
There were equal number 100, 100 patients in each group. Patients of cases and control groups were comparable regarding age, gender and Body mass index. The mean age was 46.2±7.4 years among cases and 44.9±6.8 years in controls (p-value 0.2). There were 40 females and 60 males among case group and 37 females and 63 males in control group (p-value 0.4). Patients were also comparable regarding body mass index (BMI). Mean BMI was 25.7±0.6 Kg/m^2 in case group and 26.4±0.3 Kg/m^2 in control group (P-value 0.12) [Table 1].

Regarding prevalence of gallstone disease (GSD), GSD was diagnosed in only 8.0% patients in control group and 22% patients in cases group. While 92% patients in control group were of not having any gallbladder disorder and 78.0% patients in cases group were free of all gallbladder disorders (p-value 0.005) [Fig. 1].

Table 1. Baseline Characteristics.

	Cases	Controls	P-value
Age (Years)	46.2±7.4	44.9±6.8	0.2
Female (%)	40	37	0.4
Male (%)	60	63	
BMI(Kg/m^2)	25.7±0.6	26.4±0.3	0.12

Fig. 1. Prevalence of Gallstone Disease (GDS) Between Cases and Control Groups.



DISCUSSION

Gallstone disease has become a common issue and has put a heavy load on hospital supplies and demands. Cholesterol stones are the commonest one. Studies have found that reduced synthesis of bile, reduced gallbladder motility and decreased production of cholesterol are the major risk factors of gallstones. In this study, we found higher prevalence of GSD in patients who presented with HCV as compared to control groups.

Many studies have concluded that liver cirrhosis is associated with higher prevalence of gallstones by we few studies have found that HCV infection in the absence of liver cirrhosis is also associated with increased risk of GSD[15-17].This association was first time determined in 2000 in Taiwan by Chang et al. who found a higher prevalence of GSD in HCV positive patients 11.7% versus only 6.0% in healthy subjects[18].A study conducted in Romania by Acalovschiet al. found 19% incidence of GSD in patients of HCV.[3]A study from Egypt conducted in 2014, found 15.68% incidence of GSD in HCV patients compared to only 9.9% in healthy subjects[19].A study conducted in Pakistan have found 18.65% prevalence of GSD in HCV positive patients as compared to only 6.65% in control group of patients.[14] In our study, prevalence of GSD was 22% in HCV patients and 8% among healthy subjects.

Studies have also described other risk factors of gallstone disease.Fornari et al. found that male gender is also a risk factor of GSD probably due to testosterone hormone in male patients.[20] They also found that increased level of progesterone hormone

during pregnancy also have adverse effects on gallstone emptying thus increasing the risk of GSD. The exact reason of higher prevalence of GSD in HCV patients is not completely understood, it may be due to higher risk of gallbladder and other infections in these patients[21].Loriot et al. found that HCV has direct effects on gallbladder epithelium.[22]Investigators have also found the presence of HCV or HCV antibodies in autopsy specimens of gallbladder epithelium.[23,24]However the reason for GSD in patients of liver cirrhosis is multifactorial e.g., the effects of liver cirrhosis on motility and bile production of gallbladder and all conducted studies have found very high prevalence of GSD in these patients as compared to the patients with HCV alone[25,26].

CONCLUSION

In our study, we found that HCV infection even in the absence of liver cirrhosis is an independent predictor of gallstone disease.

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