ORIGINAL ARTICLE

ASSOCIATION OF GALLSTONE AND HELICOBACTER PYLORI

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ABSTRACT

Objective: To determine the association of helicobacter pylori as a risk factor for cholelithiasis.

Material and Methods: This case control study was done at Dow University Hospital, Karachi ,Pakistan,from October 2017 to April 2018.Total 90 patients, 45 in each group complaining of upper abdominal pain, with gallstones diagnosed on ultrasound other 45 patients coming to hospital with any pathology other than gallstones were selected in this study. Serum H.pylori antibodies test were done on all the patients. Those with the presence of gallstone were offered laparoscopic cholecystectomy.

Results: The average age of the patients was 40.83±10.85 years. Risk of serum H.pylori antibodies was less likely in case than control [OR=0.475; 95%CI: 0.16 to 1.42] but there was no significant association between H. pylori and gallstones (p=0.178).

Conclusion: There were no significant association between H.pylori and gallstones. There is a need of more studies in order to determine the role of Helicobacter in hepatobiliary diseases and also for the development of specific tests to identify these bacteria.

Key Words: Helicobacter Pylori, Gallstones, Risk factor.

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INTRODUCTION

Cholelithiasis is one of the most common surgical diseases in adult population affecting about 10% of adult population in our country[1]. Cholecystectomy is a very frequently performed procedure in our country with frequency around 11% [2]. A study in 2006 in United States estimated more than 700,000 cholecystectomies annually[3] making it the most frequently performed elective operation.

There are many risk factors identified for gallstones. Some are non-modifiable like female gender, increasing age[3] and family history. Others are modifiable like rapid weight loss, obesity, high cholesterol diet, biliary stasis etc.

Helicobacter Pylori is the recognized organism associated with gastritis, peptic ulcer, and gastric cancer[4] and other extra gastric diseases[5]. Bacterial population including H. pylori have been implicated for having a possible role in the formation of cholesterol gallstones[6,7]. Bacteria like E.coli[8] are also involved in the formation of pigment stones and are responsible for the hydrolysis of bilirubin conjugates leading to monoconjugate and unconjugated bilirubin, which are present in pigment stones as calcium bilirubinate[9].

Gallstones are one of the major risk factors of gallbladder carcinoma[10,11]. Gallstones and its complications like acute cholecystitis, Pancreatitis, Cholangitis etc are very frequent reasons for patients visiting emergency room[12].

Although many risk factors have been identified for gallstones, there is deficiency of data implying role of helicobacter pylori as a risk factor in gallstone disease[12]. A Recent study shows the presence of serum H.pylori antibodies in 80% of patients with gallstones compared

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with only 47.5% patients without gallstones[13].

There is still a controversy over the role of helicobacter pylori in the pathogenesis of gallstones. The present study aims at observation of the possible association of helicobacter pylori as a risk factor in the causation of gallstone disease. Appropriate assessment of risk factors and causative factors for gallstones may help in preventing formation of gallstones and its complications like cholecystitis, cholangitis, pancreatitis and obstructive jaundice.

MATERIAL AND METHODS

This is case control study conducted at Dow University Hospital, Karachi,Pakistan from October 2017 to April 2018.Total 90 patients both males and females of age between 25 - 65 yrs were included in the study. Using 1:1 ratio, half were cases and half controls. There were 45 patients in group complaining of upper abdominal pain, with gallstones diagnosed on ultrasound, showing echogenic foci in gallbladder lumen and other 45 patients coming to hospital with any pathology other than gallstones were selected in this study. Serum helicobacter pylori antibodies test were done on all the patients. The test was considered positive if the values were above 0.9RU/L and was negative if below 0.9RU/L. Those with the presence of gallstone would be offered laparoscopic cholecystectomy. All The patients not willing to be included, who have already been treated for helicobacter pylori or those with co-morbidities like diabetes confirmed by RBS/FBS, or chronic liver disease confirmed by presence of ascites were excluded from the study.

Statistical analysis was performed with SPSS software version 20. Qualitative data like gender was presented in percentages. Mean ± standard deviation was computed for age. Association between h.pylori and gallstones was decided by using chi square test where p value of 0.05 was used for statistical significance and Odds Ratio was calculated.

Stratification was done with regards to age and gender. Post stratification chi square test was applied by taking p value 0.05 as statistically significant. Odds ratio was calculated.

RESULTS

The average age of the patients was 41.10 ± 10.3 years. Age distribution of the patients according to groups is shown in figure 1. There were 31(34.4%) males and 59(65.6%) females.

Rate of Serum H. pylori antibodies was 75.6% (34/45) in cases and 86.7 % (39/45) in control. There were no significant association between helicobacter pylori and cholelithiasis (p=0.178). Risk of serum H. pylori infection was less likely in cases than control [OR=0.475; 95%CI: 0.16 to 1.42] as shown in table 1. Age and gender effect was control by stratification but there were no significant change in rate of serum H. pylori antibodies between.

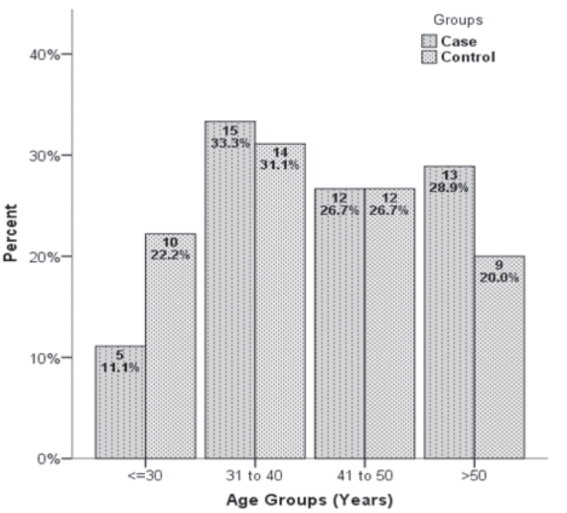

Fig 1: Age Distribution with respect to groups n= 90

Table 1: Association of helicobacter pylori as a risk factor for cholelithiasis.

Serum H. Pylori Antibodies	Case n=45	Control n=45	Total	OR [95%CI]
Present	34 (75.6%)	39 (86.7%)	73 (81.1%)	0.475 [0.16 to 1.42]
Absent	11 (24.4%)	6 (13.3%)	17 (18.9%)	

DISCUSSION

Helicobacter pylori may be causing gallstones as pointed out by their presence in infected gallbladders. Western blot, PCR, immunohistochemistry, serological and histological analysis has been used to detect their presence in gallstones. Studies suggest a relationship between positive H. pylori test in the stomach and cholelithiasis[14,15]. Pigment stones particularly seem to be formed by helicobacter pylori[16].

In present study rate of Serum H. pylori antibodies was 75.6% in cases and 86.7% in control. There were no significant association between helicobacter pylori and gallstones (p=0.178). Similar result was also reported in other studies. The results of other studies have shown that there is no role of H. pylori infection in stone formation in the gallbladder[17-19].

In a study by Arismendi - Morillo and colleagues, helicobacter pylori was shown to be involved in only 6% of cases of chronic cholecystitis[17]. In a similar study, Bostanoglu and colleagues showed no association of helicobacter pylori with cholecystitis[17]. Also, study of Yucebilgili and colleagues failed to show any association between gallstones and helicobacter pylori[20].

In a study by Helaly, more than 1/3rd of the patients with cholecystitis also had helicobacter pylori in their blood[16]. Likewise, Yakoob and colleagues demonstrated presence of h.pylori in 25 % cases with cholecystitis[14]. In other studies, association varied from 7% to 55% between gallstones and helicobacter pylori[21, 22].

Findings were insignificant mainly due to the scarce number of patients; therefore, in order for a better assessment of the association of H. pylori with gallstones, a multicentric randomized study with a large sample size in required. Even though controversy still exists over the role of h.pylori in cholelithiasis, higher incidence of H. pylori in patients with gallstones associated cholecystitis may point towards it being a vital factor in the formation of gallstones.

In order to properly study the role of helicobacter pylori in the causation of biliary diseases, improvisation is required in the conditions for growth and harvesting h.pylori from the biliary tract. There is a need of more studies in order to determine the role of Helicobacter in hepatobiliary diseases and alsofor the development of specific tests to identify these bacteria. This can be done on large-scale autopsy studies and experimental infection of the biliary tract in animal models.

CONCLUSION

There was no significant difference between case and control groups of this study for presence of helicobacter pylori antibody, which alone cannot establish the association of helicobacter pylori in causation of gallstones.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Kerawala AA: Collection and design collection and assembly of data analysis and interpretation of the data statistical expertise.

Bakhtiar N: analysis and interpretation of the data drafting of the article critical revision of the article for important intellectual content.

Abidi SS: Collection and assembly of data ,analysis and interpretation of the data.

Awan S: Collation and assembly of data analysis and interpretation of the data.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.