

The Likelihood of Helicobacter Pylori presence in pre Cholecystectomy gall bladder with or without Cholecystitis - A case control study

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ABSTRACT

Background: Helicobacter pylori is the major pathogen in the etiology of gastric and duodenal ulcers. Hence, there might be a possibility of an underlying H. pylori infestation of gall bladder in causing acute cholecystitis.

Aim: To establish a relation between presence of H pylori and acute cholecystitis

Methodology: It is a case control study, patients who underwent cholecystectomy were classified based on having a normal gall bladder or having one with gallstones/acute cholecystitis into two groups. The tenure of this study was 2010-2019 which carried out at Divisional Head Quarter Teaching Hospital, Mirpur Azad Kashmir. The gall bladders were evaluated for the presence of H. pylori with the help of polymerase chain reaction (PCR). The data was then analyzed and results were compared.

Results: Out of 80 patients studied (44 in case group having acute or chronic cholecystitis, 36 with normal gall bladder), 5 patients from case group whereas 2 patient from control group tested positive for H. pylori on PCR. However this was not statistically significant (p 0.24).

Conclusion: Although H. pylori was found to be present in chronic cholecystitis, however its presence as a causative agent or an influencer could not be proved.

Keywords: Helicobacter pylori, Cholecystectomy, Gall bladder, Cholelithiasis.

INTRODUCTION

Cholelithiasis being the most common biliary pathology is a major reason for patients getting admitted to a surgical facility¹. One of the major problems that gallstone lead to is acute cholecystitis apart from causing obstructive jaundice, acute pancreatitis etc^{2,3}. The definitive treatment for gallstone till date is laparoscopic cholecystectomy⁴. There is no pharmaceutical or preventive measure to treat or prevent gallstones⁶. In United States, a patient for cholelithiasis costs upto 10,000 USD on average⁶. Hence there is a need to find out if there can be some risk factors for either causing gallstones or acute cholecystitis so that any alternative cure can be suggested or the burden on healthcare setup can be lessened to some extent. Helicobacter pylori is the most common pathogen causing gastric and duodenal ulceration⁷. Due to close vicinity and anatomical connection of hepatobiliary tract with the upper gastrointestinal tract, It seems likely to have a positive H Pylori infestation of gall bladder. As studies have already suggested some relation between gallstone formation and various risk factors like obesity, female gender etc⁸, there must also be a relation between H Pylori and gallstone formation or predisposing one to the phase of acute inflammation⁹⁻¹³. However one study done on mice could not establish a significant relation among formation of cholesterol stones and H Pylori infection¹⁴.

Therefore we did this study to establish a relation between H Pylori and acute calculous cholecystitis to see if

a patient having gallstones and H Pylori infestation can be benefited from H Pylori eradication therapy.

MATERIALS AND METHODS

This is a case control study, the patients which had their gall bladder removed surgically between the tenure of 2010-2019 at Lahore General Hospital, Lahore were included in this study and divided in 2 groups. Case group comprised of the patients who had cholelithiasis or cholecystitis as their preoperative diagnosis whereas control group comprised of the patients who experienced cholecystectomy due to any other reason for example Hydatid cyst. The removed gall bladders were sent for pathological examination and the diagnosis of acute or chronic cholecystitis was first confirmed. Then DNA was extracted from all the gall bladders and PCR was performed to detect the presence of H Pylori. All the patients who underwent cholecystectomy in the above mentioned time period whether due to acute cholecystitis, chronic cholecystitis, cholelithiasis or any other abdominal pathology. Only patients having biliary malignancy were excluded. The data after collection was analyzed using SPSS 22.

RESULTS

A total of 80 patients were included in this study. Table 1 showed age range from 25-75 years with mean age of 51.48±5.10, 49.26±4.15 and 48.29±3.57 respectively. There were 35(44%) were male and 45(56%) were females

Received on 27-10-2019

Accepted on 03-02-2020

(Table 2). There were 44 patients out of 80 having acute or chronic cholecystitis were included as cases, the other 36 who had cholecystectomy because of any reason other than intense or chronic cholecystitis were set in control group. On PCR, 5 samples were discovered positive for Helicobacter Pylori, 5 in case group (chronic cholecystitis) and 2 in control group. Comparisons of the factors indicated that only sex (p 0.001), height (p 0.002) and body mass index (P 0.000) were found significant. In spite of high prevalence of H Pylori in case group like 5 and 2, the difference was not significant. The mean of examined variables like age, duration of illness and body mass index was not significantly different among positive and negative samples.

Table 1: Age distribution of patients (n=80)

Age (years)	Acute cholecystitis (n=15)	Chronic cholecystitis (n=29)	Controls (n=36)
25-50	7 (9%)	13 (16%)	16 (20%)
51-75	8 (10%)	16 (20%)	20 (25%)
Mean±SD	51.48±5.10	49.26±4.15	48.29±3.57

Table 2: Sex distribution of patients (n=80)

Gender	Acute cholecystitis (n=15)	Chronic cholecystitis (n=29)	Controls (n=36)
Male	5 (6%)	6 (8%)	24 (30%)
Female	10 (12%)	23 (29%)	12 (15%)

Table 3: Weight (kg) distribution of patients (n=80)

Weight (kg)	Acute cholecystitis (n=15)	Chronic cholecystitis (n=29)	Controls (n=36)
30-60	6 (8%)	11 (14%)	15 (19%)
91-90	9 (11%)	18 (22%)	21 (26%)
Mean±SD	69.25±4.36	71.44±2.34	74.42±2.48

Table 4: Height (cm) distribution of patients (n=80)

Height (cm)	Acute cholecystitis (n=15)	Chronic cholecystitis (n=29)	Controls (n=36)
100-145	4 (5%)	7 (9%)	9 (11%)
146-176	11 (14%)	21 (26%)	27 (34%)
Mean±SD	167.15±1.14	173.18±1.17	175.12±1.23

Table 5: Demographic data of patients (n=80)

Data	Acute cholecystitis (n=15)	Chronic cholecystitis (n=29)	Controls (n=36)
BMI	26.45±0.72	23.42±0.65	22.16±0.46
H Pylori (+)	0	5(17%)	2(6%)

DISCUSSION

In a gall bladder with acute or chronic calculous cholecystitis, the presence of H Pylori may indicate some contribution of this pathogen in causing either cholecystitis or gallstones. Numerous studies have been done using different techniques i.e., immune histochemistry, serological and histological analysis to find out the etiological job of this species in the development of gallstones however results are opposing. A few studies obviously show a significant relationship between the presence of H pylori and gall stones¹⁵. Some other studies also recommend that

presence of H Pylori might be a contributory factor to the development of pigment stones specially¹⁶.

Some studies have also suggested that there is not any significant relation between presence of H Pylori in stomach and chronic cholecystitis¹⁷. Helaly et al indicated the presence of H Pylori in as much as 41% patients with chronic cholecystitis¹⁸.

By Arismendi et al, giemsa and hematoxylin stains were utilized to distinguish the bacteria, it was indicated that only 6% of chronic cholecystitis patients were positive for H Pylori¹⁹. Yucebilgili et al indicated that in spite of 22% of tests were positive for this species however no significant connection could be found between presence of H pylori and formation of gall stones²⁰.

The current study showed that relatively more prominent of H Pylori in patients with chronic cholecystitis, the outcomes were not significant. The outcome of this study showed in mean height and body mass index is a significant difference in both groups i.e. case and control. In control group higher height and higher body mass index in the case group may show more prominent prevalence of obesity in this group. Therefore, suggesting that obesity may be considered as numerous studies demonstrate that despite the lack of significant results, H pylori may be considered as etiologic factor in the development of gallstones^{21,22}.

CONCLUSION

It is concluded that correlation of H. pylori and acute or chronic cholecystitis and cholelithiasis has been a controversial issue, some studies recommended that higher prevalence of helicobacter pylori in patients with cholecystitis because of gall stones may be a stimulating component for the formation of gall stones.

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