COMPARATIVE STUDY OF PREVALENCE OF H. PYLORI IN PATIENTS WITH FUNCTIONAL DYSPEPSIA IN ALCOHOLICS AND NON-ALCOHOLICS

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ABSTRACT

BACKGROUND

Helicobacter pylori and Alcohol use are important factors among the numerous factors associated with Functional Dyspepsia. The prevalence of functional dyspepsia and alcoholism is higher in India. This cross-sectional study was taken up to determine the association between Helicobacter pylori and Alcohol use among Functional Dyspepsia patients.

MATERIALS AND METHODS

Functional Dyspepsia symptoms were identified using Rome III BI criteria. Four gastric mucosal biopsies were taken from the antrum by endoscopy. Two of them were tested for H. pylori in the urease broth by the Rapid Urease Test (RUT) and rest 2 specimens were sent for histopathological examinations. Either the RUT biochemical test or the HPE test was considered positive for H. Pylori. Alcoholism and the severity assessed by DSM-questionnaire.

RESULTS

Seventy functional dyspepsia patients were included in this study and of them 35 were alcoholics and 35 were non-alcoholics. The prevalence of H. pylori in FD cases was significantly higher in non-alcoholics (82%) compared to alcoholics (28%) and this difference was statistically significant (p value < 0.05). On comparing the quantity of alcohol consumed, H. pylori was more prevalent (58%) in people who consume 91 to 160 gms of alcohol. This is higher in comparison with people who consume less alcohol in the range of 31 to 90 gms (13%). This difference is statistically significant (p < 0.001).

CONCLUSION

Alcoholism is found to be a protective factor against H. pylori infection among functional dyspepsia patients.

KEYWORDS

H. pylori, Functional Dyspepsia, Alcoholics, Non-Alcoholics.

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BACKGROUND

Dyspepsia in Greek means indigestion. Functional Dyspepsia (FD) means dyspepsia without any organic cause.(1) FD is widely prevalent in Asia compared to Western countries because of the food habits, culture, environmental and social factors.(2) Exact cause of FD is still a mystery under evaluation. Infective factors play a major role. Of them, H. pylori prevalence is of the top most priority followed by post-infection with acute salmonella gastroenteritis.(3) Psychosocial factors like Stress, Anxiety and Depression also play a significant role.(4)

The Helicobacter pylori is a flagellated, motile, gram negative bacilli and its size is 2.4 to 4.0 micrometre long and 0.5 - 1.0 μm wide. It colonises the gastric mucosa, especially the antrum.(5) It creates an alkaline environment for its survival by its virulence factors namely vacuolating cytotoxin (Vac A).(6) Of the host factors, ABO Lewis antigen has some association with H. pylori infectivity.

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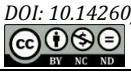


Most epidemiologic studies done for determining the H. pylori prevalence have shown that in the developing countries it is 70% as compared to 40% in developed countries.(7) Alcoholism in India is on the rising horizon, probably due to westernising culture or as a stress relieving measure. The heartrending part is the influence of alcohol on the rural masses, who spoil their physical and mental health. The overall observation and expectation is that, because the symptoms of FD increases with increasing severity of alcoholism the H. pylori prevalence also should show the same relationship. There are not many studies available to reveal the association between H. pylori, Alcoholics and FD. So the present study was done to determine the association of H. pylori infection among alcoholics and non-alcoholics presenting with functional dyspepsia.

MATERIALS AND METHODS

This comparative study was conducted among 70 patients with functional Dyspepsia symptoms who satisfied Rome III BI criteria. The severity of FD symptoms was graded with Modified Glasgow Dyspepsia Severity (MGDSS) questionnaire. Patients with FD were subjected to USG abdomen to rule out Gall bladder and Pancreatic pathologies. Then they were subjected to upper GI endoscopy. Four gastric mucosal biopsies were taken from the antrum. Two of them were tested for H. pylori in the urease broth by the Rapid Urease Test (RUT). Rapid urease test has a sensitivity and specificity of 95%.(8)

The colour change from yellow to pink was considered positive; rest of the 2 specimens were sent in formalin containers to Pathology Department and histopathological examinations were done. The presence of the gram-negative eosin stained bacilli was considered positive. Either the RUT biochemical test or the HPE test was considered positive for H. pylori. Histopathological examination with Giemsa gives information about the density of H. pylori and the severity of gastritis. Sensitivity is 90% with Starry-Warthin stain, which is the most appropriate stain for the diagnosis of H. pylori. In Giemsa staining, sensitivity was proven to be 75% - 90%.[9]

Alcoholics and their severity was assessed by DSM-questionnaire. The severity of alcoholism was graded using National Institute of Alcohol and Addiction (NIAAA) questionnaire. According to NIAAA (National Institute on Alcohol Abuse and Addiction), Alcoholic is a person who suffers from alcoholism. Alcoholism is also known as alcohol use disorder. It is marked by excessive and usually compulsive drinking of alcohol leading to psychological and physical dependence.[10] Volume of alcohol is defined as a drink in terms of grams (g). The alcohol content in strong Beer is 4.5%, Light beer is lesser than 3.2% and Wine 12.9%. Combination with varying mixtures have 15% to 40% of alcohol strength.

Spirits have high alcohol content (41.1%) which include Gin, rum, vodka, whisky, scotch, bourbon and premixed cocktail. In India and East Asian countries there are many native preparations like arak, grain alcohol, malt alcohol, toddy. All drinks with 40% - 60% alcohol have been included in the Arak group.

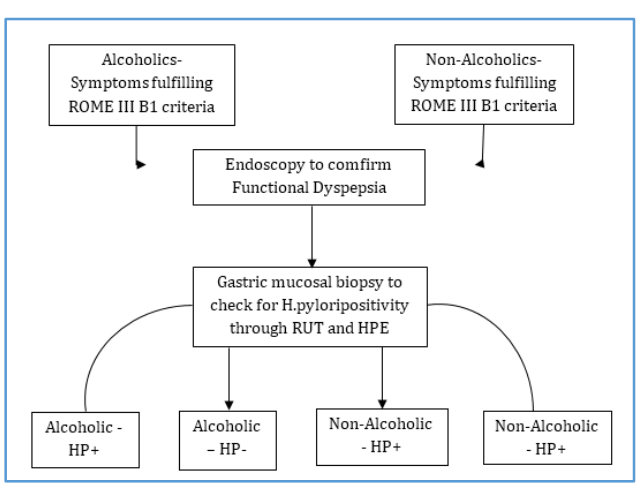
The study was conducted at MGMCRI, Pondicherry from June 2014 to May 2017 after approval by Human Ethics Committee.

Exclusion Criteria

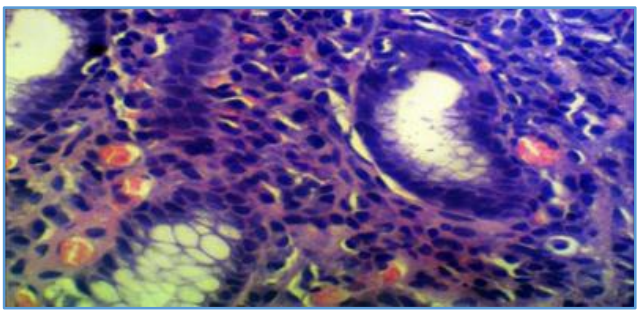
1. Patient with structural disease.
2. Gall bladder disease
3. Serology positive (HIV, Hepatitis B, C).
4. H/o recent intake of NSAID or acid suppressing drugs.

Data was analysed using SPSS software. Descriptive statistics was calculated for background characteristics of study participants. Chi square test was done to determine statistical significance between proportions.

Methodology

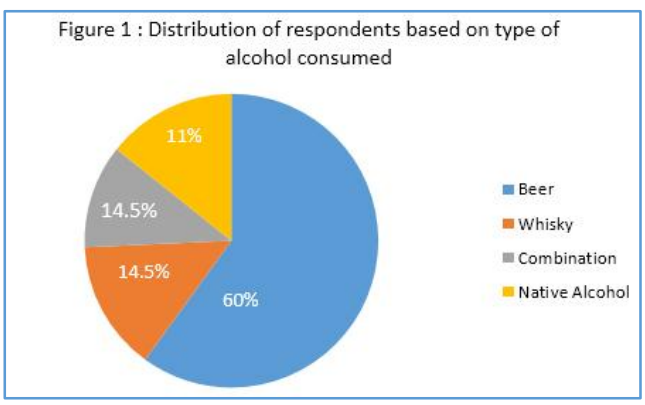


Histopathology of Gastric Mucosa/H. pylori seen as Pink Rods



RESULTS

The study results are from 70 functional dyspepsia patients and of them 35 were alcoholics and 35 were non-alcoholics. Mean age of the study participants is 30 and age ranged from 18 to 70. Mean duration of alcohol intake was 51/2.



Of the alcoholics, people who consumed beer were more (60%). Native alcohol consumers were fewer in our study and they consumed arak.

Study Groups	H. pylori			P value
	Positive	Negative	Total	
Alcoholic (test)	10 (29%)	25 (71%)	35	.000*
Non-Alcoholic (Control)	29 (83%)	6 (17%)	35	

Table 1. H. pylori Prevalence in Alcoholics and Non-Alcoholics

*P value < 0.05 indicates the difference is statistically significant.

The prevalence of H. pylori in FD cases was significantly higher in non-alcoholics (82%) compared to alcoholics (28%) and this difference was statistically significant (p value < 0.05) (Table I).

Grams of Alcohol Consumed/ Day	H. pylori			P value
	Positive	Negative	Total	
Non-alcoholics	29 (83%)	6 (17%)	35	0.000*
30 to 90	3 (13%)	20 (87%)	23	
91 to 160	7 (58%)	5 (42%)	12	
Total	39 (56%)	31 (44%)	70	

Table 2. Association between H. pylori Prevalence and Quantity of Alcohol Consumed

*P value < 0.05 indicates the difference is statistically significant.

On comparing the quantity of alcohol consumed, H. pylori was more prevalent (58%) in people who consume 91 to 160 gms of alcohol. This is higher in comparison with people who consume less alcohol in the range of 31 to 90 gms (13%). This difference is statistically significant ($p < 0.001$), (Table II).

Duration of Alcohol Intake	H. pylori			P value
	Positive	Negative	Total	
Non-Alcoholic	29 (83%)	6 (17%)	35	0.000*
4 to 12 months	1 (8%)	11 (92%)	12	
13 to 120 months	6 (40%)	9 (60%)	15	
121 to 240 months	3 (38%)	5 (62%)	8	
Total	39 (56%)	31 (44%)	70	

Table 3. Association between Prevalence of H. pylori and Duration of Alcohol Consumption

*P value < 0.05 indicates the difference is statistically significant.

On comparing the duration of alcohol consumed, H. pylori was more prevalent (40%) in people who consumed 13 - 120 months duration. This is higher in comparison with people who consume alcohol for lesser duration, 4 to 12 months (8%). This difference is statistically significant ($p < 0.001$), (Table III).

DISCUSSION

This study showed that the prevalence of H. pylori was higher in non-alcoholic than in moderate drinkers on a regular basis and high in binge drinkers, which is statistically significant. The reason for this prevalence of H. pylori is low in moderate drinking and high in severe drinking can be explained as follows.

The Reason for Low Prevalence in Moderate Drinking are-

1. Antibacterial effect of alcohol, which shows a direct cytotoxic effect or sterilisation effect on the H. pylori.[11]
2. Unfavourable P_H produced by alcohol in the gastric mucosa, which is a lethal acidity.[12]
3. Chronic active gastritis attracting the white blood cells whose inflammatory mediators, cytokines and the interleukins which eliminate the bacilli.[13]

The Increased Prevalence in Severe Alcoholics is explained as follows-

1. Increased alcohol concentration disrupts the mucosal barrier and increases the mucosal permeability to the organism.[14]
2. This in turn leads to decrease in prostaglandin production, which increases the local damage inflammations and population of H. pylori.
3. Increasing age of the patient and increase in the quantity of intake reduces the immune-mechanisms of the host, so the H. pylori prevalence is more.[15]
4. From the bacterial aspect, the Bab-A or bacterial adherence factors namely sialic and adhesion (Inflammatory protein- Hp 0638) lead to positive virulence. This happens in heavy drinkers or binge drinking habits.[16]
5. So the conclusion is that alcoholism shows an inverse U shaped relationship with H. pylori prevalence[17] among functional dyspepsia patients.

Limitations of the study

The sample size of 70 is too small and there was no definitive standard tool to measure the severity of alcohol addiction. Urea Breath test, IgG antibodies against H. pylori and faecal antigen test should have been more comfortable for the patient and perhaps could yield better results. In alcoholics, even blood alcoholic level (BAL) was widely variable and not a reliable tool to assess the severity of symptomatology or behaviour. Most of the deserving FD patients who refused endoscopy had to be excluded from the study. Most of the patients were widely self-medicated with PPI and the exact H. pylori prevalence was influenced by that.

CONCLUSION

The causative agents for FD, the definitive relationship of alcohol and H. pylori are unsolved enigma and lots of avenue is there for further research. People should not have misconception that alcohol has a beneficial antioxidant effect on gastric mucosa protecting it against dyspepsia and ulceration.

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