The Relation between Feces Acidity and Infection with H. Pylori and Some Parasites

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Abstract

Helicobacter pylori is one of the common bacterial causes of diseases of the digestive system, especially the stomach and gallbladder. Giardia lamblia and Entamoebahistolytica are the most common protozoal infections in humans and animals.Both groups of microorganisms causes a suffer diseases ,because of the similarity in the ways of infection this study aimed to estimate the relation between these organisms and the possible role of fecal sample pH . all studied groups was 37 to 44 years ,No correlation between the sex and stool pH in all groups ,except in the 4th group it was high in male.No significant correlation between the age and stool pH in the 3th group ,while in group 4 there is asignifecnt correlation between E.histolytica and infection with Pylori and study parameters the **Conclusion :** There is no correlation between *H.pylori* and *G.lamblia*and stool pH,but clear association   with *E.histolytica*

Keywords: Protozoa, H. Pylori, acidity ,parasite

Introduction

Digestive problems, especially stomach diseases, spread in the general population of the world, the most important of which is the infection of bacteria and parasites (*Helicobacter pylori*(*H. pylori*), *Giardia lamblia*(*G.lamblia*), *Entamoeba histolytic*(*E. histolytic)* (1). As a result of the lack of awareness of the transmission and spread of infection through lack of personal hygiene and social and economic conditions (2)

Recently, some types of bacteria that infect the upper digestive tract have been found to be of enormous clinical importance, including *Helicobacter pylori,* which causes gastritis and is associated with duodenal ulcer disease in humans and takes a long time to heal, as the World Health Organization classified *H. pylori* As one of the causes of stomachadenocarcinoma .Contaminated food and fecal–oral routes are the main routes of transmission; Cats, cockroaches, sheep are the main reservoir hosts for H. pylori (3) Water contamination with industrial waste and water contamination with human excreta helpthe growth of *H. pylori* bacteria by providing an acidic environment in the stomach that may   help intestinal parasites adapt to live on the host's body. (4, 5) Entamoebahistolytica and Giardia lambliaboth are protozoalparasite ,that transmitted to human by contaminated water or food. Both of them have two life cycle stages (cystestage and Trophozoitestage) .These parasite are parasitized the digestive system. (6)

Entamoebahistolytica, *Giardia lamblia* and H.pylori had similar mode of infection (Fecal -oral rout) and has been found to trigger symptoms of gastrointestinal disorders ,so the aim of this search to estimate the spread of *Helicobacter pylori* (*H. pylori*) and these parasites and study the changes in the acidity of thefeces

Methods

Seventy -two stool sample were collected from patients attended toAl-Emamain Al-Khadhmyain City Hospital laboratory Baghdad -Iraq(according to for physician request).During the period from June to September ,2020.

Inclusion criteria: patient with upper GIT symptoms and/or lower GIT symptoms (diarrhea).Exclusion criteria: patient under treatment with antibiotic, had gastric malignancy or surgery,

addictive tea or coffee,smoker,Two fresh stool samples were collected from each patient at the time of enrollment in the study.the first sample screened immediately for intestinal parasites by using direct wet mount using 0.85% sodium chloride solution (7.)The second sample diagnosed H. pylori by detecting antigen using H. pylori stool antigen test (One step H. pylori antigen test device; ACON Laboratories Inc., San Diego, CA, USA) according to manufacturer's directions (8) Groups of the study : The seventy two stool samples were divided in Four groups ,each group consiste from 18 samples ;

Group1: whom negative for parasites and Bacteria and concedered as control group .

Group2: Positive for H.pylori .

Group 3 : Positive for E. hystolytica and /or G.lamblia.

Group 4: Positive for E. hystolytica and /or G.lamblia.andH.pylori

Data Analysis

Statistical analysis of data was performed using SAS (Statistical Analysis System - version 9.1). One-way ANOVA and Least significant differences (LSD) post hoc test were performedto assess significant differences among means. Independent t test was also used in case two groups. $P < 0.05$ is considered statistically significant[9].

Results

Table No. (1) shows the mean of age was 41.00 ± 2.85 and stool pH for the groups that were taken in the study, there was no significant difference for age groups and infection with bacteria and parasites of the study, while there was little difference in the stool acidity of the fourth group, which represents the infection of the study parasites and *Helicobacter pylori*, as they had the highest level compared to the control group and those infected with parasites only and those. *H. pylori* infected only, Means with a different letter in the same column are significantly different (P<0.05)

According to the sex between

Table 1: Distribution of age and pH among study groups.

Group		Age	pH
1	Healthy	41.00±2.85a	6.27±0.57b
2	Infected without parasites	40.38±3.33a	6.94±0.46ab
3	Infected with parasites	41.38±3.11a	6.55±0.51b
4	Infected with parasites and bacteria	42.11±2.89a	8.05±0.31a
	LSD	8.62	1.34

Statistically Significant Difference (P-value<0.05)

Table No. (2), there are no significant statistically differences between the groups, while there was an unremarkable significant difference in pH, among the males of the fourth group, which showed a high (significantly significant) pH degree than the males in the other groups reached 8.21±0.21a as females in group I had the lowest pH

6.55±0.83abc and females of group IV had high pH, which is also significantly significant.

Table 2: Age and pH of the distribution of stool samples by sex among study groups.

Group		Age	pH
1	Healthy/M	44.44±4.57a	6.55±0.83abc
	F	37.55±3.26a	6.00±0.82c
2	Infected without parasites/M	44.11±3.63a	7.77±0.38abc
	F	36.66±5.53a	6.11±0.77bc
3	Infected with parasites/M	40.77±3.83a	7.00±0.64abc
	F	42.00±5.15a	6.11±0.79bc
4	Infected with parasites and bacteria/M	41.42±4.89a	8.21±0.21a
	F	42.54±3.75a	7.95±0.51ab
	LSD	12.40	1.90

Statistically Significant Difference (P-value<0.05)

Of 18 patients in the third group, 11(61.2%)are infected with *E. Histolytic* and 7 (38.8%), *G. lamblia* and also In this group, no significant difference was found between the age and but there are significant(0.02) in 4 group in age which found 35.00±3.55 are infected with*G.lamblia* but no significant in the stool pH between the study parasite infection .in this tables showing that in group4 , 10 (55.6%) patients had *E.histolytic* infection with stool pH 8.40±0.19 and age mean 47.80±3.54, and 8(44.4%) had *G. lamblia* with pH 7.62±0.66 and age mean 35.00±3.55, the statically analysis show no significant difference .

Table 3: : Association between Parasite infection and age and stool pH in groupthree and group four.

Group	No	Age	pH
Group 3			
E.histolytica	11	40.00±3.49	6.59±0.61
Giardia. lambilia	7	43.57±6.12	6.50±0.95
P-value		0.62 NS	0.93NS
Group 4			
E.histolytica	10	47.80±3.54	8.40±0.19
Giardia. lambilia	8	35.00±3.55	7.62±0.66
P-value		0.02	0.29NS

Statistically Significant Difference (P-value<0.05)

Discussion

The life cycle of the parasite begins when the host (human) eats food or drink contaminated with the cysts of the parasite. The medium becomes neutral or weak basal, the amoeba is activated inside the sac, and with the help of digestive enzymes, the casing of the sac isweakened and the sac comes out through a small hole and reaches the small intestine. [10] Our results were in agreement with what was stated [11], where he found a relationship between infection with the stomach germ and infection with the parasite *G.lamblia* and confirmed that *H. pylori* is not the only pathogenic factor in our society, Giardia infection is not the only disease. As our study found that infection with the parasite *E. histolytica* also helps to increase infection with stomach germs or vice versa, and also the infection rate among those infected with stomach germs was significantly higher than infection with *G. lamblia*, and this agreed with- Azza k. A*et al.* (2018)[12].

Protozoa infection in humans worldwide The parasite *Giardia*trophozoite is able to colonize and multiply rapidly in the gastrointestinal tract May infect the gallbladder where bile acts as a primary growth factor stimulating rapid *Giardia* Transformations usually occur in an acidic medium. Some investigators have reported the presence of *G. lamblia*trophozoite in the gastric mucosa living in an environment pH 6.38-7.0237. [13,14] The current study noted a significant increase Prevalence of parasitic infection among *H. pylori*-infected patients. The result was in agreement with little of the previous Studies . [12]The injury to H. pylori is devastating The effect of acidity of the stomach neutralizes, because it produces large amounts of the enzyme urease, which breaks down the plasma urea in the stomach wall to the ammonium ion. Germ stomach Infection has proven to be dangerous by destroying gastric acidity [15] and is an important body [12] defense against ingested pathogens [17,16].

Conclusion

The current study showed a significant association between *E. histolytica / dispar* as between the researcher and [15] In Iran it was found that *H. pylori* affect the sensorimotor system of the intestine including the colon, in addition to its neutralizing effect of urease enzyme on gastric acidity as well as the effect of *G. lamblia*. genterotype A significantly associated with dyspepsia symptoms. [18].We can conclude the infection with *P.pylori* may help *E.hystoltica* to establish it infection by changing the pH.of the digestive system.

Limitations and Future Studies

Further studies will be needed to improve the co-infection between the parties and H.pylori on the level of tissue and molecular and the association with another factor like a type of food.

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