Contents lists available at ScienceDirect

Asian Pacific Journal of Tropical Biomedicine

journal homepage:www.elsevier.com/locate/apjtb

Document heading doi:10.1016/S2221-1691(12)60048-3

The occurrence of *Helicobacter pylori* in hydatid liver disease

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ARTICLE INFO

Article history:
Received 25 July 2011
Received in revised form 5 September 2011
Accepted 27 September 2011
Available online 28 March 2012

Keywords:
Helicobacter pylori
Hydatid liver disease
Chest X-ray
Ultrasound
ELISA test
Infection

ABSTRACT

Objective: To detect the prevalence of *Helicobacter pylori* (*H. pylori*) in hydatid liver disease. **Methods:** A total of 58 patients with hydatid liver disease attending AL-Sadder Teaching Hospital in Al-Najaf and Al-Basrah governorate from February to August, 2008 were included in the study and served as group A. One hundred and twenty 1st degree relative patients (group B) and 20 normal persons including 10 male and 10 female (group C) as control were detected for the presence of *H. pylori* infection in general population. Chest X-ray was done for the above groups to exclude lung hydrated cyst. The patients were screened by ultrasound to obtain intra abdominal hydrated cyst and enzyme-linked immuno sorbent assay (ELISA) test was utilized to detect the *H. pylori* infection. **Results:** Fifty eight patients from group A with hydatid liver disease, 30 male (51.7%) and 28 female (48.3%) were screened for the presence of *H. pylori* infection by using ELISA test. We found that 28 patients from group A had positive ELISA test including 19 male (32.8%) and 9 female (15.5%) ($P<0.01$). However, there were no positive results of *H. pylori* infection in group B and C by chest X-ray, ultrasound and ELISA test. **Conclusions:** It can be concluded that there is a strong relationship between hydatid liver disease and presence of *H. pylori*.

1. Introduction

Echinococcosis is a parasitic disease which is caused by *Echinococcus granulosus* (*E. granulosus*). The adult form of the parasite can not be seen in humans. But its larvae can induce disease in humans, cows, sheep, and other domestic animals[23]. Hydatid cysts are mostly localized in the liver (50%-80%). The second most common site for hydatid cyst is the lung (5%-30%). Cysts have also been detected in the spleen, kidney, heart, bones, the central nervous system, and other organs, but with less frequency[1].

Hydatid cysts are observed endemically in Mediterranean, Middle Eastern, and South American countries, New Zealand and Turkey, where people are in close contact with sheep and dogs. Hydatidosis is an important health problem in these countries[2].

E. granulosus, *Echinococcus multilocularis*, and *Echinococcus vogeli* are tapeworms which are found primarily in dogs, but also in wolves, foxes, sheep, goats, and camels. The disease is transmitted through direct contact with infected feces and ingesting viable parasite eggs with food. Eggs remain viable in the feces of tapeworm infected canines for weeks allowing transmission to individuals with no direct contact with the vector animal. The eggs can hatch in the intestine of humans to form embryos or oncospheres that penetrate the mucosa and enter the circulation. Oncospheres then encyst in host viscera and develop in the target organs into mature larval cysts[1].

Helicobacter pylori (*H. pylori*) is a type of bacteria. Researchers believe that *H. pylori* is responsible for the majority of peptic ulcers[3].

H. pylori infection is common in the United States. About 20% under 40 years old and 50% over 60 years have this infection. However, most infected people do not develop ulcers. The reason why *H. pylori* does not cause ulcers in every infected person is not known. Most likely, infection depends on characteristics of the infected person, the type of *H. pylori*, and other factors yet to be discovered[4].

H. pylori weakens the protective mucous coating of the stomach and duodenum, allowing acid to get through the sensitive lining beneath. Both the acid and the bacteria irritate the lining and cause a sore, or ulcer[5].

H. pylori is able to survive in stomach acid because it secretes enzymes that neutralize the acid. This mechanism allows *H. pylori* to make its way to the "safe" area-the protective mucous lining. And the bacterium's spiral shape helps it burrow through the lining[6].

2. Materials and methods

The study was carried out from February to August, 2008. A total of 58 patients attending the Surgery Unit of Al-Sadder Teaching Hospital in Al-Najaf and Al-Basrah governorate for elective surgery with hydatid liver disease were included in the study and served as group A. The age of patients was ranging from 18-65 years old with 30 male (51.7%) and 28 female (48.3%). 120 1st degree relative patients were investigated by chest X-ray, ultrasound and ELISA test to detect the *H. pylori* infection. A total of 20 healthy persons including 10 males and 10 females were introduced in this study as a control group to compare with the results of hydatidosis and gastritis. They have no previous history

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of any complaints of gastrointestinal tract (GIT) diseases and no smoking or alcohol history without receiving any medications.

3. Results

58 patients from group A with hydatid liver disease, 30 male (51.7%) and 28 female (48.3%) were screened for the presence of *H. pylori* infection by using ELISA test. We found that 28 patients from group A had positive ELISA test including 19 male (32.8%) and 9 female (15.5%) ($P<0.01$). Among the 28 patients with *H. pylori* infection, hydatid cysts were localized in the liver in 26 patients. There was only one single hydatid cyst in 18 (64.29%) patients while multiple hydatid cysts were present in 10 (35.71%) patients. However, there were no positive result of *H. pylori* infection in group B and C by chest X-ray, ultrasound and ELISA test.

4. Discussion

Various factors can influence the prevalence of *Echinococcus* spp. in their hosts. These include degree of specificity, intensity of predator, prey interaction, numerical densities of carnivore hosts, species diversity of mammalian faunas, short-term or long-term fluctuations in density of numbers of herbivores, *etc*[7].

Ethological factors also may be involved, such as the influence of social rank in feeding by carnivores, and other behavior that has not been investigated in detail with respect to the transmission of the taeniids[8].

H. pylori is now considered to be the most prevalent infectious disease occurring in human. About 50% of the human population is estimated to be infected[9].

This bacteria can cause persistent gastritis and is directly linked to the development of peptic ulcer as well as gastric adenocarcinoma and mucosa-associated lymphoma of the stomach[10]. Individuals living in countries with low socioeconomic conditions have high prevalence rates of *H. pylori* acquired at an early age[11].

The current study found that *H. pylori* was significantly higher in studied age group (20-50 years old). This finding was in agreement with many other studies that showed a similar age incidence of *H. pylori*[12]. The factors that predispose the higher colonization rates include poor socioeconomic status and less education in addition to genetic factors.

In our study, the presence of *H. pylori* in hydatid liver disease patients was determined by ELISA serum IgG anti-*H. pylori* antibodies test. 67.2% of patients were positive in ELISA test. Patient were considered to be infected with *H. pylori* if they were positive in two of the three tests[13].

The multiple diagnostic methods were recommended to accurately diagnose *H. pylori* gastritis[13]. These results agree with the result of Twaij[14] who found the prevalence of *H. pylori* in 65.7% of Iraqi patients, in comparison with the results of Al-Yas (2006) and AL-Dhaher (2001) who found the prevalence of *H. pylori* 81.5% and 74.78%, respectively in Iraqi patients. Also our result were in agreement with the results of Shuker[10] who found the prevalence of *H. pylori* in 61% of Iraqi patients.

The results of many researchers depend on one or two tests for the diagnosis of *H. pylori* and any test that would give positive result for *H. pylori* is regarded as positive for final diagnosis. But every diagnostic method has a percentage of false positive or negative result. Therefore, utilization of at least two methods for the diagnosis of *H. pylori* is recommended.

The present study demonstrates the relation between hydatid liver disease and presence of *H. pylori*. In our study we found that single cyst was present in 18 (64.29%) patients with *H. pylori* infection while multiple cysts existed in 10 (35.71%) patients with *H. pylori* infection. Similar age incidence, the same environment, low socioeconomic status, the positive ELISA test, *etc* could account for the relationship between presence of *H. pylori* and hydatid liver disease.

In conclusion, there is a strong relationship between hydatid liver disease and presence of *H. pylori*.

Conflict of interest statement

We declare that we have no conflict of interest.

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