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# Adult-Hood *Helicobacter pylori* Complicated by Parasitic Infections

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## Abstract

A study of 189 patients suffering from gastroduodenal ulcer disease were done in Hilla Teaching Hospital in Babylon governorate during the period from June to November, 2007. The patients ranged from (15-75) years old.

Two gastric biopsies were taken from each patient, the first biopsy was used to perform the histological and parasitical examination and the second was used to perform both the direct smear test in addition to the bacterial isolation by using selective chocolate medium. In addition, stool specimen from each studied patient was taken in a clean container for confirmatory parasitic infections.

Forty-one gastroduodenal patients(21.6%) who infected with *Helicobacter pylori*, they also have other parasitic infections. From these 41(21.6%) gastroduodenal infected patients, there were 21(51.2%) *H.pylori*, 10(24.3%) *Giardia lamblia*, 7(17%) *Entamoeba histolytica*, and 3(7.3%) worms respectively. The first age group (15-30) years old showed high percentage of infection (29%). Twenty eight patients were males (68%) while thirteen patients were females (32%). Highest percentage of infection was presented among smoker gastroduodenal ulcered patients (70.7%).

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**Key words:** gastroduodenal ulcer, Adult, *H.pyloria*, Enteric parasites, Hilla Teaching Hospital.

## الخلاصة:

اشتملت الدراسة على 189 مريض يعانون من الإصابة بمرض القرحة العفجية المعدية في مستشفى الحلة التعليمي/ محافظة بابل ضمن الفترة الزمنية من حزيران –تشرين الثاني 2007. تراوحت اعمارهم من (15الى75) سنة. تم اخذ خزعتين من كل مريض و استخدمت الخزعة الاولى لاجراء الفحص الطفيلي والنسيجي والثانية لاجراء اختبار المسحة المباشرة وعزل الجرثومة باستخدام وسط الجوكليت الانتقائي.اضافة الى ذلك تم اخذ مسحة براز من كل مريض في هذه الدراسة في وعاء نظيف لاثبات الاصابات الطفيلية. تبين ان 41(21.6%) من مرضى القرحة العفجية المعدية كان مصاب بالجرثومة والاصابات الطفيلية الاخرى. ومن نسبة المصابين وجد ان 21(51.2%) مصاب بالجرثومة , 10(42.3%) مصاب بالجياردیا اللامبليا, 7(17%) مصاب بالاميبا الحالة للنسيج ونسبة المصابين البقية 3(7.3%) بالديدان على التوالي . الفئة العمرية الاولى (15−30)سنة اكثر نسبة من الاصابة الكلية (29%). كان الذكور اكثر اصابة من الاناث 28(68%) و 13(32%) على التوالي. وُجدت أعلى نسبة إصابة في المرضى المدخنين عنها في غير المدخنين (70.7%).

## Introduction

The "life course" perspective highlights the cumulative effect on health of exposures to episodes of illness, adverse environmental conditions and behaviors which damaged health. In this way biological and social risk factors at each stage of life links to form pathways to disease(Boon,*etal*.,2006). In addition, the determinants of health operate over the whole life span.For example, habits, values, skills, and behaviors have a profound influence on risk of disease. These attributes have a strong influence on whether a young person takes up damaging behaviors, poor hygienic level, and drug misuse (Boon, *etal*,2006;Zeibig,1997). In the note of worth, there are many and various pathogens can cause harmful and carcinogenous

diseases with its symptoms in the targeted host, like cytomegalovirus (CMV), *Helicobacter pylori, Entamoeba histolytica*, etc.(Alexanders and Street, 2001).

The *H.pylori* bacteria are Gram-negative rods that have the ability to colonize and infect the stomach. The bacteria survive in the mucous layer that covers the gastric foveolae (Sepulveda and Antonia,2007) since its identification there has been an explosion of interest in the role of this organism and its relationship to the gastritis, public ulcers, lymph proliferative disorders and gastric cancer (Jane, *etal*.,1996; Bisset,1998).

Several mechanisms of *H-pylori* transmission involving the fecal-oral or oral-oral route have been proposed (Leverstein, *etal*.,1993; Ferquson,*etal*.,1993; Graham,*etal*.,1993).

Earlier studies have indicated that person to person transmission is major mode of spread of *H.pylori*(Gill, *etal*.,1994;Malaty,*etal*.,1991; Lambert,*etal*.,1995). It was thought that *H.pylori* is acquired early in childhood and once infected children are likely to remain colonize for the rest of their life unless there are treated with antibiotics. *H.pylori* recently has been investigated as a risk factor for ischemic heart disease (Lacy and Rosemore,2001), and intrauterine growth restriction.(Bravo, *etal*., 2003; Eslick, *etal*., 2002).

In developed countries (10%) of children are expected to become infected at the age of (15) years. This figure rises to (60-70%) by the age of (60 ) years old while in developed countries, the level was estimated to be as high as (50%) of children infected by the age of (10) years and more than (80%) of population is infected by adulthood(Malaty, *etal*.,1996; Synder, *etal*.,1994; Rothenbacher, *etal*., 1999).

In addition, the gastrointestinal tract ulcers can be caused or influenced by the effect of several pathogens other than bacterial microorganisms like viruses and parasites, for example the *E. histolytica* parasite can cause ulcer of the small and large intestinal tract by atherosclerosis (Boon, *etal*.,2006; Chiodini, *etal*.,2005). Smoking tobacco dramatically increases the risk of developing many diseases. Furthermore, smoking can cause cancers of the upper respiratory and gastrointestinal tracts, pancreas, bladder and kidney and increases risks of peripheral vascular disease, stroke and peptic ulceration (Boon, *etal*., 2006; Jawetz, *etal.*, 2001).

## Aim of the study:

The study aimed to estimate the percentage rate of *H.pylori*, *E.histolytica*, and other gastroduodenal-complicated pathogens. Also, its aimed to determined some factors like sex and smoking habit that may increase or associated with adult gastroduodenal ulcerated patients.

## Patients and methods:

### 1-Patients:

One hundred eighty nine patients from (15-75)years of age of both sexes, who were suffering from gastroduodenal ulcers disease were examined during a period of June through November,2007 of Hilla Teaching Hospital in Babylon city.

### 2-Collection of specimens:

Biopsies materials were collect from each patient in the filed of the present study by use endoscopy procedure, two biopsies from each gastric and duodenal ulcerated patient was taken. The first biopsy for histological and parasitic examination, and the second biopsy for direct smear and bacterial culturing

purposes (Sood,1995).In addition, a stool specimen from each patient was taken in a clean container for confirmatory parasitic infection (WHO,1997).

**3- Laboratory examinations:**

The specimen examination include the following:

A- Parasitic examination:

They were accomplished by use direct wet mounts (normal saline and lugal iodine solutions), and then followed by concentration sedimentation method (WHO, 1997).

B- Bacterial examinations:

After mincing biopsies in saline solution they were cultured and incubated under anaerobic condition on selective chocolate medium, then preparing stain slid by using Giemsa stain and followed by biochemical tests for identification of *H.pylori* bacteria (Sood,1995;Forbes, *etal*.,2002). The biochemical tests used were: Catalase, oxidase, IMVC, citrate, and rapid urease tests, the latter test is to help for identify certain species of enterobacteriaceae and other important bacteria such as *H. pylori* ( Forbes, *etal.*,2002).

## Results:

There were 189 patients suspected with gastroduodenal ulcers disease, from those patients there are 41(21.6%) patients representing overall infection "*H.pylori* and parasitic infection" in ages between (15-75) years admitted to the Hilla Teaching Hospital, as shown in table (1).

From these (41) patients, 28(68%) were males and 13(32%) were females, as shown in table(2).

Table(3) showed the number and percentage rate of *H.pylori* and parasitic species infection isolated from gastroduodenal ulcerated patients.

In this study the distribution of infection was higher among smoker patients than non smoker patients (70.7%) and (29.3%) respectively, as shown in table (4).

**Table(1).Distribution of Infection among Gastroduodenal Ulcerated Patients According to Age Groups.**

| Age groups (in years) | Infected numbers | Percentage% |
|---|---|---|
| 15-30 | 12 | 29% |
| 31-45 | 10 | 24% |
| 46-60 | 11 | 27% |
| 61-75 | 8 | 20% |
| Total | 41 | 100% |

**Table(2).Distribution of Infection among Infected Gastroduodenal Ulcerated Patients According to Sex.**

| Age groups(1n years) | Infected numbers | Gender | | | |
|---|---|---|---|---|---|
| | | Males | % | Females | % |
| 15-30 | 12 | 9 | 75% | 3 | 25% |
| 31-45 | 10 | 6 | 60% | 4 | 40% |
| 46-60 | 11 | 6 | 54.5% | 5 | 45.5% |
| 61-75 | 8 | 7 | 87.5% | 1 | 12.5% |
| Total | 41 | 28 | 68% | 13 | 32% |

**Table3.Distribution of Infections among Gastroduodenal Ulcerated Patients According to the Type of Infection.**

| Age groups (1n years) | Infected numbers | Type of infection | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | *H.pylori* | % | *G.lamblia* | % | *E.histolytica* | % | Helminthes* | % |
| 15-30 | 12 | 3 | 25% | 5 | 41.6% | 3 | 25% | 1 | 8.3% |
| 31-45 | 10 | 3 | 30% | 3 | 30% | 2 | 20% | 2 | 20% |
| 46-60 | 11 | 8 | 72.7 % | 2 | 18.1% | 1 | 9% | 0 | 0% |
| 61-75 | 8 | 7 | 87.5 % | 0 | 0% | 1 | 12.5 % | 0 | 0% |
| Total | 41 | 21 | 51.2 % | 10 | 24.3% | 7 | 17% | 3 | 7.3% |

* refers to infection by *Hymenolepis nana* and *Ascaris lumbricoides* parasites .

**Table(4).Distribution of Infection According to the Smoker and Non Smoker Patients Habit.**

| Age groups(1n years) | Infected numbers | Smoking habit | | | |
|---|---|---|---|---|---|
| | | Smoker | % | Non smoker | % |
| 15-30 | 12 | 8 | 66.6% | 4 | 33.3% |
| 31-45 | 10 | 8 | 80% | 2 | 20% |
| 46-60 | 11 | 7 | 63.6% | 4 | 36.3% |
| 61-75 | 8 | 6 | 57% | 2 | 25% |
| Total | 41 | 29 | 70.7% | 12 | 29.3% |

## Discussion

The association between a risk factor and disease do not prove that the risk factor causes the disease, and the biological plausibility is an important test, but cause and effect can only be proven by more detailed investigation (Boon, *etal*.,2006). The idea that diseases have a single cause and that a single intervention will prevent them is appealing.There are many examples of etiological associations defining causative factors in gastroduodenal ulcer disease, e.g. the association between cigarette smoking and gastroduodenal cancer (Boon, *etal*, 2006; Jawetz, *etal*.,2001). However, the *H.pylori* infection causes chronic gastritis, which catrigger peptic ulcer disease and gastric malignancies in man (Marshall,1994). Successful eradications of the infection results in ulcer healing and prevent ulcer recurrences and complications (Adamek, *etal*., 1998).

A study of *H.pylori* infection of urban adult population in Brazil. Investigated that the overall (64.3%) of the population ≥ (20)years old was infected with *H.pylori* (Santos,*etal*.,2005), another study conducted among low socioeconomic children attending an outpatient clinic in Brazil showed that infection occurs early and increases with age(Oliver,*etal*.,1994). Santos reported the prevalence increased with age although remaining relatively constant after the twenties from (47.6%) among individuals (20-29) years old to more than (70%) among the (30-49) years old (Santos,*etal*.,2005). The results of these studies agreed with those of the present study.

A study in Italy, Doglioni, found *H.pylori* infection in 37 of 41(90.2%) patients with gastric giardiasis (Doglioni,*etal*.,2002). The results of this study is higher than result of present study (24.3%). A study of Sepulveda, showed the chronic *H.pylori* associated gastritis effects both sexes with similar frequency (Sepulveda and Antonia,2007). The result of this study was in opposite with the results of present study.

A study of Replogle, showed a sex difference, higher in male than female in the prevalence of *H.pylori* infection (Replogle,*etal*.,1995). The *H.pylori* infection reported for sex in this study was in agreement with the result of present study. Moreria,*etal*.,(2005) reported the association between the other intestinal parasites investigated such as (*E. histolytica, Giardia lamblia, Ascaris lumbricoides*, and *Trichuris trichiura*) and *H.pylori* infection. The result of this study is similar to those of present study.

Battaglia, reported some exogenous factors, which largely affect gastroenterological patients who are referred to an endoscopic unit, such as smoking and alcohol consumption, influence the presence of *H.pylori* in the stomach (Battaglia,*etal*.,1993). The result of this study is similar to those of the present study.

A study specifically planned to measure whether smoking or consumption of alcohol was associated with active *H.pylori* in southwest England concluded that smoking consumption was not related to active *H.pylori* (Murray,*etal*.,2002). The result of this study was in disagreement with the result of present study.

## Conclusions

1- *H.pylor*i bacterium is considered as main and major pathogen in causing gastroduodenal ulceration.
2- Gastroduodenal disease can be caused by other pathogenic microorganism such as *E.histolytica*.

3- Gastroduodenal-*H.pylori* disease can be accompanied and followed by other enteric pathogen like *G.lamblia, E.histolytica* and helminthes.
4- Smoking habit, can cause and encourage gastroduodenal ulcer disease.
5- Gastroduodenal ulcer disease present in males more than females.

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