The Prevalence of Helicobacter Pylori In Upper Gastrointestinal Disorders

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Abstract

Background: Helicobacter pylori are a gram negative spiral bacilli that cause one of the most chronic infection through out the world. Helicobacter pylori infection is associated with many important and serious gastrointestinal diseases like peptic ulcer, chronic gastritis, a known precursor of gastric carcinoma.
Method: we studied the prevalence of Helicobacter pylori infection in a group of patients who presented with various upper G.I discomfort between marches 1997 –November 1999. 400 patients were enrolled, they were examined clinically and by upper G.I endoscopy and 2 piece biopsy were taken from the antrum for rapid urease test for detection of Helicobacter pylori infection.
Results: Helicobacter pylori infection is a common infection and for any age group the incidence of infection was more than 60% , pain was the most common presenting symptom (93%) , patient harboring ulcer were 88% positive for urease (89% in DU , 86% in GU), 72% of patients with endoscopic findings other than ulcer were urease positive and 70% of patients with gastric carcinoma were positive while 64% of patients with negative endoscopy(non ulcer dyspepsia) were urease positive.
Conclusion: infection with Helicobacter pylori is common in this community and is strongly associated with an increase risk of peptic ulcer ,gastritis and gastric carcinoma .However many dyspeptic patients with Helicobacter pylori infection have no endoscopic abnormality (Functional, non ulcer dyspepsia) .We found that urease test is a rapid , cheap and practical test for the detection of Helicobacter pylori infection .

Keywords: *Helicobacter pylori, urease test, peptic ulcer*

Introduction

Helicobacter pylorus is a new organism for an old problem. It is first reported by Bizzozero in the stomach of dog in 1893[1]. A comprehensive autopsy study by Doeuges showed a prevalent of 43% for spiral organism in the human stomach, but he was unable to find a relationship between the presence of organism and various gastric diseases [2].
In 1983 Warren and Marshall from Australia were able to isolate the curved organism from human stomach and to culture it and was first called Campylobacter like organisms (CLO) [3].

In 1989 the decision was taken by international agreement that this organism on the bases of bacteriological and ultra structure represents an entirely new genus, hence called Helicobacter *pylori* [4,5].
Helicobacter pylorus a short, spiral , gram negative bacillus measure 0.2-0.5 micron in width with multiple (4-6) sheathed unipolar flagellae which prefers micro aerophilic environment, it reside in the mucus gel coating the epithelial cell of stomach and gastric mucosa other than stomach [5].
Helicobacter pylori is worldwide in distribution, it is one of the commonest and probably most chronic infection throughout the world[6].
Infection is acquired during childhood and increase with age, there is higher frequency of *Helicobacter pylori* infection in the low socioeconomic status and family members of infected individuals and spread occur via

person to person transmission[7-9]. *Helicobacter pylori* have a key role in the development of many important and serious disease of gastrointestinal tract from non-autoimmune gastritis through gastric and duodenal ulcer to gastric cancer and gastric lymphoma [10,11,12].

Helicobacter pylori are capable to produce many enzymes like catalyses, phospholipase, protease and urease [4,13]. There are many methods for diagnosing the presence of *Helicobacter pylori*, some of these tests are invasive and need biopsy to perform Gram's stain, culture or RAPID UREASE TEST (RUT) and histological examination and touch cytology (Imprint) [14].

There are several non-invasive methods for diagnosing *Helicobacter pylori* like C-urea breath test, radioactive C [14]-urea, ELISA [15,16].

The aim of this study is to determine the incidence of *Helicobacter pylori* in Sulaimani province in patients with various upper gastrointestinal disorders using Rapid Urease Test (RUT).

Patients and Methods

This is a prospective study conducted at Sulaimani general teaching hospital between March 1997 to Nov. 1999. Four hundred patients were studied consequentively using special forum questionnaire including age, chief complain and duration , aggravating and relieving factors , smoking ,alcohol , diet , drug history ...

All patients underwent complete upper GI endoscopy .Two biopsies from antrum were taken and they were crushed by sterile needle then put in Urea solution [17] .The solution observed for any change in color. Change of color from yellow to pink indicates the presence of *Helicobacter pylori*.

If the solution remained yellow for 24 hours, it was regarded as negative result.

Patient who received antibiotic for at least 3 days for the last four weeks and patients below 12 years of age were excluded from the study.

Results

Four hundred patients with various gastrointestinal discomforts were included in the study, 59% were male and 41 % were female.

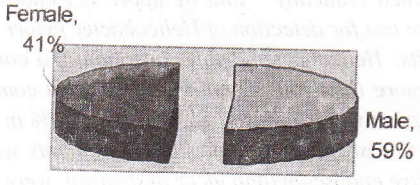
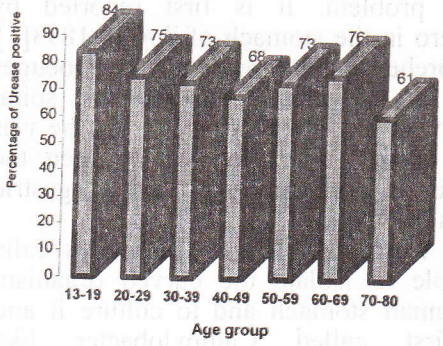


Fig.1 Gender Distribution

Urease test was positive in (84 %) in age group 13-19 years and (61%) in 70-80 years a



The main presenting symptoms was pain (93%) , Epigastric pain were the most common site (88%) hunger pain were found in 56% and nocturnal pain in60% , relapse were present in 63 % of patients . (Tab. 1).

Table 1. Presenting symptoms

SYMPTOMS	NUMBERS AND PERCENTAGE OF THE PATIENTS		MALE %	FEMALE %
	NUMBER	%		
Pain	368	93	57	43
Epigastric	354	88.5	51	38
Finger	228	57	35	22
Diffuse	147	37	45	55
Radiation	185	46		
Back	82	44	46	54
Rt. Hypoch.	16	9		
Chest	6	3		
Lt. Hypoch.	3	1.5		
Umbilical	2	1		
Hunger	225	56	59	41
Nocturnal	241	60	56	44
Relapse	247	62	57	43
Heart Burn	179	45	59	41
Nausea &Vomiting	136	34	53	47
Seasonal	88	22	68	32
Haem.& Melaena	16	4	57	43

Diet was the most common aggravating factor (59%), while psychological stress and smoking were related to the symptoms in 48% and 30 % respectively (Tab.2).

Table 3Table 2
The Aggravating factors

Aggravating factors (positive history)	Numbers and percentage of the patients		Male %	Female %
	Number	%		
Diet	237	59	60	40
Psyche. Stress	192	48	53	47
Smoking	121	30	87	13
Alcohol	23	5.7	96	4

Urease test was positive in 88% of patients with ulcer (89% in duodenal ulcer and 86% in gastric ulcer) .Patients with functional (non ulcer dyspepsia were 64%). (Tab.3 and 4).

Table 3
Edoscopic finding and urease test

Endoscopic findings	Number	Urease positive	%
Ulcer	102	90	88
Other than ulcer	148	107	72
Negative (NUD)	185	120	64

Table 4
Patients with Ulcer and Urease reaction

Ulcer	Number of positive urease	%	Male %	Female %
Duode	71/80	89	68	32
Gastric	19/22	86	74	26
Total	90/102	88	69	31

Smoking was more related to gastric ulcer (54%) while it was 37.5% in duodenal ulcer. (Tab.5).

Table 5
Relation of ulcer to smoking

Ulcer	Number of smokers	%
Duodenal	30/80	37.5
Gastric	12/22	54.5
Total	42/102	41

We found that duodenal ulcer were four times more common than gastric ulcer (Tab.6).

Table 6
The Patients with ulcer

Ulcer	Number and percentage of patients		Male %	Female%
	No.	%		
Duoden	80	20	67.5	32.5
Gastric	22	5.5	73	27
Total	102	25.5	69	31

Non ulcer dyspepsia NUD defined as chronic or recurrent pain or discomfort centered in the upper abdomen were endoscopy fails to identify a definite structural cause [18]. The urease test was positive in 80% of patients with doudenitis, 74 % in gastritis , 67 % in esophagitis and 70% in patients with carcinoma of stomach .(Tab.7)

Table 7
Patients with endocopic findings other than ulcer with positive urease reaction

NUD	Patients (No.)	urease positive (No.)	%
Duodenitis	26	21	80
Gastritis	62	42	74
Esophagitis	15	10	67
Duodenitis & gastritis	3	3	100
Duodenitis & Esophagitis	2	2	100
Carcinoma	13	8	61
Stomach	10	7	70
Esophagus	3	1	33
Erosion	8	8	100
Polyp(G&D)	6	5	83
Total	148	107	72

Discussion

Helicobacter pylorus produces a variety of protein which appears to mediate its damaging effects on the gastric mucosa. The urease produced by Helicobacter pylori catalyses the hydrolysis of urea to yield ammonia and CO_2. This provides a more alkaline microenvironment that protects Helicobacter pylori from the effects of gastric acid, which prevents gastric colonization by other bacteria.

The urease results in damage to gastric mucosa by the hydroxide ions generated by equilibration of water with ammonia. Helicobacter pylori produce surface protein

that are chemotactic for human neutrophil and monocyte and activate monocyte to produce super oxides, interleukin-1, and Tumor necrosis factor α . Helicobacter pylori are also capable of producing potentially toxic enzymes such as urease, mucinase, lipase, phopholipase. Approximately 50 % to 60% of Helicobacter pylori isolates produce a toxin that induces non lethal vacuolation in a verity of cell lines, this toxin is known as vacuolating cytotoxin.

Helicobacter pylori reduce somatostatin secretion which is a potent inhibitor of many GI secretory function which results in increased gastrin which cause increased acid secretion and duodenal ulceration [13,17,20,21,22,23].

We found a strong association between Helicobacter pylori and various GI lesions. 89% of our patients with duodenal ulceration were Helicobacter pylori positive by urease test, which is comparable with other studies, Richard G long Et al. reported 90% [19] and Zuhair A.Kassire Et al. 1994 reported 88.3 % [17] and Stephen Patcheet in 1996 reported more than 95% [24].

Zuhair A.K. Et al.1994 reported the presence of bacteria in 60% of patients with gastric ulcer [17] While our study shows higher association of about 86% which is similar to what was reported by other studies [19,24,25,26] like Marshal B.J. study 1987 demonstrate the presence of bacteria in 70% of patients with gastric ulcer [25], Richard G long, Brain T Cooper in1998 reported 75% [19] and Stephen Patcheet in 1996 report 90% [24].

This can be explained by better exclusion criteria and excluding patients who receive antibiotics for ? days in the last 4 weeks. Also we found that smoking was related to dyspeptic symptoms in about 30% of patients, it was about six times more in male. 41% of ulcer patients were smokers, this evidence support the significance of smoking in the pathogenesis of peptic ulcer.

The prevalence of *Helicobacter pylori* in patients with endoscopic finding other than ulcer and patients with gastric carcinoma was 72% and 70% respectively. Patients with non ulcer dyspepsia were only 64% urease positive which is comparable with Al Kassir study (63%) [17], While Hermens DS [27] reported 24 % and George A [28] report 82%. This wide variation may be explained by various geographic distributions and the type of population studied and the method used for detection of Helicobacter *pylori* infection.

Conclusion

Helicobacter pylori are the main cause of duodenal and gastric ulcer .It is likely that *Helicobacter pylori* also play a pivotal role in non ulcer dyspepsia and gastric cancer[29]. Rapid urease test (RUT) is a simple cheap test to identify Helicobacter *pylori* infection [30].

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ئاستی تووشبوون بە بەکتریای (هیلیکوبەکتەر) لە ناساغیەکانی بەشی سەرەوەی کۆئەندامی هەرسدا

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پوختـە

بنەمای لێکۆلینەوەکە : هێلیکوبەکتەر پایلۆری (هـ. پایلۆری) کە بەکتریایەکی لوولپێچی گرام نێگەتیڤە ئەبێتە هۆی سووتانەوەیەکی کۆنینەی بەربلاو لە سەراپای جیهاندا . نەخۆشەکان هەر لە منداڵیەوە تووش ئەبن . تووشبوونەکە بە زۆر شێوە دەرئەکەوێت وەک هەوی گەدەو دوانزەگرێ و گەدەسۆی کۆنینە ، کەبەهۆکارێکی ناسراوی شێرپەنجەی گەدە دائەنرێت

ڕێگەی کـار : لەنێوان(مارتی ١٩٩٧) و (تشرینی دووەمی ١٩٩٩) ، لە نەخۆشخانەی گشتی فێرکاری لە سلێمانی لە چوارسەد نەخۆش کۆڵرایەوە کە سکالاّ و نیشانەی هەرسی جیاجیایان هەبووە پاش پشکنینی سەر جێیی ، هەناوبینی گەدەو دوانزەگرێ یان بۆ کراوە دوو نمونە لە داڵانی گەدە وەرگیرا بۆ پشکنینی (یوریەیز) ی خێرای بۆ سەلماندنی بوون و نەبوونی (هـ. پایلۆری) .

ئەنجامەکان : ئازار بلاّوترین سکالاّی نەخۆشەکان بوو ، (هـ. پایلۆری) لەو نەخۆشانەی (هەوی دوانزەگرێ و هەوی گەدە ، گەدە سۆ و شێرپەنجەی گەدەیان) هەبووە بە ڕێژەی (٨٩٪ ، ٨٦٪ ، ٧٤٪ ، ٧٠٪) بوون یەک لەدوایەک . بەلاّم ئەو نەخۆشانەی تەنیا گرفتی هەرس (بەد هەرس) یان هەبوو ، (هـ. پایلۆری) لە (٦٤٪) یان دا دۆزرایەوە .

دەرەنجام : تووشبوون بە (هـ. پایلۆری) لە ناوچەکەماندا ، لە هەموو تەمەنێکدا بلاّوە و پەیوەندی یەکی تووند و ڕێخۆشکەرە بۆ تووشبوون بە هەوی گەدەو دوانزەگرێ و سووتانەوەی کوانینەی گەدەو شێرپەنجەی گەدە . هەروەها پشکنینی (یوریەیز) بە ڕێگایەکی خێراو هەرزان و بەردەست دا ئەنرێت بۆ دۆزینەوە (ناسینەوە) ی ئەم بەکتریایە

مدى انتشار جرثومة هاليكو باكتر في اضطرابات الجهاز الهضمي العلوي

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الخلاصة

اساس الدراسة :هليكوباكتر بايلوري هى بكتريا حلزونية ذات صبغة غرام السالبة التى تسبب احدى الالتهابات المزمنة الشائعة في جميع انحاء العالم . تكتسب الاصابة بهذه البكتريا منذ الطفولة ، ويرافق الاصابة بهذه البكتريا العديد من امراض الجهاز الهضمي المهمة والخطيرة كقرحة المعدة و الاثنى عشر و التهاب المعدة المزمن الذى يعتبر احد العوامل المعروفة للاصابة بسرطان المعدة .

طريقة العمل : قمنا بدراسة نسبة الاصابة بهاليكوباكتر في المرضى الذين كانوا يعانون من العوارض الهضمية المختلفة وقد تم دراسة (٤٠٠) مرضى ، مابين (اذار ١٩٩٧ و تشرين ثاني ١٩٩٩) في مستشفى العام التعليمي في السليمانية . وتم فحص كافة المرضى سريريا مع تنظير للجهاز الهضمي العلوي مع اخذ خزعتين من المعدة(قرب الفتحة البوابية) لعمل فحص اليوريز السريع للكشف عن وجود هيلكوباكتر .

النتائج : تبين ان الالم هو اكثر العوارض التي كان يشكو منها المرضى و و جد ان نسبة الاصابة ب (هليكوباكتر بايلوري) في المرضى الذين كانوا يعانون من قرحة الا ثنى عشر ٨٩٪ وفي المرضى الذين كانو ا يعانون من قرحة المعدة ٨٦ ٪ وكانت نسبة الاصابة في المرضى الذين كانوا يعانون من التهاب المعدة المز من ٧٤ ٪ و كانت نسبة الاصابة في المرضى الذين كانوا يعانون من سرطان المعدة٧٠ ٪ وبينما كانت نسبة الاصابة في المرضى الذين كانوا يعانون من عسر الهضم الوظيفي ٦٤٪ فقط .

<u>الاستنتاج</u> : تعتبر الاصابة ب (ها ليكوباكتر بايلوري) في منطقتنا شائعة في كافة الاعمار و هناك علاقة وثيقة بين الاصابة بهذه البكتريا مع ازدياد خطورة الاصابة بالقرحة الهضمية و التهاب المعدة المزمن وسرطان المعدة ، و يعتبر فحص اليوريز طريقة سريعة و غير مكلفة و عملية للكشف عن هذه البكتريا .

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