

Relationship between Nausea, Vomiting and *Helicobacter pylori* IgG Seropositivity in Pregnants

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Abstract

Helicobacter pylori is a helix-molded gram-negative bacterium. It is a worldwide distribution. In the current study sixty serum samples from a pregnant woman with vomiting and nausea (emesis gravidarum) plus thirty pregnant without vomiting and nausea (control group) done in Kirkuk general hospital were collected to recognize IgG *-H. pylori* antibody by utilizing Enzyme linked immunosorbent assay. The obtained information includes age, gestational period and residence, during the period of August - December /2015. The actual study was achieved which aimed to focused the light on association of *H. pylori* in the pathogenesis of emesis gravidarum. The results showed that mean age \pm Standard deviation for pregnant with vomiting and nausea (32.18 ± 1.8) and for pregnant without vomiting and nausea (8.7 ± 0.79). $P_{\text{value}} < 0.05$. The outcomes appeared the propagation of *Helicobacter pylori* IgG antibody positive in pregnant with vomit and nausea in the first-trimester of gestation was 9(42.8%) with $P_{\text{value}} = 0.001$ when matched with standard group while during second trimester, the *H. pylori* IgG antibody positiverate in emesis gravidarum group was 30(76.9) and in control group was 2(16.6%), $P_{\text{value}} = 0.0001$. The current result also reviewed a positive significant contrast between *H.pylori* IgG- positive and the residence, $P_{\text{value}}=0.04$.

Key words: *Helicobacter pylori*, seroprevalence, emesis gravidarum, Pregnancyand Enzyme Linked Immune-Sorbent Assay (ELISA).

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العلاقة بين الغثيان، التقيؤ والاستجابة لامصال *Helicobacter pylori* IgG في الحوامل

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الخلاصة

جرثومة الملوية البوابية هي من بكتريا العصيات، سلبية الغرام، أليفة الهواء وهي العدوى الأكثر انتشاراً في العالم. اشتملت عينة الدراسة على 60 عينة لنساء حوامل لهن أعراض التقيؤ والغثيان و 30 عينة لنساء حوامل أصحاء وأجريت هذه الدراسة في مستشفى كركوك العام لإيجاد اضرار جرثومة الملوية البوابية (IgG) باستخدام تقنية الامتزاز المناعي المرتبط بالانزيم (ELISA) وفقاً لاستمارة استبيان ضمت معلومات فيما يخص العمر والسكن وفترة الحمل وهل تعاني من امراض اخرى. الدراسة الحالية ركزت الضوء على علاقة جرثومة الملوية البوابية بالغثيان والتقيؤ لدى النساء الحوامل (التقيؤ الحملي) حيث بينت ان المتوسط الحسابي لاعداد النساء الحوامل مع الغثيان والتقيؤ زائدا الانحراف المعياري (32.18 ± 1.8) وفي النساء الحوامل الاصحاء (8.7 ± 0.79) وانه لا توجد دلالة معنوية بين النساء الحوامل مع الغثيان والتقيؤ والنساء الحوامل لأصحاء P. value < 0.05. فضلا عن ذلك بين ان معدل انتشار اضرار جرثومة الملوية البوابية (IgG) في النساء الحوامل اللاتي حملهن في الفصل الأول والفصل الثاني (9(42.8%) و30(76.9%) على التوالي وتختلف اختلافا معنويا مقارنة مع الحوامل الأصحاء P. value = 0.0001 & P. value = 0.001 على التوالي. وأيضا أظهرت الدراسة الحالية وجود علاقة معنوية بين النساء الحوامل والإصابة بجرثومة الملوية البوابية من حيث الإقامة (P. value=0.04).

كلمات مفتاحية: جرثومة الملوية البوابية، انتشار، التقيؤ الحملي، الحمل وتقنية الامتزاز المناعي المرتبط بالانزيم.

Introduction

Helicobacter pylorus was initially named *Campylobacter pyloridis* (later changed to the thought to be a types of *Helicobacter*).^(1,2,3) *Helicobacter Pylori* is gram negative, spiral shaped, motile, microaerophilic, motile and slow growing bacteria⁽⁴⁾. Infection with *H. pylori* happens around the world; however, the prevalence differs extremely amidst countries and between inhabitation collections inside the similar country^(5,6). The conceivable transmission of *H. pylori* may be individual to individual transmission including oral to oral; oral to fecal and saliva routes, waterborne transmission; zoonotic or vectorborne transmission and iatrogenic transmission⁽⁷⁾. The human stomach appears the principal store of infection and

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person to person contact is thought to be the fundamental course of transmission⁽⁸⁾. *H. pylori* infection is explored in gastric disease even through gestation; in particular such bacterium appears related to vomiting and nausea during pregnancy⁽⁹⁾. Vomiting plus Nausea is a great grievance in 70 to 80 percentage of pregnant. The exemplary onset is inter alia 4 -8 weeks and persist to 16-18 weeks of gestation. Vomiting and nausea in pregnancy named emesis gravidarum^(8, 10). The reasons for queasiness and vomiting in pregnant remain obscure, so various conceivable causes have been researched⁽¹¹⁾. The infection by *H. pylori* in all probability was obtained prior to pregnancy, it is extensively thought that immunological and hormonal modification occurring during pregnancy could activate latent (inactive). *H. pylori* effects the fetus in addition to maternal health^(12,13). The linkage among *H. pylori* infection and vomiting at early period of pregnancy raised aggregation of fluid and displacement of extracellular and intracellular volume happen as a consequence of the excess steroid hormones, which alternately induces an alteration in pH; such variation of acidity could prompt to activate of inactive *H. pylori* infection. Another clarification for such correlation are declined defensive mechanism versus *H. pylori* and reduced gastrointestinal motility in pregnancy⁽¹⁴⁾. Aim of the study: was directed to shed a light about determine the possible presence of any association of *Helicobacter pylorus* in the pathogenesis of emesis gravidarum in pregnant by identify *Helicobacter pylori* IgG antibody markers and compare them with control group.

Materials and Methods

Blood samples collected from total 90 pregnant (60 pregnant with vomiting plus nausea) and (30 pregnant without nausea and vomiting, as a control group), Five (5) ml blood samples was collected by vein puncture using disposable syringes from each patients & controls; was placed in plain test tube and left to clot at room temperature then separated by centrifugation; and obtain sera. All sera were immediately frozen at (-20C°) till used. Then screened for presence of *Helicobacter pylori* antibody (IgG) by classical ELISA technique. Criteria for

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selection were absence or presence of nausea and vomiting, age, residence and the interval of gestation.

The IgG -*Helicobacter pylori* antibody kit is based on the enzyme immunoassay (EIA). *Helicobacter* antigen is coated on the surface of micro-titer stripe. Diluted patient sera or standards (ready- to utilize) were added in wells of the micro-titer plats. Binds among IgG antibodies of the serum and the immobilized *Helicobacter* antigen occur. After one-hour incubation at room temperatures the plate was washed with wash buffer which is diluted, to clear unbound materials. Subsequently the conjugate (ready-to use, anti-human IgG peroxidase) were added and incubated for 30 minutes, unbounded conjugate removed by a subsequent washing, as well the substrate tetra-methylbenzidine (TMB) solution were pipetted and 20 minutes were incubated inducing the development of a blue dye in the wells. The expansion of color is terminated by the adding of a stop solution, which alters the color from blue to yellow. The resulting dye was measured at 450 nm. The intensity of color of solution was directly proportional to the concentration of the IgG antibody that present in the serum (Demeditec Diagnostics, Germany).

Interpretation of outcomes: Cut-off = 0.5

If the result is above 0.5 is indicate the value is **Positive.**; If the result is less than 0.5 is indicating the value is **Negative.**

Statistical analysis: χ^2 (Chi-square) test was used. The significant level used was $P_{value} < 0.05$.

Results

The pattern about distribution of examined groups regarding to the age is noticeable in table (1), which demonstrate that among the patient group (pregnants with nausea plus vomiting) which have *H. pylori* IgG seropositivity 13(54.2%) occur in age 27-30 years 1(33.3%) occur in age ≥ 35 years. The occurrence of IgG positive antibodies was found to be statistically non-significant in studied groups according to the age group

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Table 1: Allocation of *H. pylori* IgG in examined groups according to age

Age group (year)	Total No. of examined pregnancy	%	<i>H.pylori</i> IgG			
			Positive		Negative	
			No.	%	No.	%
<=18	7	7.7	3	42.9	4	57.1
19-22	24	26.6	8	33.3	16	66.7
23-26	12	13.3	8	66.7	4	33.3
27-30	24	26.6	13	54.2	11	45.8
31-34	20	22.2	8	40	12	60
>=35	3	3.33	1	33.3	2	66.7
Total	90	100	41	45.5	49	54.4
Mean± Standard Deviation	15 ± 1.0		6.83 ± 0.77		8.1667 ± 0.39	
X ² value Chi-square test = 4.53, X ² value at P value 0.05 = 5.99, P value = 0.4 (Nonsignificant).						

Table (2) show the incidence of *H. pylori* IgG antibody positive according to duration of gestation (first trimester); 9(42.8%) pregnant with vomiting & nausea have *H. pylori* IgG positive whereas absent with the control group (pregnant women in the first trimester without nausea and vomiting). Statistically, there was significant difference P.value (0.001) between the studied groups regarding to duration of gestation (first trimester).

Table 2: The incidence of *H. pylori* IgG antibody positive according to duration of gestation (first trimester)

Appearance of nausea & vomiting	Total of examined pregnant		<i>H. pylori</i> IgG antibody titer			
	No.	%	+ ve		- ve	
			No.	%	No.	%
Nausea & vomiting at the first 3 months of pregnant (First trimester)	21	53.8	9	42.8	12	57.1
No nausea & vomiting during the first 3 months of pregnant	18	46.2	0	0	18	100
Total	39	100	9	23.1	30	76.9
X ² value Chi-square test = 10.01, X ² value at P.0.05 = 3.84, P value = 0.001 (significant)						

Table (3) observed the occurrence of *H. pylori* IgG positive according to duration of gestation (2nd & 3rd trimester) within patient group; 30(76.9%) have *H. pylori* IgG positive whereas only 2(16.6%) pregnant without vomiting and nausea have *H. pylori* IgG positive. There was

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significant differences (Pvalue = 0.001) between studied group according to duration of gestation (2nd & 3rd trimester).

Table 3: Distribution of *H. pylori* IgG in patient groups according to appearance of

Appearance of nausea and vomiting	Total No. of examined		H. pylori IgG			
			+ve		-ve	
	No.	%	No.	%	No.	%
Showed nausea & vomiting during 2nd & 3rd trimester of pregnancy	39	76.5	30	76.9	9	23.1
No nausea & vomiting during the 2nd + 3rd trimester of pregnancy	12	23.5	2	16.6	10	83.3
Total	51	100	32	62.7	19	37.2
<i>X² value = 14.25, X² value at P.0.05 = 3.8, P.0.05 = 0.001 (Significant)</i>						

Table (4) reviewed the incidence of patients and controls according to residence. Among the urban residence 14(34.1%) have the *H. pylori* IgG positive. otherwise, among the rural residence 27(55.1) have *H. pylori* IgG positive.

Table 4: Incidence of patients and controls according to residence

Parameter	Total NO. of examined		H. pylori IgG			
			+ve		-ve	
	No.	%	No.	%	No.	%
Urban	41	45.5	14	34.1	27	65.9
Rural	49	54.4	27	55.1	22	44.9
Total	90	100	41	45.5	49	54.4
<i>X² value = 3.63, X², P.0.05 = 0.04 (Significant)</i>						

Table (5) reveals the prevalence of *H.pylori* IgG antibody titer between Pregnant with nausea & vomiting and Pregnant without nausea & vomiting.

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Table 5: Distribution of *H. pylori* IgG antibody titer between pregnant with nausea and vomiting and pregnant without nausea and vomiting.

Pregnant with nausea & vomiting	Pregnant without nausea & vomiting	
60(66.66)	30(33.33)	Number & %
67.2	4.7	$\sum x$
1.12	0.15	X-
0.4	0.009	S2
32.18 ± 1.8	8.71 ± 0.79	Mean ± Standard deviation
X^2 value T test = 7.46, X^2 value at P.0.05 = 1.66, P value < 0.05, P value = 0.01 (Significant)		

Discussion

Helicobacter pylorus is one of the generality well-known infectious illnesses on earth. More spread rate are present in developing nation at lesser distribution in developed countries. Vomiting and Nausea are the more widely recognized disturbance affect pregnant⁽¹⁵⁾. Else, proposed the relation among emesis gravidarum and *H. pylori* infection is a result of raised fluid cumulating and the displacement of both intracellular and extracellular volumes in the coming early stage of gestation according to outcomes of of raised steroid hormone in turn results in an altar of pH inside gastro-intestinal tract. Such variation in acidity prompts to activate latent *H. pylori* bacteria. Another illustration with regard to combination are reduced defensive mechanisms of pregnant versus *H. pylori*; this related to alteration in cell-mediated immunity adding to hormones⁽¹⁶⁾. The maternal age means in pregnant with emesis gravidarum is (32- 18 ± 0.5) but in controls is (8.71 ± 0.2); There is statistically significant variance among two groups regards to ages (P.value = 0.1). Furthermore, no difference (P.value > 0.05) in the term of age and *H. pylori*- IgG. This results in agreement to previous study performed in Dubai which showed no significance among age and the *H. pylori*- IgG positive (P.value = 0.45). Also the current search showed the incidence of *H. pylori* - IgG between patient and control groups are highly significant (P.value = 0.01) and this results agreed with another study which reviewed that there was very significant in distribution in controls and patient (P.value < 0.01)⁽¹⁷⁾.

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30 (76.9%) pregnant with vomiting through second trimester and 2(16.6%) pregnant within the control groups have *H. pylori* IgG positive. This result are nearly compatible with another study who found that the 24 (92.3%) pregnant with vomiting and only 23(7.7%) pregnant in control group have *H. pylori* IgG positive (18). These consequence in a accordance with outcome of past studies which reports the average of *H.pylori* seropositive were more than 85% in pregnant with queasiness and vomiting(19). The mean \pm standard deviation of IgG titer in the study group (69.7 ± 77.5) was significantly (P.value < 0.01) more than that in control group (34 ± 47.8) (20). Salami- Khayati etal. revealed significantly higher *H. pylori* seropositivity in nausea and vomiting pregnant (88.9%) than in control ones (40.7%) (21). Our data observed there was non- significant (P.value = 0.4) as regards to age difference among the studied collections. Those outcomes in agreement to gether with other consequence that showed the difference was (pvalue:0.45), also the current outcomes in approval with others that founds the women whose have repeated vomit at first trimester& were positive for *H.pylori* were significantly elder than those negative for *H.pylori* (22,23).Another study may be agree with the current results which showed that the *H. pylori* IgG positive in pregnant with emesis gravidarum were 68 % (24). Ehab etal. got that the *H. pylori* considered as one of the reseans of emesis gravidarum (25).Mashaallah etal. study was nearly in agreement with current study how showed no significant differences according to ages, also reported that the *H. pylori* infection is elevated within emesis gravidarum cases and may be considered a risk factor (26). In current study, the occurance of it bacteria was significantly riser in pregnant with nausea and vomiting 39 (65%) out of 60 than control group 2(7%) out of 30. This goes with another study, who point that *H. pylori* antibody in serum samples positive in 54 from 62 and patient's cases (87%) while in controls were 20 from 62 (32%) (27). Other study done by Ahmed Erdem, Mural Arslan etal. They found the propagation from *H. pylori* was high in pregnant with emesis gravidarum when compared with control groups (28) (29). Our detecting, indicated distribution of *H. pylori* infection in urban residents (28.8%) low comparison to rural (71.2%) (P.value = 0.008) was in line with a report elsewhere and it may be contributed to agents affined to back of safe water providing

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and hygiene status in the rural portion of the county^(30, 31). The prevalence of *H. pylori*- IgG antibody positive in pregnant with vomiting plus nausea were 9 (42.8%), 30 (76.9%) through the first and second trimester respectively. Only 2(16.6%) of pregnant within control group have *H. pylori* IgG- positive. There was a significant difference (P.value = 0.001) between studied group indicated by duration of gestation. The above results are nearly compatible with another study done in China who found 73.4% of pregnant with nausea and vomiting in the first trimester have *H. pylori* IgG antibody, 53.7% of pregnant with vomiting at the second trimester have IgG antibody and *H. pylori* IgG antibody is present in 1.5 % of pregnant without nausea and vomiting (32). The current study may be nearly compatible with another study done by Fariba Nanbakhsh et al. in Iran which showed no significance between age (years) between pregnant with nausea and vomiting and controls (P.value =0.47). At last, our outcomes propose that there might be a correlation amidst *H. pylori* infection & emesis gravidarum.

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