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RESEARCH ARTICLE

Evaluation of the Relationship Between Helicobacter Pylori Infection and Hyperemesis Gravidarum

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Abstract

Objective: to detect Helicobacter pylori seropositivity in Hyperemesis gravidarum at 6-16 weeks of gestation in comparison to asymptomatic pregnant females.

Methods: The study includeded 30 pregnant women with hyperemesis gravidarum ,admitted to Department of Obstetric and Gynacology ,high risk pregnancy unit,Benha University hospital and 30 healthy pregnant controls at 6-16 weeks of gestation .both groups were matched clinicaly. Blood samples were collected and tested for H.pylori using rapid one step chromatographic immunoassay test.

Results: In that study H.pylori seropositivy was significalty higher in hyperemesis gravidarum than normal pregnant women .H.pylori was present in 53.3% of hyperemesis patients compared to 13.3% in non hyperemesis women.

Conclusion: Our study showed that there was significant correlation between H.pylori and hyperemesis gravidarum.

Introduction:-

Vomiting (morning sickness) occur in almost 70% of all pregnancies, the typical onset is between 4 and 8 weeks gestation continuing until 14-16 weeks. Severe nausea and vomiting associated with weight loss ,dehydration and electrolyte disturbance is called hyperemesis gravidarum(HG).It complicates 0.3-2% of all pregnancies (1).The cause of HG ,which still remains unknown,seems to be multifactorial .There is evidence indicated that ,in HG ,there are endocrine factors ; gastrointestinal tract dysfunction; psychological causes ; anatomical variation; genetic incompatibility and immunological factors (2).

Helicobacter pylori is one of the most common bacterium infecting humans. It
is a gram negative, helix-shaped, microaerphilic. The infection is acquired by fecal-oral or oral-oral routes,iatrogenic transmission and vertical spread (3). It is more common in the developing countries rather than in Western countries. H.pylori is associated with chronic gastritis ,gastrodudenal ulcers ,and gastric malignancies (4).

Recently several studies have implicated H.pylori infection as a possible cause for HG.There is an increasing importance of treatment of H.pylori and a great need for simple,accurate,inexpensive ,and noninvasive diagnostic methods.Serological test is the fast noninvasive techniques with high sensitivity 95.9% and specificity 89.6%.(5).
Serogical teste are based on the detection of specific anti-H.pylori IgG antibodies in the patients serum. The aim of our study is to determine if there is an association between Helicobacter pylori infection and hyperemesis gravidarum among Egyptian women.

Patients and Methods:-

A prospective study included 60 pregnant women, admitted to Department of Obstetrics and Gynecology, High Risk Pregnancy Unit, Benha University Hospitals,30 patients with the diagnosis of hyperemesis gravidarum, and 30 other

pregnant women without hyperemesis gravidarum. Written informed consent was obtained from all participants who were fully informed about the study and that the study had no extra expense for participants according to ethical committee of Benha university Hospital.Inclusion criteria for the hyperemesis gravidarum group (vomiting >3 episodes per day ,wight loss of > 3kg or 5% and the presence of at least 1 positive ketonuria),age of 18-40 years, gestation between 6 and 16 weeks and exclution of other causes of vomiting such as hyperthyroidism, molar pregnancy, infectiouse diseases, multiple pregnancy and gastrointestinal disorders. Inclusion criteria for control group were the same as for HG groups except for symptoms of HG.Both groups had a full history taking, general and local examination, as well as ultrasound , was conducted for all cases in order to exclude any other obstetric cause for hyperemesis such as multiple pregnancy or molar pregnancy,urine analysis for ketons and a special laboratory investigation to test the serum for H.pylori IgG seropositivity usuing 1-step H.pylori serum/plasma test device which is a qualitative membrane-based for the detection of H pylori antibodies in serum or plasma with a sensitivity of 95.9% and specificity of 89.6%. This test cannot differentiate between
recent and old infection as the antibodies remain for a long period in the serum. The test contains H pylori antigens coated particles and antihuman IgG coated on the membrane.

Statistical methodology:-

The collected data were tabulated and analyzed using SPSS version 16 soft ware (Spss Inc, Chicago, ILL Company). Categorical data were presented as number and percentages, using Chi square test (X^2) or Fisher's exact test (FET) for their analysis, Quantitative data were expressed as mean ± standard deviation and range, using Student "t" test or Man Whitney U test for analyzing them. The accepted level of significance in this work was stated at 0.05 (P <0.05 was considered significant).

Results:-

The clinical characters of the hyperemesis gravidarum group and the control group are present in Table 1.There were no significant differences in occupation,age,gestational age,BMI ,parity and gravidity in women with HG and the controls.The mean age was 25.4 years in HG group and 27.7 years in the control group (p=0.085).The mean gestational age in HG group was 10.4 weeks and that in control group was 10.3 weeks ,with no statistically significant difference (p=0.15).Regarding parity ,graviditiy no statistically significant difference (p=0.24&0.27 respectively).There were insignificant difference between two groups with regard to weight (p=0.83).
Regarding the number of vomits per day, Table 2 shows statistically significant difference between both groups.
Regarding H.pylori seropositivity in both groups ,Table 3 shows statistically significant difference between both groups (p=0.001). As the H.pylori seropositivity higher in HG group (53.3%) compared with the control group (13.3%).

Table(1): clinical characters of the hyperemesis gravidarum group and the control group:

Variable	Hyper emesis group (N=30)			Control group (N=30)			St. 't'	P
	Mean	± SD	Range	Mean	± SD	Range		
Occupation	H.W	H.W	H.W	H.W	H.W	H.W	H.W	NS
Age (Y)	25.4	4.47	20-33	27.7	5.64	21-38	1.75	0.085 (NS)
Gestational age (w)	10.4	3.66	6-16	10.3	3.30	6-16	0.15	0.88 (NS)
BMI	22.4	4.31	17-31	22.6	4.14	17-32	0.21	0.83 (NS)
							Mann Whitney U test	
Gravidity	2.4	1.25	1-6	2.9	1.56	1-6	1.09	0.27 (NS)
Parity	1.2	1.09	0-3	1.8	1.74	0-5	1.17	0.24 (NS)

Table (2): Comparing the frequency of vomiting between hyperemesis group and control group:

Frequency of vomiting/day	Hyperemesis gravidarum group	Control group	St.t	P
Mean ±SD	6.9±2.9	0.3±0.8	18.85	<0.001 (HS)
Range	4-13	0-3		

Table(3): Incidence of H.pylori seropositivity in hyperemesis group and control group:

H. pylori seropositivity		Group			X^2 &P	OR (95%CI)
		Hyper emesis gravidarum group N=30	Control group N=30	Total		
Positive	Count	16	4	20	10.8& 0.001 (HS)	7.4 (2.07-36.3)
	% within Group	53.3%	13.3%	33.3%		

Disscusion:-

Nausea and vomiting are the most common disorders affecting pregnancy. It varies from mild(emesis gravidarum), which does not interfere with a patient's physical activity, to severe (hyperemesis gravidarum), which is associated with frequent vomiting,dehydration and electrolyte imbalance. Hyperemesis gravidarum occurs in about 0.3% to 2% of pregnancies and is most prevalent during but certainly not limited to, the first trimester of pregnancy (6).

The pathogenesis of hyperemesis gravidarum is still unclear.However,pregnancy may be associated with an increased susceptibility to H.pylori infection (7), and it has been hypothetically proposed that a shift in gastrointestinal tract PH during early pregnancy as a result of increased accumulation of women body fluid ,steroid hormone changes and immunologic tolerance ,could lead to the activation of latent H.pylori infection ,which can exaggerate the symptoms on nausea and vomiting (8).

Studies as ***Frigo et al., (1998)***(12***); Hayakawa et al., (2000)***(13);***Bagis et al.,(2002)(***14***); Mansour et al.,(2010)***(15)***; Aboulfoutouh et al.,(2012)***(16)***; Nanbakhsh et al.,(2014)***(17). Showed a significantly increased infection rate in patients with hyperemesis gravidarum than in controls. ***Frigo et al., (1998)***reported statistically significant difference between HG patients and asymptomatic once regarding H.pylori infection (90.5% vs. 46.5%) , ***Hayakawa et al., (2000)*** ; reported H.pylori seropistivitly (47.5% in HG patients vs. 20.6% in controls), ***Bagis et al.,(2002)*** reported H.pylori diagnosed by endoscopic in (90% HG patients vs. 50% in controls), ***Mansour et al.,(2010)*** reported H.pylori seropistivitly (88% in HG patients vs. 30% in controls), ***Aboulfoutouh et al.,(2012)*** reported H.pylori seropistivitly (100% in HG patients vs. 86.67% in controls) and ***Nanbakhsh et al.,(2014*)** reported H.pylori seropistivitly (92.3% in HG patients vs. 7.7% in controls).

In contrast the studies of ***Karadeniz et al., (2006)****(18)* ***; Aytac et al.,(2007)***(19) found no association between H.pylori and HG.
Karadeniz et al.,(2006) found no association between Hpylori and HG by specific serologic and stool antigen tests,as reported the prevelance of H.pylori IgG antibody was 67.7%(21 of 31) in the patient with HG and 79.3%(23 of 29) in control . ***Aytac et al.,(2007)*** also did not findany significant difference HG patients and control ones (41.1% vs. 40%).

In Our study, 60 pregnant women in the first trimester were subjected to detailed history ,physical examination ,ultrasonograhy and Helicobacter pylori IgG assay by rapid antigen test. 30 pregnant women complaining of hyperemesis gravidarum and 30 pregnant women were control.

The two groups were matched to each other regarding :Age , occupation ,gestational age ,gravidity, parity and BMI. In this we Compared the two groups as regards H pylori seropositivity.

We found that the (p value 0.001) and highly significant statistical difference between case group and control group as within the case group 46.7 % (14cases) were H. pylori seronegative while 53.3% (16cases) were H. pylori seropositive compared to 86.7%(26 women) being H.pylori seronegative and 13.3%(4 women) seropositive in the control group.

Our results suggest that there was strong association between Helicobacter Pylori and hyperemesis gravidarum, and we conclude that when a pregnant patient is complaining of hyperemesis gravidarum , we should do test for *H pylori* seropositivity

Our study revealed higher H. pylori seropositivity in pregnant women with hyperemesis gravidarum , this result is similar to previous studies reporting a seropositive rate of more than 50%, the relationship between hyperemesis gravidarum and H.pylori infection as showing in (table 4).

Table (4): Incidence of H pylori infection in hyperemesis in different studies

The study	Number of cases withHP(+)/number of cases , n(%).
Frigo,1998	95/105(90.5%)
Hayakawa,2002	18/34(52.9%)
Bagis,2002	19/20(95%)
Khayati,2003(20)	48/54(88,9%)
Karaca,2004(21)	46/56(82.1%)
Xia,2004(22)	64/72(88.9)
Tuncel,2006(23)	48/50(96%)
Hatziveis,2007 (24)	14/25(56%)
Sandven,2008	105/244(435%)
Mansour,2011	71/80(88.8)
Shaban,2014	46/50(92%)
The present study,2015	16/30(53,3%)

Conclusion:-

From this study we can conclude that there is significant correlation between Helicobacter pylori infection and occurrence of hypere mesis gravidarum.

It is recommended to do investigations for Helicobacter pylori for all women who are considering pregnancy in the near future.

When Helicobacter pylori infection is discovered before pregnancy, it is recommended to receive treatment for Helicobacter pylori before pregnancy. The safest method for best method for treatment during pregnancy is combination therapy of amoxicillin(category A) (750 mg t.i.d) and metronidazole (category B\C) (500 mg.q.i.d) combined with or given after anti-secretory drug therapy(PPI) with meals for 2 weeks. This gives success rate 85%.

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