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Serum Level of Rheumatoid Factor and Anti-Nuclear Anti bodies in Patients with Helicobacter Pylori Related Gastric Lesions

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Abstract: The exact etiology of systemic rheumatic diseases is unclear, but it has long been suggested that exposure to certain environmental agents, such as bacterial infection, in genetically predisposed individuals may be the trigger for the initiation of autoimmune processes. Helicobacter pylori (H. pylori) is one of the most widely studied infectious agents proposed as agents triggering autoimmune response.

Eighty dyspeptic patients were selected in our prospective case-control study, for evaluating the serum level of rheumatoid factor (RF) and anti-nuclear antibody (ANA) in patients with H. Pylori related gastric lesions.

According to endoscopic findings and Rapid Urease Test (RUT), our patients were divided into 4 groups; 20 patients with positive endoscopic findings and positive RUT (I-a), 20 patients with positive endoscopic findings and negative RUT (I-b), 20 patients with negative endoscopic findings and positive RUT (II-a) and 20 patients with negative endoscopic findings and negative RUT (II-b).

For all patients group, full clinical evaluation, routine laboratory investigations, upper endoscopy with RUT, serum level of RF and ANA were done.

Serum levels of RF and ANA among the total H. pylori-infected subjects, were significantly higher in comparison to uninfected groups, furthermore, serum levels of RF and ANA were higher in H. pylori infected patients with gastric lesions as, peptic ulcer, gastritis and\or duodenitis.

Further study for evaluating the effect of H. pylori eradication on serum levels of RF and ANA is highly recommended.

Keyword: Helicobacter pylori (H. pylori), Rheumatoid factor (RF), Anti-nuclear antibody (ANA) and Rapid Urease Test (RUT).

Introduction: -

Helicobacter pylori (H. pylori) is one of the most frequent chronic bacterial infections in humans and has been associated with several gastroduodenal diseases. Gastric colonization with H. pylori causes peptic ulcers in 10-20% and gastric cancer in less than 3% of those infected. The interplay of interactions between bacterial virulence parameters and host gastric factor determine the outcome of infection [(1)].

Helicobacter pylori infection causes not only a variety of gastroduodenal diseases but is also involved in the pathogenesis of various autoimmune disorders such as rheumatoid arthritis, idiopathic thrombocytopenic purpura, Sjogrens syndrome, autoimmune gastric atrophy, antiphospholipid antibody syndrome, autoimmune thyroiditis and Henoch Schoenlien purpura[(2)]. It has also been reported that a connection between H. pylori infection and the occurrence of anti-thyroid peroxidase, antithyroglobulin antibodies and autoimmune thyroiditis in young patients with type one diabetes [(3)].

Rheumatoid factor (RF) is an antibody recognizing the Fc portion of human antibodies, and as present in 60 -90 % of rheumatoid arthritis patients. Chronically high titers of RF are thought to be more specific for rheumatoid arthritis (RA) as well as being prognostic of poor outcomes. The autoantibody RF may exist in subjects many years before they exhibit RA and its appearance awards a risk of developing RA that increases with rising titer [(4)].

The production of autoantibodies against nuclear antigens such as ANA is the hallmark of systemic lupus erythematosus. It should be noted that the association of the H. pylori infection with ANA has not been studied adequately[(5)].

Aim of the study: - Evaluating the serum level of rheumatoid factor (RF) and anti-nuclear antibody (ANA) in patients with H. Pylori related gastric lesions**.**

Patients: -

Our study was prospective case-control study, conducted at Al-Hussein university hospital and Dar El-Salam hospital (Harmal) endoscopy units during period from February 2017 to November 2017

We aimed to evaluate the relation between the serum levels of rheumatoid factor and\or antinuclear antibodies and H. pylori infection.

From patients subjected to upper endoscopy in our units, 80 patients with dyspepsia were selected to fill the following 4 groups, according to endoscopic findings and RUT: twenty patients with positive endoscopic findings and positive RUT as group I-a, 20 patients with positive endoscopic findings and negative RUT as group I-b, 20 patients with negative endoscopic findings and positive RUT as group II-a and 20 patients with negative endoscopic findings and negative RUT as group II-b, the last groups was considered as control group.

Any patient with history autoimmune disorders, HBV, HCV, decompensated liver and\or history of steroid or immuno-modulator drugs therapy was excluded from our study.

methods: Written medical consent were taken from all patients. For all patients group, full clinical evaluation, routine laboratory investigations, upper endoscopy with RUT, serum level of RF and ANA were done.

Endoscopic findings in our study included the peptic ulcer, gastritis and\or duodenitis.

Results

There were no significant differences among the examined groups regarding, ag and sex, clinical presentation or routine laboratory investigations.

Table (1) Rheumatoid factors and ANA among the studied groups

	Gp. I-a n. 20	Gp. I-b n. 20	Gp. II-a n. 20	Gp. II-b n. 20	X^2	P value
RF: Mean±SD	41.30±16.81	8.83±2.97	23.40±6.91	7.60±2.76	57.102	<0.05
ANA: Mean±SD	1.81±.434	1.010±.030	1.64±.558	0.22±.000	28.565	<0.05

Serum levels of RF and ANA among the total H. pylori-infected subjects, were significantly higher in comparison to uninfected groups.

Table (2) Rheumatoid factors and ANA among the studied groups

	Gp. I-a & Gp. II-a n. 40	Gp. I-b & Gp. II-b n. 40	X^2	P value
RF: Mean±SD	32.35 ±11.86	8.21±2.86	57.102	<0.05
ANA: Mean±SD	1.72±.496	0.615±.015	28.565	<0.05

Serum levels of RF and ANA among the total H. pylori-infected subjects, were significantly higher in comparison to uninfected groups.

Table (3) Rheumatoid factors and ANA among patient of group-I

	Gp. I-a n. 20	Gp. I-b n. 20	t test	P value
RF: Mean±SD	41.30±16.818	7.60±2.760	8.842	<0.05
ANA: Mean±SD	1.815±0.434	1.010±0.030	8.266	<0.05

Serum levels of RF and ANA were higher in H. pylori infected patients with gastric lesions.

Table (4) Rheumatoid factors and ANA among patient of group-II

Laboratory parameters	Gp. II-a n. 20	Gp. II-b n. 20	t test	P
RF: Mean±SD	23.40±6.916	8.83±2.973	8.652	<0.05
ANA: Mean±SD	1.64±0.558	1.00±0.000	5.124	<0.05

Serum levels of RF and ANA were higher in H. pylori infected patients without gastric lesions.

Discussion: -

Helicobacter pylori is a Gram-negative, flagellated bacterium[6], varies widely by geography and the specific patient population studied [7].

We classified dyspeptic patients after endoscopic findings and presence of H. pylori into 4 groups, for all groups RF and ANA were evaluated.

We found that serum levels of RF and ANA among the total H. pylori-infected patient were significantly higher in comparison to non-infected groups

Our results agreed with **Jafarzadeh et al.**, [8] who recorded higher levels of RF and ANA among H. pylori infected patients.

Also, **Zentilin** et al.[9] reported that, the H. pylori infection contributes in the pathogenesis of rheumatoid arthritis, and the eradication at the infection is reported to have reduced the disease severity.

it has been suggested that H. pylori components such as urease may be among the environmental inducers that initiate several autoimmune diseases by inducing the production of autoantibodies via the activation of B-1 cells.[10]

In the current study RUT was used as the only diagnostic test for H. pylori infection.

This concept was also considered by **Takahiro and David** [11] who reported that, RUT is a rapid, cheap and simple test that is used frequently in clinical practice.

The RUT is an indirect test of the presence of H. pylori based on the presence of urease in or on the gastric mucosa. It has an advantage over serology in that it only detects the presence of an active infection. The test requires a sample of gastric mucosa or mucus that is added to a tube, gel, or other device which brings that sample into contact with urea and a method to detect the products of urea hydrolysis, ammonia or carbon dioxide11.

Furthermore, we found that serum levels of RF and ANA were higher in H. pylori infected patients with gastric lesions as, peptic ulcer, gastritis and\or duodenitis.

Our results agreed with **Jafarzadeh et al**., [8] who recorded higher levels of RF and ANA among H. pylori infected patients presented with peptic ulcer after endoscopic examination.

It has been reported that the eradication of H. pylori reduces several laboratory parameters including RF, ANA, erythrocyte sedimentation rate, fibrinogen and α2-globulins in patients with RA [9] [12].

We rolled out this study for the aim of evaluating RA and ANA in H. pylori infected patients with or without gastric lesions, but further studies are highly recommended as, studying the effect of H. pylori eradication on serum level of RF and ANA or disease activity.

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مستوى عامل الروماتويد والأجسام المضادة النووية في مرضى هيليكوباكتر بيلوري المسببه لآفات المعدة

الملخص: إن المسببات الدقيقة للأمراض الروماتيزمية غير واضحة، ولكن منذ فترة طويلة اقترح أن التعرض لعوامل بيئية معينة، مثل العدوى البكتيرية، في الأفراد المعرضين وراثيا قد يكون السبب في بدء عمليات المناعة الذاتية .تعتبر هيليكوباكتر بيلوري واحدة من أكثر العوامل المعدية التي تمت دراستها على نطاق واسع والتي تم اقتراحها كعوامل تحفيز للمناعة الذاتية.

تم اختيار ثمانين مريضا يعانون من عسر الهضم، لتقييم مستوى عامل الروماتويد والأجسام المضاده النووية في المرضى الذين يعانون من آفات المعدة المرتبطة بالهيلكوباكتر بيلوري.

وفقا لنتائج التنظير الداخلي واختبار الأنسجة السريع للهيلكوباكتر بيلوري ، تم تقسيم مرضانا إلى 4 مجموعات 20 مريضًا لديهم نتائج إيجابية بالمنظار ومصابين هيلكوباكتر بيلوري و 20 مريضًا لديهم نتائج إيجابية بالمنظار وغير مصابيت هيلكوباكتر بيلوري و 20 مريضًا لديهم نتائج سلبية بالمنظار و ومصابين هيلكوباكتر بيلوري و 20 مريضًا يعانون من نتائج سلبية بالمنظار و غير ومصابين هيلكوباكتر بيلوري

لجميع مجموعة المرضى، تم إجراء التقييم السريري الكامل، والتحقيقات المخبرية الروتينية، والتنظير العلوي مع واختبار الأنسجة السريع للهيلكوباكتر بيلوري، و مستوى عامل الروماتويد والاجسام المضاده النووية

كانت مستويات مستوى عامل الروماتويد والأجسام المضاده النووية بين المرضى المصابين بالبكتيريا أعلى بشكل ملحوظ بالمقارنة مع المجموعات غير المصابة، علاوة على ذلك، كانت مستويات مستوى عامل الروماتويد والاجسام المضاده النووية أعلى في المرضى المصابين بـ البكتيريا مع آفات المعدة مثل القرحة المعوية والتهاب المعدة أو التهاب الإثنى عشر.

ينصح بشدة دراسة إضافية لتقييم تأثير القضاء على هيليكوباكتر بيلوري

الكلمات المفتاحية: هيليكوباكتر بيلوري، مستوى عامل الروماتويد والأجسام المضاده النووية، واختبار الانسجة السريع للهيلكوباكتر بيلوري