EVALUATION OF ANTI HELICOBACTER PYLORI IGG LEVEL IN THE SERUM OF PATIENTS WITH AUTOIMMUNE THYROID DISEASE

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Abstract

To detect the autoimmune thyroid disease in patients with peptic ulcer caused by *H. pylori*, we investigated (24) patients with suspected peptic ulcer aged (20 – 35) years old and (10) healthy control. Anti *H. pylori* IgG were measured in serum of peptic ulcer patients by ELISA test. The patients which were positive to anti *H. pylori* IgG were carried to T3, T4, TSH evaluation by ELISA test. There were a highly significant differences ($P<0.05$) inT3,T4 and TSH hormones when comparison with age groups and gender of patients with peptic ulcer caused by H. pylori and there were a highly significant differences ($P<0.05$) with increased means level of T3,T4. and TSH hormones in sera of patients afflicted with peptic ulcer caused by *H.pylori* than control groups.

There were a level of anti H. pylori IgG in patients with autoimmune thyroid disease.

تقييم مستوى أضداد الـ IgG ضد بكتريا *Helicobacter pylori* في مصول المرضى المصابين بأمراض الغدة الدرقية ذاتية المناعة

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الخلاصة

لغرض التحري عن أمراض الغدة الدرقية في المرضى المصابين بالقرحة المعوية المتسببة عن بكتريا *Helicobacter pylori* (*H.* pylori) تم اخذ (٢٤) عينة مصل من المرضى المشكوك بإصابتهم بالقرحة المعوية بأعمار تتراوح بين (٢٠-٣٥) سنة مع (١٠) عينات مصل من الأصحاء الذين يعدون عينات سيطرة. تم قياس نسبة وجود الجسم المضاد IgG لبكتريا *H. pylori* في عينات الأشخاص قيد الدراسة باستخدام تقنية الاليزا. وقد خضعت عينات المرضى الموجبة للضد IgG لقياس مستوى هرمونات T3, T4, باستخدام نفس التقنية.لوحظ هنالك فروق معنوية عالية ($P<0.05$) في هرمونات الغدة الدرقية T3,T4, TSH عند المقارنة مع مجاميع الأعمار والأجناس للمرضى المصابين بالقرحة المعوية المتسببة عن بكتريا *H. pylori* . كما لوحظ هنالك فروق معنوية عالية ($P<0.05$) مع زيادة مستوى متوسط هرمونات T3, T4,TSH في مصول المرضى المصابين بالقرحة المعوية المتسببة عن بكتريا *H. pylori* مقارنة مع مجاميع السيطرة .

تشير الدراسة الحالية إن هناك مستوى من أضداد ال IgG ضد بكتريا ال *H. pylori* وجدت لدى الأشخاص الذين يعانون من أمراض الغدة الدرقية ذاتية المناعة.

Introduction

Pathogenesis of autoimmune thyroid disease (ATD) is multifactorial, including both genetic and environmental factors; among these, bacterial and viral agents also have been suspected to play a role [1]. *Helicobacter pylori* (*H. pylori*) infection, a common inflammatory process of gastroenteric tract, is one of multifactor [2]. Furthermore, there is evidence that Hp infection can induce autoimmune processes against mucosa, with consequent autoimmune gastritis[3]. With these words Marden Black in his monograph remarked the unusual frequency with which peptic ulcer disease is encountered among patients exhibiting hyperparathyroidism. Laboratory data suggest that a real, although undefined, influence is exerted by parathyroid hormone on gastric acid secretion and on the gastrointestinal mucosa [4]. In fact, only one study showed that *H. pylori* infection was more prevalent amongst patients with primary hyperparathyroidism (PHPT) than in the general population, suggesting that patients with PHPT, and especially those with dyspeptic symptoms, should be evaluated for *H. pylori* infection and treated appropriately if positive[5]. There have been controversial reports linking *H. pylori* infection to thyroid disorders including autoimmune thyroid disorders (ATD) such as autoimmune atrophic thyroiditis and Hashimoto's thyroiditis, or thyroid mucosal associated lymphocyte tissue (MALT) lymphoma[6,7,8]. Some studies have reported an increased prevalence of *H. pylori* infection in adults and children with ATD and a relationship between *H. pylori* infection and the presence of high titers of thyroid autoantibodies, such as anti-thyroglobulin (anti-Tg) and antithyroperoxidase (anti-TPO) antibodies resulting in abnormalities of gastric secretory function [9,10]. It has also been suggested that CagA+ *H. pylori* strains increase the risk for ATD, especially in women, and that they are involved in the pathogenesis of Hashimoto's thyroiditis. This is based on the detection of monoclonal antibodies against Cag-A+ *H. pylori* strains which cross-react with follicular cells of the thyroid gland and also on the fact that *H. pylori* strains possessing the Cag-A pathogenicity island carry a gene encoding for an endogenous peroxidase [9]. On the contrary, other studies showed no differences in the serum levels of thyroid hormones or thyroid auto-antibodies in patients with and without *H. pylori* infection whereas *H. pylori* infection seemed not to increase the risk of ATD in individuals with dyspeptic symptoms [11].

The aim of the present study was to evaluate the prevalence of autoimmune thyroid disease in patients with peptic ulcer caused by *H. pylori*.

Materials and methods

The study include 24 patients with suspected peptic ulcer aged (20-35) years and(10) healthy blood donors taken as a healthy control groups.Anti *H. pylori* IgG were measured in both serum samples by using Enzyme-Linked Immunosorbent Assay ELISA [12]. The patients which were positive to *H. pylori* Abs are carried out toT3, T4 and TSH test by using ELISA. This was performed as in the leaflet of the kit (Human Germany).

Statistical analysis

Comparison of paired data from the groups of subjects was done using T-test(t), SPSS and Microsoft excel programs were used for T-test [13].

Results and Discussion

The demographic study showed that there were a highly significant differences ($p<0.05$) in the level of TSH, T3, T4 hormones respectively when comparison with age group of patient with peptic ulcer caused by H. *pylori*, also there were a highly- significant differences ($p<0.05$)in the level of TSH,T3 ,T4 hormones when comparison with the gender of patient with peptic ulcer as we demonstrated in figure(1)and (2).

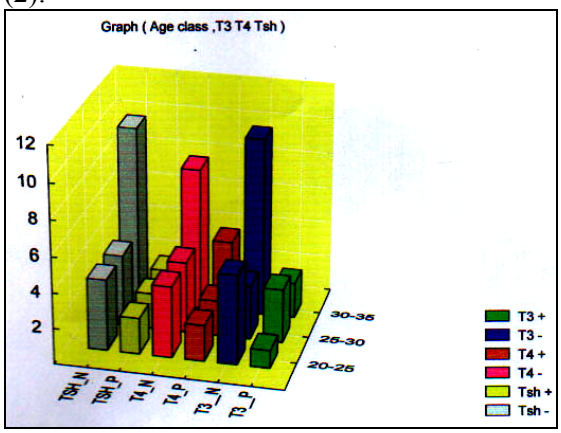

Figure 1: Demographic study for patients with thyroids among patient with peptic ulcer according to age groups.

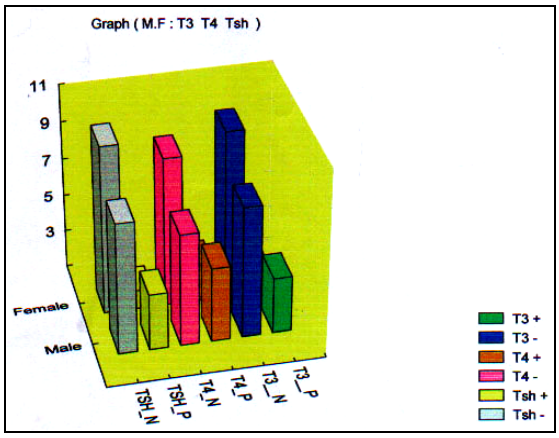

Figure 2: Demographic study for patients with thyroids among patient with peptic ulcer according to gender.

Table (1) showed a highly significant differences($P<0.05$)with increased mean level of T3 hormon in sera of patients afflicted with peptic ulcer caused by H.*pyloi* (4.313±0.659), (0.714±0.403) than control groups (0.499±0.33) . The results of this study demonstrate there were a highly significant differences($P<0.05$)in the level of positive T4 hormone in sera of patients with peptic ulcer (14.33±5.077) and with non- significant differences ($P>0.05$) (1.762±1.370) in the sera of negative T4 hormone when compared with control groups (0.947±0.862).

Also there were a highly significant differences in the level of positive TSH hormone in the sera of patients afflicted with peptic ulcer (7.451±1.27) and non-significant differences ($P>0.05$) in negative TSH hormone (0.658±0.488) than controls groups (0.506±0.333).

Table 1: Mean distribution of T3, T4, TSH hormones level among patients with peptic ulcer caused by *H. pylori*

Hormone Type		No.	Mean	S.D	S.D test (f – test)		(t-test) $\alpha = 0.05$
T3	Control	10	0.499	0.33			
	+	6	4.313	0.659	4	4.48*	15.557
	-	18	0.714	0.403	11.49	3.72*	3.785
T4	Control	10	0.947	0.862			
	+	8	14.33	5.077	34.68	4.20**	7.376
	-	16	1.762	1.370	2.527	3.77*	1.678
TSH	Control	10	0.506	0.333			
	+	6	7.451	1.274	14.63	14.63**	13.087
	-	18	0.658	0.488	2.147	2.147*	0.873

* NS
** HS

In this study we have tried to analyze the association between autoimmune thyroid disease in patients with peptic ulcer caused by *H. pylori*. It is well known that *H. pylori* elicits antibodies can cross – reacting with epithelial components of the gastric mucosa, periglandular T cell infiltrates, and increased glandular cells apoptosis, which may cause diffuse, corpus – fundus restricted, atrophic gastritis of autoimmune type [14]. Another target of *H. pylori* – elicited immune – inflammatory response might be the thyroid gland and that autoimmune thyroid disease may be a consequence [15, 16]. Other studies showed that HLA alleles and *H. pylori* infection can act as independent or combined risk factors in the development of ATD, especially in the HLA – DRB18 0301 who is significantly associated with AT group, although there is no statically significant results between *H. pylori* antibodies and HLA – DRB 1 0301 in patients with GD [3]. Lymphoid follicles in the gastric mucosa are common in ATD, and *H. pylori* infection plays a causative role [17]. When an autoimmune disease such as ATD coexists with *H. pylori* infection, *H. pylori* may be involved in the pathogenesis of extra-gastric MALT lymphomas, such as thyroid MALT lymphoma, as shown by a case report describing a primary thyroid MALT lymphoma which occurred in an *H. pylori* +ve patient with gastric cancer and Hashimoto's thyroiditis [18]. On the other hand, it is important to realize that patients with *H. pylori*-related gastritis, atrophic gastritis, or both conditions required increased daily doses of T4 than controls, suggesting that normal gastric acid secretion is necessary for effective absorption of oral T4 . In addition, development of *H. pylori* infection in patients treated with T4 led to an increased serum level of thyrotropin (TSH), an effect that was nearly reversed after eradication of *H. pylori* infection [19].

The results of this study agreements with other studies which found that the mean value of gastric acid output was higher in the hyperthyroid patients than in the controls, and an extremely high gastric acid output was noted in 8 of the hyperthyroid patients[20]. One study showed a significant decrease of Free-T3 and Free-T4 in *H. pylori*+ve subjects compared to *H. pylori*-ve controls[10]. Other studies have failed to show any correlation between *H. pylori* infection and ATD in children[21]. Other studies examines the pertinent data relating to the possible role of infecting organisms in the

development of autoimmune thyroid diseases (AITD), with an emphasis on human disease, focusing on the mechanisms by which infection could trigger Graves' disease and other thyroiditides [22]. In the other study recognized that a relationship exist between the functional state of the thyroid gland and the secretory and motor activity of the stomach, One of the early observation noted that anacidity was common in patients with hyperthyroid diseases[22]. The feeding of thyroid substance to dogs and rabbits has been reported to diminish gastric secretion. Gastric motor activity appears to be augomented in dogs fed thyroid substance and this effect is not altered by vagotomy[23]. This study indicated that there were a level of anti *H. pylori* IgG in patients with autoimmune thyroid diseases.

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