



## Research Article

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## Detection Anti-Tissuetransglutaminase Antibodies of Celiac Disease in Chronic Hepatitis C Patients

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### ABSTRACT

To determine the relationship between chronic hepatitis C virus and celiac disease, thirty patients with chronic hepatitis C virus of ages (17 -66) years have been investigated and compared with 20 healthy individuals. All the studied groups were carried out to measure antitissu-transglutaminase antibodies IgA and IgG by Elisa test. The percentage of antitissu-transglutaminase IgA antibodies was 10%, and there were a highly significant differences ( $P < 0.01$ ) when compared between studied groups, while the percentage of antitissu-transglutaminase antibodies IgG antibodies was 13.3% and there were also significant differences ( $P < 0.01$ ) when compared between studied groups. These results indicated that infection with HCV play an important role in the pathogenesis of chronic liver disease including viral infection.

**Keyword:** Hepatitis C virus; chronic infection; celiac disease; antibodies

### INTRODUCTION

Celiac disease (CD) is an intolerance to gluten, a protein found in wheat, rye, and barley, it is recognised as a chronic autoimmune disorder that occurs in genetically predisposed individuals, both children and adults and it affects approximately 1% of the world population [1, 2]. Abnormal immune response to gliadin, genetic factors, and environmental factors play a role in the pathogenesis of CD [3]. Infectious agents have been implicated in the pathogenesis of CD via various pathogenic mechanisms, such as molecular mimicry, resulting in modulation of the host's immune tolerance. Transient infections or increased permeability of the

mucosa may facilitate disease onset induced by the uptake of gluten peptide into a microenvironmental milieu in the small intestinal mucosal [4]. Recently, it has been hypothesised that nonintestinal inflammatory disease may trigger immunologic gluten intolerance in susceptible individuals, and hepatitis B virus (HBV) as far as Hepatitis C virus (HCV) were thought to be suitable candidates [5]. The association between CD and several liver disorders has long been documented, about 40% of adult CD patients have been reported to have a mild to moderate hypertransaminasemia (up to five times the upper normal limit) at the time of

diagnosis of CD [6,7]. Several isolated cases of infection with HBV and other viruses, which probably only reflect a fortuitous association with CD [8].

Because the relationship between HCV and celiac disease has yet to be established, this study aimed to estimate the seroprevalence of some autoantibodies of CD in patients with chronic hepatitis C virus.

Chronic hepatitis C is the most common cause of chronic liver disease and cirrhosis [9]. Celiac disease (CD) has been epidemiologically associated with chronic hepatitis C (HCV), and CD activation after the initiation of interferon (IFN- $\alpha$ ) in patients with HCV is documented [10]. Hepatitis C virus (HCV) can also initiate autoimmune disease process. Therefore, HCV infection and celiac disease may occur together [11]. A higher prevalence of the coeliac disease has recently been reported among patients with HCV-related chronic hepatitis. [12]. Moreover, development of clinically overt coeliac disease has been described in some HCV-related chronic hepatitis patients during  $\alpha$ -interferon therapy.

## MATERIALS AND METHODS

The study was carried out on thirty patients infected with chronic hepatitis C virus who attended to hepatic and gastrointestinal tract hospital in the capital of Baghdad during the period from first of November 2015 until February 2016. Consent of the patients has been taken before the study. The ages of the total patients were ranged from (17-66) years. Twenty samples of healthy individuals; 18 female and 12 male were studied as a control group of same ages and sex. Blood samples (5 ml) were collected by disposable syringe into gel tubes and stand at room temperature until the coagulant was formed. Then the samples are centrifuged at

3000 rpm for 5 minutes. Serum samples were dispensed on seven Ependroff tubes. All samples were marked by the name, day and numbering and stored at (-20°C) until carried out to immunological examinations.

## Immunological examination

All the studied groups were carried out to measure anti-tissue transglutaminase antibodies IgA and IgG by ELISA test (Uroimmune, Germany) according to the leaflet of kit.

## Statistical analysis

The statistical analysis system-SAS was used to effect of different factors in study parameters. Chi-square test was used to a significant comparison between percentage and least significant difference. LSD test was used to significant comparison between means in this study [13].

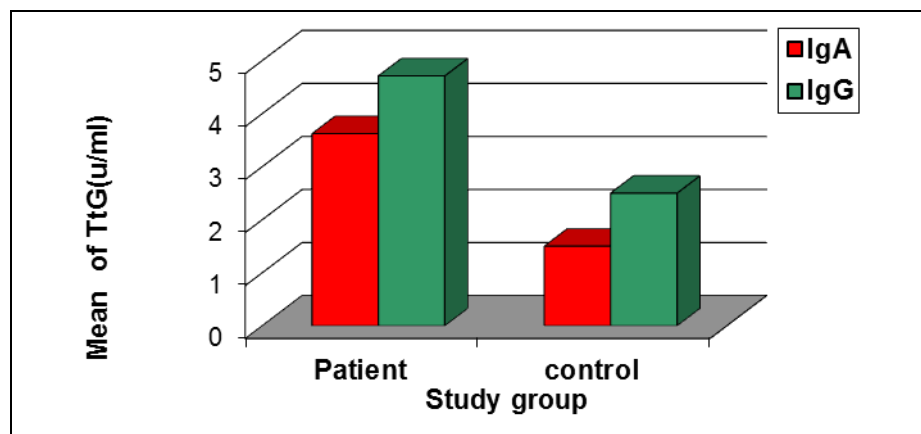
## RESULTS AND DISCUSSION

A total of thirty CHC patients were classified into three groups, group 1 with age less than 30 years, which included teen patients (33.3%). The highest number of CHC patients were located within group 2 in which range of age (30-50) years (46.7%), and the last group which was greater than 50 years and was included only 6 CHC patients (20%). The results of the present study showed that there was a significant elevation ( $P < 0.05$ ) in the concentration of anti-tissue transglutaminase antibodies IgA and IgG ( $3.62 \pm 0.26$ ), ( $4.71 \pm 0.31$ ) U/ml compared to control groups ( $1.50 \pm 0.08$ ), ( $2.50 \pm 0.14$ ) U/ml as shown in fig(1). The prevalence of anti-tissue transglutaminase antibodies IgA and IgG was (3/30) 10.0% and (4/30) 13.3% respectively. There were a highly significant differences ( $P < 0.01$ ) when compared between studied groups as shown in table 1.

**Table 1: The percentage distribution of anti-tissue transglutaminase IgA and IgG antibodies in sera of CHC patients.**

Test	IgA (TtG)		IgG(TtG)	
	No.	%	No.	%
Positive	4	10.0	3	13.3
Negative	26	90.0	27	86.7
Total	30	100 %	30	100 %
Chi-square value	---	14.372**	---	12.846**

\*\* ( $P < 0.01$ )



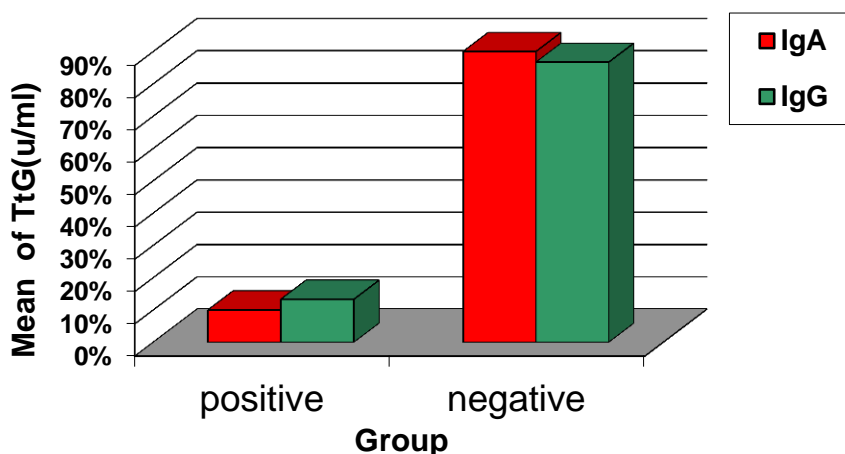
**Fig. 1: Mean level of anti-tissue transglutaminase IgA and IgG (U/ml) in the sera of a patient with chronic hepatitis C virus and control groups.**

When compared between studied groups as shown in table 1 and figure 1,2. Immunoglobulin IgA considers as an indicator of recent (acute) infection, and the titer of IgA is racing during the first two weeks of infection, while the titer of IgA will be decreased gradually, and the titer of IgG will increase during the second and third week of infection for sometimes and decreased at fewer levels and stable for life in serum of patients and referred to the chronic infection [14].

The results of the current study were disagreement with another study was done by

[15]. On CHC patients who reported the percentage of tTG IgA was 33.43%, and [16]. Reported the percentage of tTG IgA was (5.3%) in CHC patients.

It has also been suggested that viral infections prime a mucosal T-cell response to gluten peptides. Also, hepatitis C infections have been associated with the development of autoantibodies, including anti-endomysial antibodies. Previous studies have attempted to determine whether there is an association between celiac disease and hepatitis C but none was found [17,18].



**Fig. 2: The percentage distribution of anti-tissue transglutaminase IgA and IgG antibodies in sera of CHC patients**

#### CONCLUSION

These results indicated that infection with chronic hepatitis C virus might play an important role in the pathogenesis of celiac disease.

#### RECOMMENDATION

Patients with chronic hepatitis C infection should be carried out to the laboratory examination of celiac disease, especially anti-tissue transglutaminase Abs.

**CONFLICT OF INTEREST STATEMENT**

The authors declare that they have no conflict of interests.

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