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Serum Cytokines Profile In Celiac Disease And Healthy Subjects

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ABSTRACT

Background: *In This study measuring the levels of some cytokines in Najaf patients with CD and to compare with healthy subjects. Methods : This case control study was done to check the levels of markers in the serum of(60) patients the celiac disease(CD) and who randomly recruited from different Hospital in Najaf Iraq during period between September 2022and January 2023 This was done using the ELISA method, and the results were compared with those of 40 healthy people who were the same age (18-50) and sex. The ages of the people in the case group ranged from (18 to 50) of celiac disease. Results: the mean level of Interleukin -2(IL-2) high significant different between patients and healthy groups and IFN-gamma no significant, Anti-tissue transglutaminase levels correlated and were show statistically significant with these IL-2 cytokines .and negative correlation between the amounts of marker in the serum and sex. Conclusion:IL-2 play role of pathology of celiac disease.*

Keywords: Celiac Disease, Anti-Tissue Transglutaminase IL-2, IFN-Gamma.

Article Information

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INTRODUCTION

Celiac disease is a chronic, small-intestinal immune mediated enteropathy initiated by exposure to dietary gluten in genetically predisposed individuals and characterized by specific autoantibodies against tissue transglutaminase 2 (anti-tTG2), endomysium, and/or deamidated gliadin peptide(1). CD may affect individuals of either sex and at any age, albeit the mean age at the diagnosis is 45 years and up to 20% of all patients are diagnosed over 60 years. It is often an underdiagnosed condition especially in adulthood, whereby two-thirds of affected individuals remain long unrecognized(2) . Genetic, environmental, and immune factors interact in a complex manner to cause an Inappropriate mucosal T cell response to gluten leads to villous atrophy and the clinical effects that follow, including remodeling of the small intestinal mucosa.(3) . The epidemiology of CD is well understood, with an estimated 0.6% to 1% of the general population experiencing it globally(4).

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Circulating levels of interleukin (IL)-2 are elevated as early as 2 h after gluten food challenge in patients with coeliac disease on a gluten-free diet, and are closely linked to the onset of gastrointestinal symptoms(5). IFN-γ, is secreted predominantly by T cells and natural killer (NK) cells (6) and, to a lesser extent, by other cell types such as macrophages, dendritic cells (DC) and B cells(7). The broad array of IFN-γ responses are mediated by the cell-specific expression of many hundreds of IFN-γ-regulated genes (8), for which functional classification encompasses inflammatory mediators, signaling molecules, transcriptional activators, mediators of apoptosis and immune modulators (9).

MATERIALS AND METHOD

(60)serum samples are collected from CD patients and 40 healthy subjects a control group. Tissue transglutaminase (TTG) IgG serological antibody tests are diagnosed to all patients and the control group. Serum was isolated from peripheral blood collected from patients after informed consent Al participants are obtained from different hospitals in Najaf Iraq.

Determination the serum levels of Anti TTG, Intrelukin-2,and IFN γ: : The SUNLONG Biotech Human IL-2 & IFN γ By strictly following the manufacturer's procedure, ELISA kits from Bioassay Technology Laboratory (China) were used to quantitatively assess the levels of" IL-2 & **IFN γ** " in the blood of the test and control participants. Aeskulisa Germany, SunLong Biotech, china.

Statistical analysis:

Statistical Package for the Social Science, (SPSS) program was used for data entry and analysis. All data were summarized as the mean, standard deviation of the mean, and percentage. Categorical variables were expressed as absolute numbers and percentages (%), and continuous variables were defined as means ± standard deviation.

RESULTS

The ages of the people in the case group ranged from (18 to 50) of celiac disease according the age< 21 years percentages (2.50%) while range age 21-30 (46.7%), age 31-40 (38.3%), > 40(10.0). There no significant statistical difference between age groups were groups patients with compared with control group as show in table (4.1)the distribution of the groups based of the sex male (31.7%)female (65.0%) the no significant statistical difference between sex groups patients and control.

Table(1): Difference in Age group and gender among study groups

Variables			Celiac Disease n=60	Healthy control n=40	P.Value	
Age group (years)	< 21	Count	3	4	11	0.542
		%	5.0%	10.0%	9.2%	
	21-30	Count	28	15	49	
		%	46.7%	37.5%	40.8%	
	31-40	Count	23	17	48	
		%	38.3%	42.5%	40.0%	
	> 40	Count	6	4	12	
		%	10.0%	10.0%	10.0%	
Total		Count	60	40	120	
		%	100.0%	100.0%	100.0%	
Gender	Male	Count	19	17	45	0.483
		%	31.7%	42.5%	37.5%	
	Female	Count	39	23	73	
		%	65.0%	57.5%	60.8%	
	22	Count	2	0	2	
		%	3.3%	0.0%	1.7%	
Total		Count	60	40	120	
		%	100.0%	100.0%	100.0%	

Table (2): Difference in HB, anti-t TG IgG,IL-2, IL-6 and IFN Gamma among study groups

The mean number for Haemoglobin (HB) in the group of patients CD with Anemia was (11.810)g/dl and thehealthy group, the mean value was(13.168) g/dl results display significant statistical difference between the patients and healthy groups (p=0.0001). Serum levels of anti-tTG IgG in individuals and controls were measured.

There were important differences in mean serum concertation of Anti - t TG sera of patients groups compared with AHC(table 4.3) In our the study, the mean± standard deviation of Anti-t TG was(143.785±45.909 U/mL) in the CD In the control group was (39.422±35.710U/mL) with a mean difference. there were When it came to measuring anti-tTG, there a significant difference between the CD, groups and the healthy group (p=0.001):

Serum levels interleukin-2 the study groups

the Serum level IL-2 in both the CD(27.057) , and control group(15.111). there were statistically significant differences groups (p=0.041)there were highly among study groups

Serum result levels IFN Gamma in the participants

Data showed elevated level of IFN Gamma in patients with celiac disease (46.784±80.747) and comparably to control (32.579±13.964) with a no significant differences table (2).

Table(2):): Difference in HB, anti-t TG IgG,IL-2, and IFN Gamma among study groups.

Variables		Celiac disease n=60	Normal Control n=40	P value
HB g/l	Mean	11.810	13.168	0.0001
	± SD	1.502	1.085	
anti-t TG IgG	Mean	143.785	39.422	0.0001*
	± SD	45.909	35.710	
IL-2	Mean	27.057	15.111	0.041*
	± SD	22.428	7.682	
	± SD	14.225	5.168	
IFN Gamma	Mean	46.784	32.579	0.435*
	± SD	80.747	13.964	

The distribution the Immunological markers in relationship sex of CD and healthy groups

In this study, the information in Table 4.6 was meant to show that there was a negative correlation between the amounts of marker in the serum and sex.

Table (3): distribution of serological marker in relation to sex of celiac disease patients

Variables	Sex		T-test	p-value
	Male (N=19) Mean ±S.D	Female (N=41) Mean ±S.D		
HB	12.179±1.559	11.639±1.462	1.303	0.198
Anti-tTG IgG	156.78±37.654	137.76±48.511	1.509	0.137
IL-2	28.95±24.028	26.179±21.901	0.442	0.660
IFN-Gamma	53.28±101.308	43.773±70.492	0.421	0.675

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DISCUSSION

This age the study CD patients , NCGS and healthy groups were the range age from (18-50)years, The mean age of the studied groups did not differ statistically significantly, Celiac disease has no specific age related group .It can appear at any age "If somebody tested negative for celiac disease at age 50, may probably he will develops symptoms at age65, because the develop gluten intolerance occurs at any age. (10).

In this study there were high significant differences in Hb between the patients and control group. These results were agreement with(11) These study show that most of patients had anemia a significant difference between the groups . (12) showed195 adult patients in who Turkey who were diagnosed with CD, Anemia was found in 60.5% of them (IDA in 53.3%, folic acid deficiency in 38.4%, vitamin B12 deficiency in 25.6%, and ACD in 10.2%). These result support my study. In this study high significant differences between patients and healthy subjects . serum levels of anti –Ttg showed significant differences among study groups ,such finding were comparable to that of others by (13)who sand that. the serum level of IL-2 was significantly elevated patients group compared with AHC this result explained in relation to the study of (14) who sand similar studies IL-2 release with systemic administration of gluten peptides that actives gluten –specific CD4 t cells and also placebo controlled feeding studies , the sensitivity of IL-2 release after gluten challenge is likely to be over 905% in true positive on a GFD In this study, the results also showed that IFN- not risk of CD, but its value was not different between people with CD, and healthy people .

IFN-, Innate and adaptive defence against viral, bacterial, and protozoal infections depend on type II interferon, a cytokine (15) . Some research support study such as (16). IFN- makes the risk of CD go up, but its value as a risk of CD was very low and not significant. In our research, the IFN- level is higher in the CD group than in the healthy group(17). In this study the negative correlation of the serum levels of marker and sex in this study according to the statistical analysis, there is not a significant difference between the markers included in this study and the patients' sex. Support study There is no significant difference between male and female CD patients' serum levels of t TG, according to a 2018 article. (18).

CONCLUSIONS

Inflammatory cytokines are implicated in the pathogenesis of CD,. However, further studies with a larger sample size are recommended.

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