

The role of cellular kinetics in patients with irritable bowel syndrome in Diyala Governorate

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Abstract: The current study aimed to evaluate the role of cellular kinetics in patients with irritable bowel syndrome in Diyala Governorate, The study was conducted in the laboratories of Baquba Teaching Hospital in Diyala Governorate, during the time period limited between 1/ 4/ 2019/ 11/ 1/ 2019, (70) samples were collected from patients with Irritable Bowel Syndrome after being diagnosed by a specialist doctor in the clinic in the consulting clinic in the hospital. Baquba and the number of males was (24) with a percentage of (34.28%) and the number of females (46) and at a rate of (65.71%) within an age range ranging from (15 years- 48 years), and (25) samples were collected from apparently healthy people, which were collected as a control group, and the number of Males (14) at a rate of (56%) and the number of females (11) at a rate of (44%) within an age range ranging from (25 years- 47 years). C- reactive protein negativity was measured using a latex assay, depending on the presence of agglutination from its absence. The results showed a significant difference at the level of $P < 0.001$ for the CRP value, as it reached the highest negativity for the immunological index in the group of patients compared with the healthy group, also The results showed an increase in IL- 17 in patients with IBS (110.357 ± 165.35) compared to the control group (6.203 ± 15.254) Pg/ ml. was also observed. Measuring the level of other cellular movements, such as: IL-12, IL-33 and Conducting a molecular study of cytokinesis IL-17, Conducting a study to clarify the relationship between smoking and Irritable Bowel Syndrome.

Keywords: IL-7, CRP, irritable bowel, syndrome, inflammatory.

دور الحركة الخلوية في مرضى القولون العصبي في محافظة ديالى

الباحثة/ أشواق مثنى وهيب

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الخلاصة: هدفت الدراسة الحالية إلى تقييم دور الحركة الخلوية في مرضى القولون العصبي في محافظة ديالى، وأجريت الدراسة في مختبرات مستشفى بعقوبة التعليمي بمحافظة ديالى، خلال الفترة الزمنية المحددة بين 1/ 4/ 2019 / 11/ 1/ 2019، جمعت (70) عينة من مرضى القولون العصبي بعد تشخيصهم بمرض القولون العصبي. طبيب متخصص في العيادة في العيادة الاستشارية بالمستشفى. بعقوبة وعدد الذكور (24) بنسبة (34.28%) وعدد الاناث (46) وبنسبة (65.71%) ضمن فئة عمرية تتراوح بين (15- 48 سنة)، وتم جمع (25) عينة من أشخاص يبدو أنهم أصحاء، والتي جمعت كمجموعة ضابطة، وعدد الذكور (14) بنسبة (56%) وعدد الإناث (11) بنسبة (44%). ضمن فئة عمرية تتراوح بين (25- 47 سنة)، كما تم قياس سلبية البروتين التفاعلي باستخدام مقايصة اللاتكس بالاعتماد على وجود تراص من عدمه، وأظهرت نتائج الدراسة فرقاً معنوياً عند مستوى $P < 0.001$ لقيمة CRP حيث وصلت إلى أعلى سلبية للمؤشر المناعي في مجموعة المرضى

مقارنة بالمجموعة السليمة، كما أظهرت النتائج زيادة في IL-17 في مرضى القولون العصبي (165.35 ± 110.357) مقارنة بمجموعة التحكم (15.254 ± 6.203 Pg/ml). بناء على النتائج أوصت الباحثة بقياس مستوى الحركات الخلوية الأخرى مثل IL-12، IL-33 وإجراء دراسة جزيئية للحركة الخلوية IL-17، إجراء دراسة لتوضيح العلاقة بين التدخين ومتلازمة القولون العصبي.

الكلمات المفتاحية: IL-7، CRP، القولون العصبي، متلازمة، التهابات.

Introduction.

Irritable bowel syndrome is the most common disease affecting 20- 5% worldwide (1). It is the most common disorder of the digestive system, which is characterized by intermittent pain in the abdomen, discomfort, bloating and a change in bowel habits such as diarrhea and constipation (2), and although these symptoms are not dangerous in themselves and do not lead to serious disease in the future, they are very annoying to the patient (3).

The colon has a negative impact on several aspects of the patient's life such as sleep, illness, work, sexual activity and mood (depression, anxiety) and this leads to a decrease in work productivity (4).

The pathophysiology of irritable bowel syndrome is not well understood, while the mechanisms that lead to the development of the disease are hypersensitivity, and abnormal bowel movement (5). Gastrointestinal mucositis is also a causative agent (6).

Diet affects the development of symptoms of irritable bowel syndrome, as some patients increase their symptoms when eating some food products such as cabbage, onions, caffeine, milk, and spices (7). In addition, psychological disorders such as anxiety and major depression are common in irritable bowel syndrome (8).

The disease is diagnosed at an early age and is more common in females than males, as well as young people and young adults are more susceptible to infection (9). IBS appears after infection (bacteria, virus) or stressful life events (10), but it varies slightly with age (11).

The most common theory is that IBS is a disorder of interaction between the brain and the nervous system (12) and it has caused some individuals to deform the intestinal lining, which leads to inflammation and changes in bowel function (13).

Immune defense mechanisms emerged as a means to provide protection against microbial invasion, and consist of both innate and acquired immunity, as the primary protection against infection is provided by innate immunity, while acquired immunity is more effective and protection against infection.

There are several documented studies indicating the presence of T lymphocytes, B lymphocytes and cytotoxin concentrations in the colonic mucosa and systemic circulation in IBS patients(14). IBS can either enhance or abnormally stimulate immune responses(15) Furthermore, gastroenteritis can secrete and alter the innate immune response (16), as biopsies of the intestinal mucosa from patients with irritable bowel syndrome revealed elevated numbers of immune cells (17).

This is according to what was stated in the study of the researcher Bani Ahluwalia, where he proved that patients with irritable bowel syndrome have a role in lymphocytes in the infections of patients with irritable bowel syndrome (18).

Some genetic and molecular studies have shown that there is a relationship between IBS patients and genetic factors, although these studies have not always been repeated (19).

Objectives of the study

The study aimed to investigate the inflammatory role of IL- 17 in some patients with irritable bowel syndrome by measuring the level of IL- 17 in addition to the role of acute phase protein (C- reactive protein), which is related to the immune activity of the disease.

The study samples patient and methods.

70 blood samples were collected from Irritable Bowel Syndrome patients who attended the consulting clinic in Baquba Teaching Hospital after diagnosis by a specialist doctor and according to the criteria approved by the World Health Organization for diagnosing Irritable Bowel Syndrome. The number of males was 24 (34.28%) and the number of females was (46). And by (65.71%) within my age range (15-48 years). Also, (25) samples of apparently healthy people of both sexes were collected and used as a control group. The number of males was (14) by (56%) and the number of females by (11) and (44%) within an age range ranging from (25 years- 47 years). It was obtained by venous blood of patients and healthy people included in the study by means of medical wine syringes after placing the paws and masks with sterilization of the blood withdrawal area with 70% ethyl alcohol. Clotting and then separating the serum using centrifugation at a rate of 3000 rpm for 10 minutes to separate the serum. Then the serum was divided into two parts and placed in test tubes called Eppendorf until use. Each section of the preserved serum was used once to avoid freezing and thawing.

Statistical analysis

We analyzed the data of all tests statistically by using a calculator and using the statistical package for social sciences (spss) which depends on the T- test at the 0.01 probability level to determine the significance of the differences between the samples.

Results.

The current study included 70 patients with Irritable Bowel Syndrome, the number of males was (24) and the percentage of 34.28%) and the number of females was (46) and the percentage of (65.71%), while the control group included (25) apparently healthy people, where the number of males was (14) and the percentage of (56) % and the number of females (11) and (44%), there was a significant difference with

a high statistical significance between the two study groups, as the value of P.Value $P < 0.001^*$ as shown in Table (1).

Table (1) the distribution of the two study groups according to percentages for both sexes.

Gender	Control	Patients
Male	14	24
%	56%	34.28%
Female	11	46
%	44%	65.71%
Total	25	70
P.value		$<0.001^*$

The results of the current study showed that the percentage of females with irritable bowel syndrome is more than that of males, as in the above table.

Another study showed that the incidence of females is more than that of males, as it was also proven that young people and young people are more susceptible to infection (9). Another study showed that the diagnosis of colon is more common in females than in males, and it appears at an early age (ie > 50 years).

Immunohistochemistry for acute phase protein (CRP) study

The results of the C- reactive protein study indicated that the positive CRP test for patients with irritable bowel syndrome was (30) patients out of a total of (70) patients, with a percentage of (42.85%), while the positive (CRP) test for the control group was (3) of the group. (25) healthy people with a percentage of (12%), while the negative CRP test for patients was (40) patients out of a total of (70) patients and (57.14%), while the negative (CRP) test for the control group was (22) people Out of a total of (25) healthy people, at a rate of (88%). There was a significant statistically significant difference between the two study groups. The value of P.Value was ($P < 0.001$) as shown in Table (2).

Table (2) the test positivity ratio (CRP) for the two study groups.

Study group	Control	Patients	$P < 0.001$
Negativ	22	40	
%	88%	57.14%	
Positive	3	30	
%	12%	42.85%	
Total	25	70	
P.Value			

The results of the current study showed a negative percentage in C- reactive protein levels by 57.14% as in the above table (2- 1), and this is consistent with the study, where the study showed a negative in C- reactive protein and this is evidence of the absence of inflammation, I agree with the findings of Richard N. Fogoros, MD(2022) that showed that the level of C- reactive protein is evidence of inflammation and an aid to detect inflammatory bowel disease, differentiate between functional bowel disorders and irritable bowel syndrome, and classify disease severity and risk(20). I also agreed with Biljana Novkovic's study(2021) that showed C- reactive protein levels are low in people with irritable bowel syndrome compared to healthy controls(21).

A recent study showed that C- reactive protein is used to monitor internal inflammation in patients who are generally without clinical symptoms, and that C- reactive protein is elevated in patients, evidence of mild or moderate inflammatory activity in the mucosa. This study was conducted by the University of California. another study demonstrated that CRP is a good marker for differentiating between inflammatory diseases such as IBD and Irritable Bowel Syndrome (IBS).

3- 1 Measurement of the IL- 17 level in the serum:

The results of the current study showed an increase in the level of IL- 17 in patients with irritable bowel syndrome (110.357 ± 165.35) ml/ Pg compared with the control group (6.203 ± 15.254) ml/ Pg with a significant difference with a statistically significant high $P < 0.001$ as shown in Table (3).

Table (3) the level of IL- 17 in the serum of the two study groups.

ml/ Pg		Study group	
		Control	Patients
IL- 17	Mean	15.254	165.35
	S.D	6.203	110.357

The results of the current study confirm the high level of leukocyte IL- 17 in the serum of patients with Irritable Bowel Syndrome as a result of the increase in the inflammatory process, which leads to the response of the immune system and the activation of immune cells, as well as the participation of psychological factors such as stress, fear and stress in increasing the levels of IL- 17.

The results of the current study were in agreement with the findings of (22), where it was found that there is a significant relationship between IL- 17 elevation and IBS patients. This study also agreed with another study indicating an elevated level of IL- 17 in the serum of patients with IBS compared to healthy controls (23), While. (24) indicated that there is an increase in IL- 17 levels in IBS patients.

There is a study indicating that there is an increase in the rate of IL- 17 in the intestinal mucosa in patients with IBS or those suffering from IBD or GI inflammation (25).

It also agreed with the study of researcher (26), which proved that gastrointestinal diseases and irritable bowel diseases are closely related with increased expression of IL- 17.

Conclusion.

The study was conducted in the laboratories of Baquba Teaching Hospital in Diyala Governorate, during the time period limited between 1/ 4/ 2019/ 11/ 1/ 2019, (70) samples were collected from patients with Irritable Bowel Syndrome after being diagnosed by a specialist doctor in the clinic in the consulting clinic in the hospital. The results of the current study showed a significant difference at the level of $P < 0.001$ for the CRP value, as it reached the highest negativity for the immunological index in the group of patients compared with the healthy. The results of the current study showed an increase in IL- 17 in patients with IBS (110.357 ± 165.35) compared to the control group (6.203 ± 15.254) Pg/ ml.

Recommendations.

- 1- Measuring the level of other cellular movements, such as: IL-12, IL-33.
- 2- Conducting a molecular study of cytokinesis IL-17.
- 3- Conducting a study to clarify the relationship between smoking and Irritable Bowel Syndrome.

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