

# **Assessment Of Joint Hypermobility In Iraqi Patients With Inflammatory Bowel Diseases**

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## **Abstract**

### **Background**

Joint hypermobility is a common condition characterized by joint laxity and an increased range of joint motion and may be associated with joint pain. joint pain is common in inflammatory bowel disease (IBD) and is often attributed to seronegative arthropathy.

### **Objective**

To assess JHM in Iraqi patients with IBD and to evaluate the associates of this possible relationship.

### **Patients And Method**

A case-control study was conducted on 83 patients with IBD who were randomly seen between December 2014 and June 2015 at the gastrointestinal and liver diseases center of the medical city and the endoscopy unit of Baghdad Teaching Hospital compared to a 83 healthy individuals served as a control group who were randomly selected during the period of the study and matched for age and sex to the patient group.. Full history was taken and complete clinical examination was done for all individuals in both groups . Beighton's Score for joint hypermobility was performed on patients and controls.

### **Results**

Joint hypermobility was found in 12(14.5%) of IBD patients and 10 12% in healthy controls

( $p > 0.05$ ) JHM was present and 6(17.6%) of 34 CD patients and 6 12.2% of 49 UC patients ( $P > 0.05$ ).

The presence of JHM was significantly associated with younger age, short in duration of the disease, positive family history of JHM and low BMI ( $p < 0.05$ ).

### Conclusion

JHM was comparable in IBD and controls. Younger age, short duration of the disease, positive family history of JHM and low BMI were significant associates with JHM.

### Introduction

#### **Joint Hyper mobility**

#### **Definition**

A condition characterized by joint laxity and an increased range of joint motion (1).

Benign joint hypermobility syndrome (BJHS) is the occurrence of musculoskeletal symptoms in hyper mobile individuals in absence of systemic rheumatologic disease (2,3).

#### **Epidemiology**

Prevalence of joint hyper mobility is variable but in general it is greater in women than men and in Afro-Caribbean than in white and declines with age (4).

The prevalence of joint hyper mobility among 1774 university students aged 22-24 years in Iraq has been determined from a survey made in 1985 was found in 25.4% of males and 38.5% of females (5).

### Causes

Current thinking suggests four factors that may lead to hyper mobility although these factors will affect different people to varying degrees (6).

- 1- The shape of the ends of the bones and shallow joints.
- 2- Weaker stretched ligament caused by protein or hormone problems.
- 3- Muscle tone, the more relaxed your muscles are the greater the range of movement you will have in your joints this is likely to affect a smaller number of joints.
- 4- Sense of joint movement proprioception, some people find it difficult to sense the position of a joint without being able to see it and may develop joint hypermobility by over stretching the joints without releasing it .

## **DIAGNOSIS**

### **Joint hyper mobility JHM**

can be diagnosed as a score of Beightons scale 4 out of 9 or greater (1) (appendix 1).

### **Hyper mobility Syndrome**

Can be diagnosed according to Brighton's criteria:

- 1- 2 major criteria or
- 2- 1 major plus 2 minor criteria Or
- 3- 4 minor criteria or
- 4- 2 minor criteria and unequivocally affected first degree relative(2) (appendix 2).

### **Inflammatory Bowel Disease (IBD)**

#### **Definition**

Inflammatory bowel disease (IBD) is a chronic idiopathic inflammatory disorder affecting the gastrointestinal tract of unclear etiology. It comprises both Crohn's disease (CD) and ulcerative colitis(UC) (7,8). Both ulcerative colitis and Crohn's disease are characterized by chronic recurrent abdominal pain, frequent bowel motion and Rectal bleeding (9,10).

#### **Epidemiology**

Inflammatory bowel disease occurs worldwide but the highest incidence is found in North America, the United Kingdom and northern Europe (9).

The prevalence of ulcerative colitis in North America is 37 to 246 per 100,000 while for Crohn's disease is 26 to 199 per 100,000.

The peak incidence of Crohn's disease occurs between age 15 and 30 years of age with second peak in the seventh decade there is a 1.2:1 female to male ratio (13).

Ulcerative colitis also has a bimodal peak age distribution with an initial peak between 20 and 40 years of age and second smaller peak beyond the seventh decade there is an equal gender distribution in ulcerative colitis (11) up to the best of our knowledge there is no data about the prevalence of IBD in Iraq.

#### **Causes**

Inflammatory bowel diseases are thought to develop as a result of dysregulation of the immune response to normal gut flora in a genetically susceptible host (12). Other parameters including microvascular, infectious and environmental factors have also been advocated (13).

#### **Diagnosis**

The diagnosis of inflammatory bowel diseases with its two main subforms, Crohn's disease and ulcerative colitis, is based on clinical, endoscopic, radiologic and histologic criteria. This paradigm remains unchanged despite the advent of new molecular technologies for the examination of serum proteins and genetic

sequences respectively (14).

### **Literature Review Relationship Between Joint Hypermobility And Inflammatory Bowel Disease**

We found only two studies that assessed the relationship between joint hypermobility and inflammatory bowel diseases (IBD), the first study done by Vounotrypidis et al which evaluated the prevalence of joint hypermobility and patterns of articular manifestations in patients with inflammatory bowel diseases compared with normal population and found JHM is common in CD patients (1).

The second study done by Fikree et al which investigated joint pain and joint hypermobility and inflammatory bowel disease and showed that the prevalence of JHM is not increased in patients with IBD whether CD or UC (15).

Because of the very little and limited conflicting available data, we studied the incidence of JHM in Iraqi patients with inflammatory bowel diseases.

### **AIMS OF THE STUDY**

- 1- To assess JHM in Iraqi patients with IBD.
- 2- To evaluate the associate for this relationship if present.

## **PATIENTS AND METHODS**

### **Patients**

A case-control study was conducted on 83 patients with IBD who were randomly seen between December 2014 and June 2015 at the gastrointestinal and liver diseases center of the medical city and the endoscopy unit of Baghdad Teaching Hospital compared to a 83 healthy individuals served as a control group who were randomly selected during the period of the study and matched for age and sex to the patient group.

The clinical assessment was performed using a comprehensive or protocol full history was taken from all individuals including name 86 occupation clinical features family history of joint hypermobility social history complete clinical examination was done for both groups to detect joint hypermobility JHM

The diagnosis of Crohn's disease and ulcerative colitis had been established by the standard clinical, endoscopic and histologic criteria IBD patients and healthy individuals , their ages between 18 to 50 years because of the increased chance of hypermobility among younger age and increased chance of stiffness among older age group.

### **Methods**

- 1- Beighton score was very formed on patients and controls to diagnose joint hypermobility.

2-The diagnosis of Crohn's disease and ulcerative colitis had been established by the standard clinical endoscopic and histologic criteria.

3- Body mass index BMI and waist circumference were measured.

4- A signed consent was taken from individuals of both groups for admission of the study.

### Statistical analysis

By using SPSS (statistical package for social sciences ), version 18, all data were entered and checked for any errors or inconsistency

All variables then had been coded with specific code for each variable. Descriptive statistics descriptive statistics were Performed and presented as mean,

plus minus standard deviation (SD) for continuous variables (age, BMI, waist circumference and the duration of the disease). For categorical variables (sex, JHM, IBD, family history and type of IBD,...) descriptive statistical for these variables was presented in frequencies (numbers) and percentages. Multiple contingency tables had been conducted and the analytical statistics had been conducted.

Students *t* test was used for comparisons in between means of two variables, while chi square (X) was used for comparison of frequencies and percentages.

In all statistical Procedures and tests, level of significance was set at less than 0.05 and considered as significant. All data and information were presented in tables.

## RESULTS

A total of 166 individuals were involved in the study, 83 patients with IBD and 83 healthy controls.

The demographic characteristics of all participants in both groups revealed no statistically significant difference between both groups ( *p* more than 0.05, table 1, figure 1).

We found that 12 (14.5%) of IBD patients and 10 (12%) of the controls had JHM and the difference was not statistically significant the odds ratio (95% CI) is 1.23 and *P* more than 0.05 as shown in table 2

The association between JHM and the type of IBD was not statistically significant although the odds ratio (95% CI) was 1.54 , *P* more than 0.05 (table 3).

Regarding the association of JHM with demographic, clinical data and medications 83 IBD patients we found that JHM was present in 12 (14.5%) out of the 83 patients with mean age of

27.33 plus minus 3.9 years, vs 71 (85.5%) did not have JHM and their mean age was 35.4 plus minus (7.5) year. We also noticed that patients who have JHM were significantly younger than those who did not have JHM, on the other hand, presence of JHM was significantly associated with shorter duration of the disease, positive family history of JHM and low BMI, (p less than 0.05) as in table 4.

Also JHM presence was not significantly associated with sex, waist circumference and the medications used by the patients (table 4).

**Table 1:** Distribution of study sample according to their demographic characteristics.

<b>Variables</b>	<b>Patients N=83(100%)</b>	<b>Controls N=83(100%)</b>	<b>P- value</b>
<b>Age (years) Mean <math>\pm</math> SD</b>	34.2 $\pm$ 7.6	34.6 $\pm$ 8.1	0.77 (ns)
<b>Sex</b>			
<b>Male, n (%)</b>	40 (48.2%)	37 (44.6%)	
<b>Female, n (%)</b>	43 (51.8%)	46 (55.4%)	0.27 (ns)
<b>BMI mean <math>\pm</math> SD</b>	24.9 $\pm$ 2.4	24.8 $\pm$ 2.3	0.84 (ns)

n; number, %; percent, P; P value, (ns); not significant

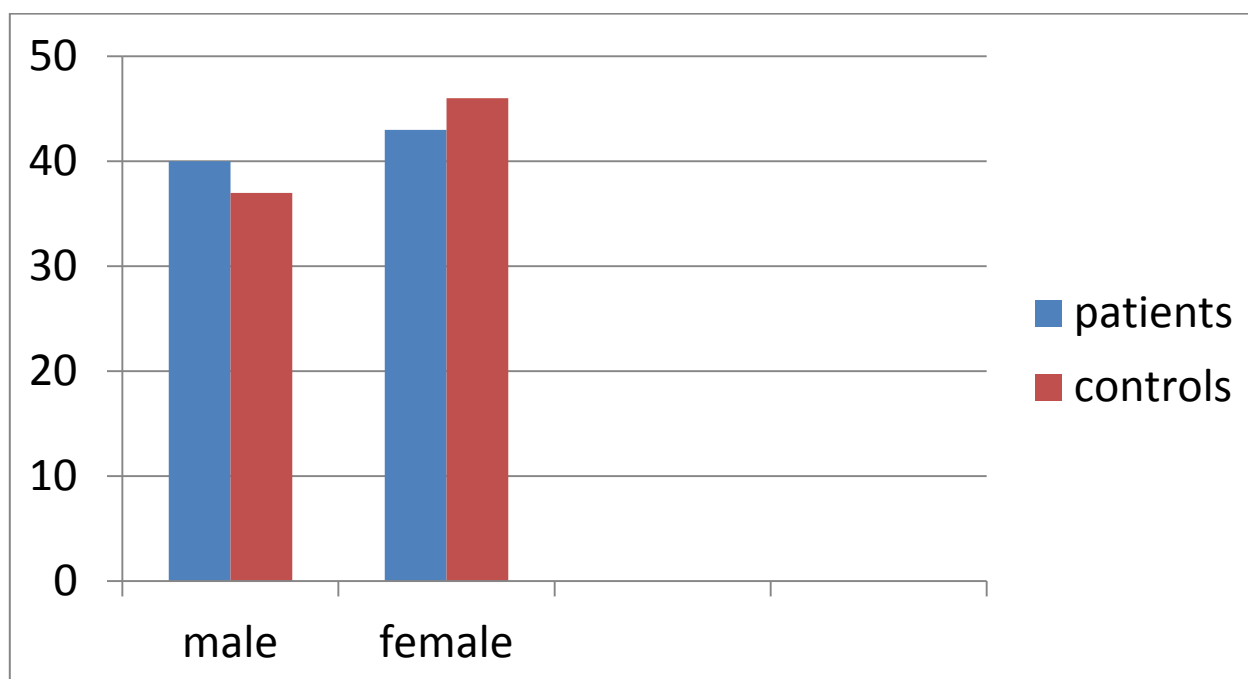


Figure 1.sex distribution of studied groups.

**Table 2:** Comparison of joint Hypermobility (JHM) in 83 IBD patients and 83 controls.

Variables	JHM present n. (%)	JHM absent n. (%)	Odds ratio (95% CI)	P.value
<b>IBD (n=83)</b>	12 (14.5%)	71 ((85.5%)		
<b>Controls (n=83)</b>	10 (12%)	73 (88%)	1.23 (0.5 – 3.01)	0.82 (ns)

N; number, %; percent, P; P value, (ns); not significant, IBD; inflammatory bowel diseases.

**Table 3: Distribution of JHM according to type of IBD**

<b>Variables</b>	<b>JHM present n.(%)</b>	<b>JHM absent n.(%)</b>	<b>Odds ratio (95% CI)</b>	<b>P. value</b>
<b>CD = 34</b>	6 (17.6%)	28 (82.4%)		
<b>UC = 49</b>	6 (12.2%)	43 (87.8%)	1.54 (0.45 – 5.2)	0.537 (ns)

n; number, %; percent, P; P value, ns; not significant, IBD; inflammatory bowel diseases, CD; Crohn's diseases, UC; ulcerative colitis.

**Table 4: Association of JHM with demographic & clinical data and medications of 83 IBD patients**

<b>Variables</b>	<b>JHM present</b>	<b>JHM absent</b>	<b>P- value</b>
<b>Age (years); mean <math>\pm</math> SD</b>	27.33 $\pm$ 3.9	35.4 $\pm$ 7.8	0.001*
<b>Sex; n (%)</b>			
<b>Male; n (%)</b>	5 (12.5%)	35 (87.5%)	
<b>Female; n (%)</b>	7 (16.3%)	36 (83.7%)	0.43
<b>Duration (years); mean <math>\pm</math> SD</b>	2.14 $\pm$ 1.6	3.7 $\pm$ 3.3	0.012*
<b>Family History of JHM; n (%)</b>			
<b>Positive n (%)</b>	3 (25%)	0 (0%)	
<b>Negative n (%)</b>	9 (75%)	71 (100%)	0.002*
<b>BMI (m<sup>2</sup>/kg); Mean <math>\pm</math> SD</b>	23.3 $\pm$ 2.4	25.2 $\pm$ 2.3	0.022*
<b>Waist circumference (cm); Mean <math>\pm</math> SD</b>	88.6 $\pm$ 6.7	88.9 $\pm$ 5.9	0.87
<b>Medications:</b>			
<b>Steroids, n=18</b>	2 (11.1%)	16(88.9%)	0.65
<b>Sulfasalazine (SSZ), n=50</b>	8 (16%)	42 (84%)	0.44
<b>Mesalazine, n=33</b>	4 (12.1%)	29 (87.9%)	0.623

n; number, %; percent, P; P value, \*; significant, BMI; body mass index



## Discussion

Our study showed that JHM in IBD and controls was compatible without significant differences between CD and UC. In addition younger age, shorter duration of the disease, family history of JHM and low BMI were significant associates with JHM.

Up to the best of our knowledge this is the first case control study investigating JHM in Iraqi patients with IBD.

Joint hypermobility is a common feature of heritable disorders of connective tissue (16). In some individuals JHM gives rise to musculoskeletal problems the so-called hypermobility syndrome (HMS) which is a major source of morbidity in children and impaired quality of life that has been observed recently in adults (17). The present study demonstrated a comparative prevalence of JHM in IBD patients (14.5%) to controls (12%). This finding agreed with fikree et al (15) who reported that prevalence of JHM was not increased in patients with IBD (19%) and approximate to healthy controls (18%) however this finding was in contrast to vounotrypidis et al (1) who reported that JHM was significantly more in IBD (47%) than that of healthy controls (25.4%). This difference may be explained by small sample size and racial differences.

Crohn's disease (CD) and ulcerative

colitis (UC) where often associated with musculoskeletal symptoms which are considered the most common extraintestinal manifestations in IBD (18, 19). Our study revealed compatible prevalence of JHM in CD (17.6%) and UC (12.2%) with non significant difference. Similar finding was reported by fikree et al study (15). However in contrast to vounotrypidis et al study (1) which demonstrated that JHM was significantly more in CD (70.3%) than in UC (35.7%) this difference could be explained by small sample size that affect statistical significance.

In the present study we observed young age patients with IBD were significant associate with JHM this agreed with Alrawi et al (20) who found JHM in young age was more than old age group and Vounotrypidis et al (1) who reported JHM is increased and childhood and decreases with age.

In our study we found that shorter duration of IBD was significant associate with JHM this is associated with another study (1). Also family history or JHM was significant associated with JHM which was an expected finding similar finding was reported by another study (21).

Interestingly we found JHM was significantly associated with low BMI however the results of the previous

studies were conflicting some showed no significant association (22) while others reported significance with increased BMI (23) possible explanation could be that patients in our study with IBD had chronic disease and most of them were underweight in addition to low sample size in our study therefore had less

## CONCLUSIONS

1- Joint hypermobility was comparable IBD and controls.

power to assess this relationship clearly.

The small size of the study sample is the main limitation of the present study, yet in spite of that our study has points of strength like long duration, strict inclusion and exclusion criteria and data measurement and collection.

2- Younger age, short duration of the disease, positive family history of JHM and low BMI were significant associates with JHM.

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## تقويم فرط حركة المفاصل لدى المرضى العراقيين المصابين بمرض الامعاء الالتهابي دراسة اعدادها

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### الخلفية:

فرط حركة المفاصل هي حالة شائعة تتميز بليونية المفاصل وزيادة في معدل حركته وربما تترافق مع ألم المفاصل. إن ألم المفاصل شائع في أمراض الأمعاء الالتهابية ويعزى غالباً لاعتلال المفاصل السالب.

### الهدف:

تقويم حركة المفاصل لدى المرضى العراقيين المصابين بمرض الأمعاء الالتهابي وتقويم مترافقات هذه العلاقة المحتملة.

### طريقة البحث:

شملت الدراسة عينة من ٨٣ مريضاً عراقياً لديهم مرض الأمعاء الالتهابي حيث تم تشخيص مرض كرون والتهاب الأمعاء النقرحي حسب المعايير السريرية والناظورية والنسجية. كما تم دراسة ٨٣ شخصاً من الأصحاء كعينة ضبط مطابقين في العمر والجنس.

تم أخذ التاريخ المرضي وإجراء الفحص السريري بشكل كامل للأفراد في المجموعتين وتطبيق ضابطة بيتون على المرضى ومجموعة الضبط.

### النتائج:

وجد أن فرط حركة المفاصل كانت ١٢ (١٤.٥%) لدى المرضى المصابين بمرض الأمعاء الالتهابي و ١٠ (١٢%) لدى مجموعة الضبط.

فرط حركة المفاصل كانت موجودة لدى ٦ (١٧.٦%) من ٣٤ مريضاً مصاباً بمرض كرون ولدى ٦ (١٢.٢%) من ٤٩ مريضاً مصاباً بالتهاب الأمعاء النقرحي.

كما أن وجود فرط حركة المفاصل كانت له علاقة ذات مغزى احصائي مع العمر ومدة المرض والتاريخ العائلي الموجب لفرط حركة المفاصل ومعيار كتلة الجسم.

### الاستنتاج:

إن فرط حركة المفاصل كانت متقاربة لدى مرضى مرض الأمعاء الالتهابي ومجموعة الضبط كما أن العمر ومدة المرض والتاريخ العائلي الموجب لفرط حركة المفاصل ومعيار كتلة الجسم هي عوامل مترافقة مع فرط حركة المفاصل.