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RESEARCH ARTICLE

Characterization of Irritable Bowel Syndrome Subtype in Iraqi Patients

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ABSTRACT

Irritable Bowel Syndrome (IBS) is a functional disease of gastrointestinal tract (GIT) that affects 10–20% of the population worldwide and is distinguished by abdominal pain/discomfort and changes in bowel habits that is accompanied by diarrhea, constipation, or both. Cross-sectional study was conducted on 50 Iraqi patients with IBS who were presented at private clinics for gastrointestinal diseases (GIDs). The study lasted from November 2021 to May 2022 and aimed to determine the frequency of IBS subtypes among Iraqi patients, as well as the influence of several factors on disease's initiation, type and severity such as age, gender, and anxiety. The results found that the most common frequent type of disease is constipation type (IBS-c) in comparison with diarrheal (IBS-d) and mixed type (IBS-m). Among all patients, IBS is gender-related and age-related disease, in which patients who are females and at young age (2nd to 3rd decade) are the most affected. However, family history, marital status, occupational status, anxiety, and other GIDs didn't act as risk factors for getting certain type of IBS.

Keywords: IBS, Anxiety, Rome IV, GAD-7

1. Introduction

Irritable bowel syndrome (IBS) is a prevalent GIT disease that occurs because of a disruption in neuronal function along the brain-gut axis at different levels of enteric, autonomic, and/or central neurological systems [26, 27]. Patients with IBS are presented with abdominal pain and/or discomfort, bloating, and irregular bowel function (diarrhea and/or constipation) [20]. IBS can be classified based on their primary stool pattern into three main types; constipation type (IBS-c), diarrheal type (IBS-d), and mixed type (IBS-m) which characterized with both diarrhea and constipation [10]. The last criteria that used to diagnose and classify IBS into three types are based on Rome IV [4]. In Iraq, previous studies reported that the prevalence of IBS affects 30% of the general population in Tikrit

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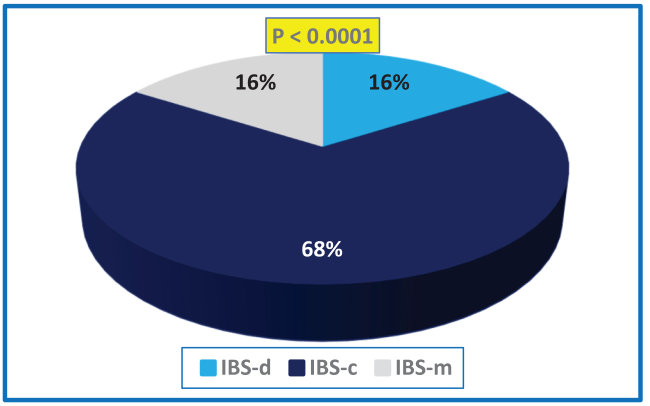

Fig. 1. Frequency of three types of irritable bowel syndromes.

province (Hazaa and Lami, 2018), and about 29.7% of students in Baghdad governorate suffer from IBS [41]. Therefore, the present study is conducted on Patients with IBS to determine their subtypes as well as to investigate various risk factors that contribute in this disease.

2. Materials and methods

All patients (males and females) with IBS were collected from private clinics specialized in GIDs. Other characteristic were obtained from patients profile such as gender, age at disease onset, disease duration, family history, marital status, occupation status and other GIDs disease rather than IBS. To classify patients in IBS subtypes based on Rome IV criteria [11]. Also, the anxiety score for each patient is calculated according to Generalized Anxiety Disorder Assessment (GAD-7) [13].

3. Results

Among 50 patients enrolled in this study, 34 (68%) of them are presented with constipation type of irritable bowel syndrome (abbreviated as IBS-c) which is significantly ($P < 0.0001$) more frequent than 8 (16%) of patients with the diarrheal type (IBS-d), and 8 (16%) of patients with mixed type of irritable bowel syndrome (IBS-m) as shown in Fig. 1.

In these three types of IBS, defecation times per week and the sustained abdominal pain & discomfort after defecation were determined. Table 1 shows a significant difference ($P < 0.0001$) in the number of defecations per week among patients of IBS-c (3.6 ± 2 times/week), IBS-d (15.2 ± 10.8 times/week), and IBS-m (8.7 ± 5.9 times/week). However, pain after defecation is sustained in 32.4% of IBS-c patients which is higher than 12.5% and 25% in patients with IBS-d and IBS-m respectively, but difference is not significant.

The age of patients at onset of disease was calculated by subtraction their disease duration from their present age. Table 2 shows that 33 (66%) of patients have experience of IBS at the second and third decade of their age (20.3 ± 5 year), which is significantly ($P= 0.001$) higher than 17 (34%) of them who have IBS at the fourth decade or more of their age (39.1 ± 14.2 year).

Table 1. Clinical manifestation in three types of IBS.

Symptom		Disease type IBS-c (n = 34)	IBS-d (n = 8)	IBS-m (n = 8)	P value
Defecation times/week		3.6 ± 2	15.2 ± 10.8	8.7 ± 5.9	<0.0001
Sustained pain after defecation	No	23 (67.6%)	7 (87.5%)	6 (75%)	0.519
	Yes	11 (32.4%)	1 (12.5%)	2 (25%)	

Table 2. Age of IBS patients at onset of disease.

Parameter		Age of patient at onset of disease 2nd–3rd decade	≥ 4th decade	P value
Range (year)		11–29	≥30	
Patient's	Number	33	17	0.001
	frequency	66%	34%	
M ± SD (year)		20.3 ± 5	39.1 ± 14.2	<0.0001

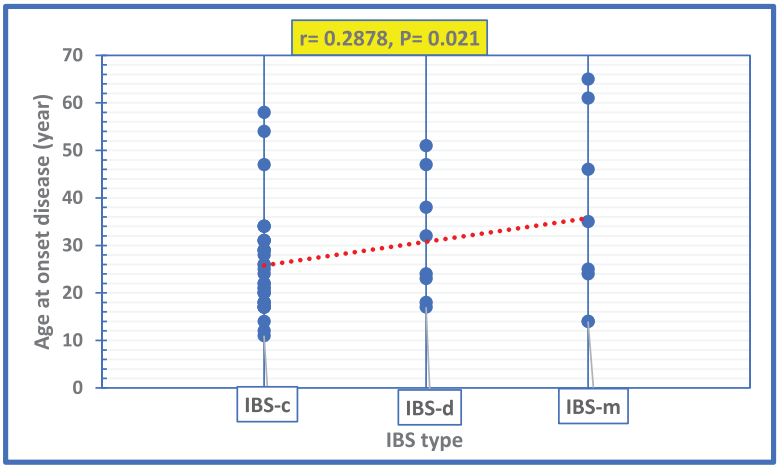

Fig. 2. Correlation of IBS types with patient's age at onset of disease.

Moreover, the age at onset of disease is significantly correlated with the type of IBS (r = 0.2878, P = 0.021), in which IBS-c is mostly occur at young age in comparison with the incidence of IBS-d and IBS-m as shown in Fig. 2.

Table 3 shows that 33 (66%) of all IBS patients are females which is significantly (P = 0.001) higher than 17 (34%) of male patients. This table also reveals that 27 (73.5%) of IBS-c cases are females which is significantly (P = 0.0001) higher than 9 (26.5%) of male cases. However, the distribution of male and female cases in the IBS-d and IBS-m types reveals non-significant difference (50% for each gender) in both types of disease.

From patients profile, five factors were studied which include family history, anxiety, marital status, occupational status, and other gastrointestinal diseases (GIDs) rather than IBS. Table 4 show non-significant difference in the occurrence of all these factors among patients of three groups, and not act as risk factors in differentiation between the three types of IBS.

Table 3. Frequency of disease type based on patient's gender.

Gender	Total patients (N = 50)	Disease type		
		IBS-c (n = 34)	IBS-d (n = 8)	IBS-m (n = 8)
Female	33 (66%)	25 (73.5%)	4 (50%)	4 (50%)
Male	17 (34%)	9 (26.5%)	4 (50%)	4 (50%)
P value	0.001	0.0001	1.0	1.0

Table 4. Risk factors for getting different types of IBS.

Factor	Disease type			P value
	IBS-c	IBS-d	IBS-m	
Family history				
Present	11 (32.4%)	1 (12.5%)	3 (37.5%)	0.479
Absent	23 (67.6%)	7 (87.5%)	5 (62.5%)	
Anxiety				
Mild	4 (11.8%)	2 (25%)	0 (0%)	0.872
Moderate	8 (23.5%)	1 (12.5%)	3 (37.5%)	
Severe	22 (64.7%)	5 (62.5%)	5 (62.5%)	
Marital status				
Married	16 (47.1%)	5 (62.5%)	4 (50%)	0.734
Not married	18 (52.9%)	3 (37.5%)	4 (50%)	
Occupational status				
Employee	15 (44.1%)	4 (50%)	2 (25%)	0.158
Student	15 (44.1%)	2 (25%)	2 (25%)	
No job	4 (11.8%)	2 (25%)	4 (50%)	
Other GIDs				
Present	7 (20.6%)	1 (12.5%)	4 (50%)	0.152
Absent	27 (79.4%)	7 (87.5%)	4 (50%)	

4. Discussion

These results are comparable with those reported by other studies [30, 32, 39] which found that the main IBS subtype is constipation. Moreover, Mohammad et al. [24] reported that IBS-c is more frequent in Iraqi patients, than IBS-d and IBS-m. In contrast, other studies found that IBS-m and IBS-d are the most common subtypes than IBS-c [12, 31, 35]. Concerning with sustained pain after defecation the result of the present study reported non-significant differences among patients of these subtype (Table 3-1) which disagree with those found by other studies that found the constipation is the most common bowel behavior along with abdominal bloating/distension and discomfort [19, 20]. Recently, Shah et al. [29] also noticed that patients of IBS-c have more abdominal discomfort than other subtypes. This form of IBS-c might be described as painful constipation because difficulty passing stools or a low frequency of bowel movements which is frequently accompanied by straining during defecation or a sense of incomplete evacuation [23]. There are several factors that cause constipation such as; (damaged or reduced 5-hydroxytryptamine (5-HT) release, psychological issues, poor diet, enteric inflammation, genetic changes, high polyunsaturated fatty acid levels, low bile acid levels, and incorrect GIT motility all the way to methanogenesis inhibition) [16, 25]. 5HT is a member of the intestinal serotonin system, which aids in GIT motility and it is also present in the central nervous system as a neurotransmitter that aids in mental health [22].

Many studies agreed with their results for instance; Tan et al. (2003) refer to a high prevalence of IBS patients among young people. Also Yilmaz et al. [36] According to the

findings the prevalence was highest in the middle-aged group with the highest rates. This is also in line with findings from research conducted in Syria, which indicated that IBS was more prevalent among young adults [1]. Furthermore, Arasteh et al. [2] recorded a distinct age limit at which the prevalence of IBS fluctuates, the age between 40 and 45 years is a changeable point at which the prevalence of IBS reaches its peak, and drops. However, Üçüncü et al. [34] reported that the prevalence of IBS is usually more common in the third to fourth decades. In Norway, it was also said that the infection occurs at a young age and declines with age and that the causes for this are unknown. It has been proposed, however, that stress and unclear living conditions may be factors in increasing risk in younger age groups [12]. In contrast, other studies disagree the present result, one study found no obvious link between age and onset of disease [28], while other studies reported that the prevalence of IBS increases with age and the cause of its increase in the elderly may be caused by concomitant medications or organic diseases [9, 17].

On the other hand result in figures, 3-2 show that IBS-c is the most common at young ages. This is in agreement with most studies instance Ford et al. [8] refer to the IBS-c as more common in younger patients. Additionally, Bellini et al. [5] also discovered that IBS-c is more common in younger persons, who had more severe symptoms, firmer stools, and a lower quality of life (QOL). As it is much known from previous studies, the IBS-c was the most frequent kind of IBS particularly in females; various studies found that IBS-c is more prevalent, especially among women [2, 12, 34]. It has been noticed that women have higher levels of inflammatory cytokines than males which may be due to having greater tiredness, depressed mood, less positive well-being and self-control, and higher anxiety [6, 7]. In contrast, some researchers didn't found substantial difference in the development of IBS between men and women, particularly in Singapore, Korea, or Hong Kong, indicating probable cross-national variances in the distribution of IBS between the two genders when compared with the prevalence of IBS among females in the West which is higher than in the East [15, 17]. However, Tang et al. [33] indicated that women with IBS in middle age are more common in type IBS-d.

Many risk factors contribute to the onset of IBS; which is a prevalent and chronic complicated GIT disease. According to the present study, found all factors in the study did not act as risk factors for the IBS subgroups. In contrast, Zamani et al. [38] found that IBS-c had the greatest prevalence of both anxiety and stress in a study of IBS patients. The present study found no relationship between types of IBS with married/single it does not constitute a risk factor among the species. Furthermore, in occupational status, Yilmaz et al. [36] also did not find significant differences between occupational status and disease development. In addition, results indicated that other GIDs among IBS types did not appear as a risk factor and therefore, there was no previous study on IBS with a family history of serious illnesses. It is reasonable that IBS/GIT symptoms are linked to a family history of reflux and other functional GIDs conditions that overlap with IBS [14].

According to the findings reported in this study, it can be concluded that about two third of IBS patients getting the disease in second third decade of their age (average: 20.3 $\pm$ 5 ages), and about two thirds of them are females. Also, the most common type of IBS is constipation (IBS-c) followed by diarrhea (IBS-d) and mixed (IBS-m). However, family history, Anxiety, Marital status, occupational status, and other GIDs not acts as risk factor for getting specific type of IBS.

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