

Full Length Research Paper

Prevalence and clinical characteristics of irritable bowel syndrome (IBS) in police officers in Istanbul

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This study was undertaken to determine the prevalence and clinical characteristics of irritable bowel syndrome (IBS) in police officers. The retrospective study was carried out by applying a questionnaire including Rome II criteria in a study population of 1750 police officers who were selected by systematic sampling method among those admitted to Istanbul Police Hospital between 2000 and 2008. We determined IBS prevalence and their clinical characteristics. The IBS prevalence of police officers was 38%. Among the 1750 patients participating in the study, 722 were admitted with gastrointestinal symptoms (GIS). 54.1% of IBS patients were constipation-dominant, 3% of them were diarrhea-dominant and 42.9% of them had alternating bowel habits. We found the prevalence of IBS to be related with previous infections, abdominal operations, chronic laxative use, absence of regular diet, lack of fiber foods in nutrition and daily tea or coffee consumption. A negative statistical relationship between IBS prevalence and smoking or alcohol intake was found. No association was found between the prevalence of IBS and psychological events. Distribution of IBS patients among age groups was not different. There were both similar and different results about prevalence and clinical characteristics of IBS in police officers from the other studies. IBS prevalence (38%) in our study was higher than usually estimated. It was around 6.2 to 19.1% in previous studies. The prevalence of IBS with alternating constipation and diarrhea was significantly higher too. The factors having a positive correlation with IBS were similar to the results of other studies. More studies should be carried out to explain the reasons of the differences.

Key words: Irritable bowel syndrome (IBS), prevalence, police.

INTRODUCTION

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder characterized by symptoms of abdominal pain, discomfort or bloating associated with changes in bowel habit without any organic symptom (Thompson et al., 1999; Talley and Spiller, 2002). The most common diagnosis of functional gastrointestinal

disorders include functional dyspepsia and irritable bowel disease successively (Unalan, 2010).

In the absence of biological disease marker, diagnosis of IBS have been made by using symptom based criteria like Manning, Roma I, Roma II or Rome III (Manning et al., 1978; Longstreth et al., 2006). The prevalence of IBS

Table 1. Distribution of IBS patients according to age groups.

Age group (years)	IBS [+] {n (%)}	IBS [-] {n (%)}	Total (n)
20 - 29	302 (39)	469 (61)	771
30 - 39	167 (37)	283 (63)	450
40 - 49	196 (37)	333 (63)	529
Total	665 (38)	1085 (62)	1750

in population based studies was around 10% in most studies (Talley et al., 1991; Sandler, 1990; Ballou and Keefer, 2013). IBS prevalence was found to vary between 6.2 and 19.1% in studies from Turkey (Celebi et al., 2004; Karaman et al., 2003; Akpinar et al., 1999; Yilmaz et al., 2005). The prevalence of IBS varies with age and can be seen in all age groups (Talley et al., 1995). It was found to be around 14% between 15 to 44 years in previous studies and goes down to 9% over 45 years (Drossman et al., 1993). Although it was found to be significantly more common, sometimes to be 2 or 3 times higher in females than males, an equal prevalence of men and women was reported in some studies (Talley et al., 1995; Drossman et al., 1993).

Identification of the physiological basis for symptoms of IBS is known but pathophysiologic mechanism is not understood. It is unlikely that a single unifying factor will explain it. Many factors such as gut dysmotility, visceral hypersensitivity, mucosal inflammation, alteration in fecal microflora, psychosocial factors such as stressful life and anxiety disorders affect the clinical course (Simren et al., 2000; Bouin et al., 2002; Törnblom et al., 2002; Kassinen et al., 2007; Nicholl et al., 2008; Drossman et al., 2002). Some recent reports have found an interesting correlation between obesity and IBS (Delgado-Aros et al., 2004). There is an association between the daily stress factors of police work with obesity and metabolic syndrome. The 'Buffalo Cardio-Metabolic Occupational Police Stress (BCOPS) study revealed that compared with 32% of the general population, 40% of police officers were obese and that over 25% suffered from metabolic syndrome compared with 18.7% of the general population (Hartley et al., 2011). The study was initiated because of the assumption that the daily stress factors that police officers endure during their work, such as danger, high demands and exposure to human misery and death, are contributing factors to a higher risk of chronic health outcomes.

In this study, we aimed to determine the prevalence and clinical characteristics of IBS on police officers.

MATERIALS AND METHODS

1750 police officers selected by systematic sampling method among those admitted to Istanbul Police Hospital (Uskudar State Hospital, the new name) between 2000 and 2008 were enrolled in the study. These patients were evaluated by experts in

gastroenterology and internal medicine. Due to lack of reliable biological markers for the diagnosis of IBS, symptom-based criteria were used. IBS was diagnosed with the exclusion of other diseases with similar clinical picture. After listening to the story of the patients and physical examination, complete blood count, erythrocyte sedimentation rate, biochemical tests, sigmoidoscopy and especially in elderly patients, colonoscopy were performed. In patients with the alarm signs such as weight loss, advanced age of onset, night waking symptoms, family history (cancer, inflammatory bowel disease) further research was done. Patients with an abdominal mass, hepatomegaly, fever, arthritis, dermatitis, signs of malabsorption found on physical examination; abnormalities on initial laboratory tests including anemia, thyroid dysfunction, increased sedimentation rate, leukocytosis, presence of occult blood in stool or other abnormal biochemical findings were evaluated further. Rome II criteria were used for the diagnosis of IBS.

Laxative use, history of previous infection, previous abdominal surgery, physiological stress, diet, eating habits and lack of fibrous foods, daily consumption of tea and coffee, smoking, regular alcohol intake in persons diagnosed with IBS were investigated retrospectively. Deficiencies have been completed by telephone or face-to-face interviews.

SPSS 11 statistical program for Windows was used for statistical analysis. Chi-square test and Fisher exact Chi-square test was performed to compare qualitative data in IBS patients and in control groups without IBS. Level of statistical significance of the data were interpreted by "p" value. $P < 0.05$ values were statistically different.

RESULTS

The study involved 1750 patients, 665 patients (38%) were diagnosed with IBS. 722 of patients participating in the study had gastrointestinal complaints, 1028 patients had non-gastrointestinal symptoms (GIS). Almost all of the patients due to the nature of the occupation were male. There were very few women. Distribution of IBS patients according to age group is shown in Table 1.

IBS prevalence according to age did not show any significant difference ($p > 0.05$). 54.1% of patients were constipation dominant, 3% of them were diarrhea dominant, 42.9% of them were IBS with alternating constipation and diarrhea.

Characteristics of the patients with and without IBS are shown in Table 2. Laxative usage was significantly high in IBS group ($P < 0.0001$). We found a significant difference between IBS and previous abdominal operation too ($p < 0.05$). IBS had a positive correlation with previous infection history ($p < 0.05$). The statistical relationship between the stress and the prevalence of IBS was not

Table 2. Characteristics of the patients with and without IBS.

Patients characteristics		IBS [-] (%)	IBS [+] (%)	P
Laxative use	(+)	24 (1)	122 (7)	P < 0.0001
	(-)	1061 (61)	543 (31)	
Previous infection	(+)	124 (7)	102 (6)	P < 0.05
	(-)	961 (55)	563 (32)	
Previous psychological stres	(+)	846 (48)	540 (31)	P > 0.05
	(-)	239 (14)	125 (7)	
previous abdominal operation	(+)	72 (4)	68 (4)	P < 0.05
	(-)	1013 (58)	597 (34)	
Reguler diet (three meals per day)	(+)	884 (51)	328 (19)	P < 0.0001
	(-)	201 (11)	337 (19)	
Fiber consumption	(+)	826(47)	316 (18)	P < 0.0001
	(-)	259 (15)	349 (20)	

Table 3. The relationship between IBS and smoking-drinking materials.

IBS prevalence		IBS [-] (%)	IBS [+] (%)	P
Daily tea consumption	1 - 2 cups/day	622 (36)	201 (11)	P < 0.0001
	3+	463 (26)	464 (27)	
Daily coffee consumption	1 - 2 cups/day	1054 (60)	486 (28)	P < 0.0001
	3+	31 (2)	179 (10)	
Reguler alcohol intake	(+)	103 (6)	22 (1)	P < 0.0001
	(-)	982 (56)	643 (37)	
Smoking	(+)	819 (47)	421 (24)	P < 0.0001

significant ($p > 0.05$). IBS was observed to be significantly increased in persons not eating three regular meals per day, and in subjects without fiber in their diet ($p < 0.0001$).

The relationship between IBS and smoking-drinking materials are given in Table 3. IBS prevalence increased as the daily consumption of tea and coffee increased ($p < 0.0001$). We found a negative correlation between IBS and smoking ($p < 0.0001$). There was a negative correlation between IBS and alcohol intake too ($p < 0.0001$).

DISCUSSION

The diagnosis of IBS ranks 7th among all medical diagnoses (Everhart and Renault, 1991; Russo et al.,

1999). The disease that gastroenterologists diagnosed most frequently was IBS. The IBS prevalence of the police officers admitted to the hospital was found to be 38% and was higher than most of the other studies. IBS prevalence may vary between 2.9 to 17% in different studies (Sandler, 1990; Talley et al., 1991; Full-Young et al., 2010). Its prevalence in Turkish society ranges from 6.2 to 19.1% (Celebi et al., 2004; Karaman et al., 2003; Akpinar et al., 1999; Yilmaz et al., 2005); 54.1% of IBS patients were constipation-dominant (C-IBS), 3% of them were diarrhea-dominant (D-IBS) and 42.9% of IBS patients had an alternating bowel habit (A-IBS). Although C-IBS prevalence were higher in our population, a recent review for asian population showed diarrhea predominance for males (Full-Young et al., 2010). Another population based study from Turkey showed the subtype prevalences of IBS as 48.1% (D-IBS), 38.9%

(C-IBS), 13% (A-IBS) (Yilmaz et al., 2005). Although A-IBS prevalence was remarkably high and D-IBS prevalence was low in our study, we should consider that A-IBS prevalences ranges = from 20 to 65% in different studies (Full-Young et al., 2010).

Among age groups, there was no statistically significant difference ($p > 0.05$). Unlike the studies involving the community, very young and elderly patients were not included in the statistical survey because there are a certain age range of the police officers. We did not review any statistical link with educational level and gender status on IBS because the patients educational status and gender status were almost the same.

In our study, the statistical relationship between the stress and the prevalence of IBS was not significant ($p > 0.05$). In a prospective study, psychosocial factors such as anxiety, sleep problems, somatic symptoms were shown to be independent risk factors for the development of IBS (Nicholl et al., 2008). Stress is also known to play a role in exacerbation of IBS (Whitehead et al., 1992). Since stress is found in the nature of police job, it may explain why we could not find any differences between each group in our study.

Laxative drug use was common among our patients ($p < 0.0001$). Chronic laxative use usually exists in constipation-predominant patients (Olden and Scuhuster, 1998). The result of our study is compatible with previous research results.

In our study, we found a significant correlation between IBS and previous abdominal operation ($p < 0.05$). According to the literature, lifetime abdominal operation prevalence of IBS was higher than healthy subjects. Results are compatible with the literature (Saito et al., 2002).

We found a positive correlation between IBS and previous infection history ($p < 0.05$). In the literature it has been demonstrated that infection and other harmful agents have enhanced the precision of receptors causing symptoms (Karaman and Turkay, 2002).

In our study, we observed the IBS prevalence to be higher in individuals who did not eat regular meals and who had insufficient fiber in their diet ($p < 0.0001$). The habit of feeding with insufficient fiber foods have been shown to contribute to chronic constipation even in children (Akyildiz et al., 2005).

IBS prevalence increased as the daily consumption of tea and coffee increased ($p < 0.0001$). The symptoms of IBS and functional gastrointestinal disorders are usually together and may cause the current situation (Holtmann et al., 1997; Agreus et al., 2001). In the literature, although some of the studies show that smoking is one of the possible reason that increase dyspeptic complaints and IBS, there are also studies without any differences (Ozkan et al., 1992; Karaman et al., 2003). In our study, we found a negative correlation between IBS and smoking ($p < 0.0001$). There was negative correlation between IBS and alcohol intake too ($p < 0.0001$).

Police officers with vocational and socio-economic

features constitute a special group of society. Our research results have both similarity and differences from the results of other studies. We found the IBS prevalence to be related with previous infections, abdominal operations, chronic laxative use, absence of regular diet, lack of fiber foods in nutrition and daily tea or coffee consumption. Negative statistical relationship between IBS prevalence and smoking or alcohol intake was found. No relationship was found between the prevalence of IBS and psychological events. We think that more studies with different job groups should be carried out to explain the reasons of the differences.

Conflict of interests

The author(s) have not declared any conflict of interests.

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