A SEARCH FOR UNHAPPY ABDOMEN: PREVALENCE OF IRRITABLE BOWEL SYNDROME IN GENERAL POPULATION

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ABSTRACT

The irritable bowel syndrome is the commonest gastrointestinal disorder seen in practice but its exact prevalence in India is not known. This study was carried out to determine the prevalence of symptoms compatible with this diagnosis in general population. A cross sectional random sample survey was conducted in various strata of urban population in Wanowrie area of Pune. Survey utilized personal interviews based on a questionnaire. Symptoms were evaluated as per Manning criteria and the diagnosis of irritable bowel syndrome was defined by Kruis diagnostic index. Of the 1010 subjects interviewed, 370 (37%) reported more than 6 episodes of abdominal pain in previous 6 months, with 333 reporting symptoms consistent with the the diagnosis of irritable bowel syndrome. At least one of the Manning's symptoms was present in 307 out of 370 subjects (83%). The male female ratio was 5.3:1. Among males, 288 (35%) and among females 82 (53.2%) persons had at least some degree of abdominal discomfort. Other common symptoms were: excessive passage of wind (42.2%), irregular bowel habits (33%), excessive belching (30.8%), constipation (27.5) and feeling of incomplete evacuation (28.1%). About one third of the symptomatic subjects (134 or 36.2%) had seen a doctor or wanted to be seen by a specialist. Overall prevalence of the symptoms consistent with irritable bowel syndrome thus, is 33 per cent though only about a third of these may possibly consult a doctor. Follow up of all these patients for a mean duration of 8.3 months showed that no case of organic disease was picked up either by the scoring system or by the gastroenterologist. Symptoms consistent with the diagnosis of irritable bowel syndrome are seen in almost one third of the study population residing in Wanowrie area of Pune.

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KEYWORDS : Irritable bowel syndrome; Kruis diagnostic index; Manning's symptoms.

Introduction

Irritable bowel syndrome (IBS) is a common problem affecting over 15 per cent of apparently healthy individuals [1,2]. For several years IBS was considered a diagnosis of exclusion. Now it is widely accepted that this diagnosis should be actively sought due to characteristic symptom pattern rather than negative investigations. Manning et al [3] have described certain symptoms that distinguish IBS from organic disease. These are: pain relieved by defecation, loose or more frequent stools at the onset of pain, abdominal distension, passage of mucus and a feeling of incomplete evacuation. It is rarely necessary to revise the diagnosis made clinically on this basis [4].

In Bristol, one or more of GI symptoms were admitted by 47 per cent of women and 27 per cent of men [5]. Similar results have been published from Southampton and Rochester, Minnesota [6,7]. Although exact figures pertaining to our country are not available, this syndrome is considered the second common cause, after common cold, of absenteeism

from work [8]. This common syndrome has not been adequately investigated in India. One study from Raipur reported its prevalence in about 10 per cent patients seen in a gastroenterology out-patient department [9]. In Simla, a little over 10 per cent subjects with diarrhoea had IBS [10]. These Indian studies have focused on a selected sample rather than general population. In the absence of dedicated attempts to study the prevalence of IBS in Indian population, its prevalence in our country remains largely unknown. This random sample survey was carried out to determine the prevalence of symptoms suggestive of IBS among certain segments of persons living in Pune.

Material and Methods

Study design : The study was a community based survey in certain segments of general population of a large cantonment (Pune). The population included defence service personnel, their families, medical students of Armed Forces Medical College and the civilians residing in the cantonment. The study design was that of a cross sectional analytic study, with the outcome and its putative exposure variables being measured at a common point of time.

Sample selection : Sample size was worked out based on a two

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tailed alpha error level of 0.05, an expected prevalence of abdominal symptoms as 10 per cent ($p=0.1$) based on review of literature and a pilot study. With a view to estimate this expected parameter within a precise 95 per cent confidence interval of 0.08 to 0.12 ($d=0.02$), the sample size worked out to 900. In fact a larger sample size ($n=1010$) was actually studied to further improve the precision. The required number of subjects were drawn by stratified random sampling which further helped in reducing the variance. The stratification was done on the basis of officers, junior commissioned officers (JCOs), other ranks (ORs), families, medical students and civilians.

Methods : Data collection was undertaken by interns assisted by medico-social workers using a structured personal interview technique. All data collectors were centrally trained to ensure standardisation. A close-ended, precoded questionnaire was used to collect the data. The questionnaire was developed by the authors based on previously published studies [5-7] and was subjected to peer group review. It aimed to obtain information about abdominal symptoms in Indian population. After basic demographic information was collected, the subjects were asked if they are satisfied with their abdominal functions or digestion. If the answer was anything other than 'yes', they were asked about the details of all their symptoms along with its duration and approximate frequency. Previous diagnoses if made were also recorded. A direct question about loss or gain in weight was also asked and finally they were asked if they would like to avail of an opportunity to be investigated by a specialist. With a view to standardise and validate the questionnaire in the population of interest, it was subjected to two consecutive rounds of pretesting during which fine adjustments were made. Assessment of test-retest and interobserver reliabilities was undertaken by calculation of Kappa co-efficient in respect of related categorical variable and of correlation co-efficient of related continuous variables. A high Kappa co-efficient/correlation co-efficient (>0.75) was ensured before the questions on these variables were included in the questionnaire. Subjects of these pilot studies were not included in the main study. Finally, the questionnaire was validated for the local languages, i.e. ordinary usage Hindi and Marathi, by the process of translation-backtranslation.

Diagnosis : IBS was defined according to the definition given by consensus conference [11]. The symptoms were analysed according to Manning criteria [3]. The diagnosis of IBS was confirmed if the patients scored over 44 on the Kruis scoring system [12] (Table 1). The latter was used to avoid picking up any case of an organic disease since Kruis index gives heavy negative marks for any abnormal physical finding or investigation.

Statistical methods : Statistical analysis of data included calculation of point estimates and their 95 per cent confidence intervals (95% CI), Chi-Square test for linear trend in proportions for ordinal-categorical data, and Chi-Square test for their proportions in a $r \times c$ contingency table.

Results

Population details : A total of 1010 subjects residing in Pune, were surveyed with the help of a questionnaire. The subjects consisted of 325 (32.2%) civilians residing in general area 'Wanowrie, Pune', 183 (18.2%) medical student, 106 (10.5%) officers, 101 (10%) JCOs, 111 (11%) ORs and 179 (17.7%) families (women and children) of Armed Forces personnel. Mean age was 29.2 (SD ± 10.93) years with a range of 13 to 51 years. Males formed the majority of the study group comprising of 822 (81.5%) while 154 (15.5%) subjects were females (3.2% subjects didn't enter their sex in the questionnaire).

TABLE 1

Kruis scoring system for making a diagnosis

Symptoms	Points
Pain, flatulence and bowel irregularity	34 pts
Symptoms > 2 years	16 pts
The description of pain	23 pts
Alternating constipation and diarrhoea	14 pts
Abnormal physical findings	- 47 pts
ESR > 10 mm/1hr	- 13 pts
WBC > 10,000/cu mm	- 50 pts
Anemia	- 98 pts

Note : Positive score > 44 points was estimated to have a probability of IBS of 94%

Prevalence of abdominal symptoms : In response to first question, it was noted that 370 individuals were not satisfied with their abdominal functions (Fig. 1) and these 370 subjects formed the study group A for further analysis. Among males, 288 (35%) and among females 82 (53.2%) persons had at least some degree of abdominal discomfort. The overall prevalence was 36.6 per cent with a 95 per cent CI of 33.6 to 39.6 per cent. Interestingly, of the 640 subjects who (in response to first question) said that they were fully satisfied with their abdominal functions, 178 (27.8%) went on to describe their abdominal symptoms in second question of the questionnaire. These 178 subjects were also analysed as group B (Table 3). It is possible that this group of subjects had failed to comprehend the first question (Are you satisfied with your abdominal function?) or they did not give much significance to these symptoms, but recognised them in the subsequent question.

Analysis of individual symptoms : Prevalence of various symptoms in the population is summarised in the Table 2. Pain appeared to be dominant symptom and often was described in vague terms. Location was variable and it was invariably poorly localised. Only 13 (7.2%) of the 182 patients could pin-point their pain with one finger. In 98 (53.8%) persons, mild dull pain was present almost 24 hours a day which was occasionally aggravated.

Diagnosis of IBS : When Manning criteria were applied to analysis, it was noted that at least one of the Mannings symptoms was present in 307 out of 370 subjects (Group A) and even in 156 of 178 additional subjects (Group B) (Table 4). Using Kruis diagnostic index, the diagnosis of irritable bowel syndrome could be made in 296/370 (80%) subjects in group A and in 37/178 (21%) in group B, giving an overall prevalence of 33 per cent in population. Significant weight loss was not present in majority (83.8%), including those who felt their weight was static but had not both.

Fig. 1 : Almost one third of the population studied had noticeable abdominal symptoms.

TABLE 2

Prevalence of abdominal symptoms in Wanoworie area of Pune (India) in a random sample survey

Symptoms	Number studied	Frequency of symptoms (Figures below refer to the number of subjects who had given frequency of symptoms)											
		Every 3-5 days		Once in 10-15 days		Once a month		Once in two months		Less often		Never	
		Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Pain in abdomen	370	44	11.9	12	3.2	42	11.4	24	6.5	60	16.2	188	50.8
a. Pain relief by passing motion	182*	12	6.6	4	2.2	6	3.3	16	8.8	18	9.9	126	69.2
b. Pain relief by passing flatus	182*	12	6.6	10	5.5	6	3.3	16	8.8	18	9.9	120	65.9
Post prandial abdominal bloating	370	36	9.7	30	8.1	34	9.2	14	3.8	52	14.1	204	55.1
Excessive belching	370	46	12.4	36	9.7	43	11.6	31	8.4	26	7.0	188	50.8
Excessive passage of wind	370	38	10.3	12	3.2	8	2.2	16	4.3	36	9.7	260	70.3
Sensation of gas moving in the abdomen	370	28	7.6	32	8.6	28	7.6	14	3.8	20	5.4	248	67.0
Eruclatations	370	10	2.7	12	3.2	8	2.2	6	1.6	40	10.8	294	79.5
Retrosternal burning	370	42	11.4	16	4.3	0	0.0	18	4.9	54	14.6	240	64.9
Constipation	370	10	2.7	26	7.0	38	10.3	24	6.5	14	3.8	258	69.7
More than two motions per day	370	24	6.5	10	2.7	26	7.0	14	3.8	36	9.7	260	70.3
Feeling of incomplete evacuation	370	34	9.2	24	6.5	34	9.2	12	3.2	26	7.0	240	64.9
Irregular bowel habits	370	32	8.6	40	10.8	30	8.1	20	5.4	30	8.1	218	58.9
Variable consistency in the same motion	370	45	12.2	35	9.5	8	2.2	21	5.7	28	7.6	233	63.0
Urgency to rush to toilet	370	14	3.8	10	2.7	4	1.1	6	1.6	28	7.6	308	83.2
Diarrhoea	370	10	2.7	4	1.1	8	2.2	14	3.8	46	12.4	288	77.8

* Only those with abdominal pain have been analysed.

TABLE 3

Prevalence of abdominal symptoms in various groups surveyed

Groups studied	Asymptomatic		Symptomatic		Total no. studied
	Number	%	Number	%	
Medical students	115	62.8	68	37.2	183
Service officers	73	68.9	33	31.1	106
JCOs	64	63.4	37	36.6	101
Other ranks	83	71.5	33	28.5	116
Families of service personnel	113	63.1	66	36.9	179
Civilians living in Wanoworie village	192	59.1	133	40.9	325
Total	640	63.4	370	36.6	1010

Note $\chi^2 = 7.93$, $df = 5$, $p > 0.05$ (not significant)

ered to measure and 32 (8.6%) subjects in fact, had gained some weight during this period. Only 28 (7.6%) subjects complained of having lost over 6 Kg weight during previous 6 months. About one third of them (134 or 36.2%) wanted to be seen by a specialist while others either did not (204, 55.1%) want to see a doctor or failed to answer that question (32, 8.6%).

Follow up : Follow up of all these patients for a mean duration of 8.3 months showed that no case of organic disease was picked

up either by the scoring system or by the gastroenterologist.

Discussion

We found that over one third of study population has some or other abdominal symptoms. Overall 370 out of 1010 (36.6%) of individuals studied, admitted to being dissatisfied with their abdominal function. A larger proportion of females (53.2%) had such symptoms as compared to males (35%). Of the remaining 640 'satisfied subjects', additional 178 (17.6%) accepted that they also had atleast one of the 15 listed abdominal symptoms off and on. In a similar study from Bristol, 47 per cent of women and 27 per cent of men were reported to have abdominal symptoms [5]. Whether higher incidence of abdominal symptoms in India is related to multiple parasitic/bacterial infections is not yet clear. Overall prevalence of such symptoms was not significantly different in civilians, army personnel, medical students or families of army personnel.

The commonest symptoms detected in the study population were excessive passage of wind (42.2%),

TABLE 4

Prevalence of multiple symptoms satisfying Manning criteria in general population. Table also presents analysis of difference between group A and group B subjects with regards to the number of symptoms

Number of symptoms present more frequently than 6 times a year	Proportion of patients meeting Manning criteria Group A (n = 370)		Proportion of patients meeting Manning criteria Group B (n = 178)		Stratum OR (95% CI)
	Number of patients	Percent	Number of patients	Percent	
Atleast one symptoms	307	83	156	87.6	0.44 (0.23 to 0.83)
Atleast two symptoms	246	66.5	83	48.3	2.27 (1.55 to 3.33)
Atleast three symptoms	238	64.3	46	25.8	5.17 (3.41 to 7.86)
Atleast four symptoms	234	63.2	38	21.3	6.34 (4.10 to 9.83)
Atleast five symptoms	234	63.2	35	19.7	10.53 (6.41 to 17.4)

pain in abdomen (33%), irregular bowel habits (33%) and excessive belching (30.8%). Next common symptoms were constipation (27.5%) and feeling of incomplete evacuation (28.1%). Similar trend was also noted in the group B (see above). Atleast one symptom was present in 463 (45.8%) patients (307 from group A and 156 from group B), while atleast 2 and 3 symptoms were present in 329 (32.6%) and 284/1010 (28.1%) patients. Bristol study reported the prevalence of atleast 2 and 3 such symptoms to be 24 and 13 per cent respectively in women and 11 and 5 per cent respectively in males [5]. Similar results have been published from Southampton and Rochester, Minnesota [6,7]. Even these figures seem to understate the true incidence of abdominal symptoms in the community [13]. Commonest symptoms in the Bristol study were frequent bloated feeling, passage of mucus, frequent urgency of defecation and feeling of incomplete evacuation.

In our survey, only 36.2 per cent of the symptomatic patients (group A) in our study were motivated to consult a doctor. In surveys of healthy people reported from elsewhere, only 14-66 per cent of symptomatic individuals had consulted a doctor [15-18].

A large proportion (296/370 or 80%) of them could be diagnosed as IBS on the basis of our scoring system modified from Kruis [12]. Kruis scoring system has been criticised by some authorities as having low sensitivity even though it is highly specific [14]. Another criticism is that additional weightage has not been given to female sex [15]. From our study, a history of weight loss can be added to the list of symptoms given negative weightage. Manning et al [3] have also reported that certain symptoms distinguished IBS from organic disease. These were : pain relieved by defecation, loose or more frequent stools at the onset of pain, abdominal distension, passage of mucus and a feeling of incomplete evacuation. These criteria have been subsequently confirmed to be of discrimi-

nating value in IBS [16]. If sigmoidoscopy/colonoscopy findings are added, these scoring systems will become much more useful and definitive.

Interestingly, research shows that such surveys seem to understate the true prevalence of abdominal symptoms in the community. When 27 healthy women who had recently denied getting any abdominal pain, were followed up closely for a month, no fewer than 81 per cent experienced one or more non-menstrual abdominal pains and 93 per cent experienced bloating [13]. Most of them had at least one episode of urgent defecation or runny stools, and all had at least one occasion when they felt evacuation was incomplete. In surveys of healthy people, only 14-66 per cent of those with above symptoms had consulted a doctor [4-7].

In our setting it must be borne in mind that abdominal tuberculosis may present with several vague symptoms during the initial months. Specialists in medicine or gastroenterology may not require a scoring system to suspect that an organic disease rather than IBS is the cause of these symptoms. It is at a peripheral or primary health care level that a scoring system is likely to be useful. Kruis scoring system appears quite satisfactory in our situation where it is extremely important for the MOs in peripheral hospitals not to miss any organic illness and still be able to suspect IBS in the field settings. Moreover, it has recently been shown that many patients with such symptoms were misdiagnosed as chronic amoebiasis in the past [17]. This study highlights the points that the symptoms of IBS are common in general population and medical officers will do well to consider this in the differential diagnosis of patients presenting with chronic symptoms.

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