

Full Length Research Paper

Apparent rarity of constipation-predominant irritable bowel syndrome in female Nigerians

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Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder with a prevalence that varies according to geographical regions. This study was designed to determine the prevalence of IBS and its subtypes in a population of medical students in South-East Nigeria. This was a descriptive cross-sectional study in which clinical students were administered the IBS component of the Rome III diagnostic questionnaire for adult functional gastrointestinal disorders. The responses were analyzed with the scoring algorithm. The mean age of the students (\pm SD) was 27.25 ± 4.3 years. Fifty two out of the 380 students who completed and returned their questionnaires had IBS which translates to a prevalence of 13.7%, and majority of them (61.5%) were females. The commonest subtype was IBS with constipation alternating with diarrhea (53.8%). However, no female student had constipation-predominant IBS. The prevalence of IBS in a population of medical students was 13.7%. There was a clear female preponderance but IBS-C was more common in males. Environmental factors may be responsible for this symptom pattern.

Key words: Constipation predominant, irritable bowel syndrome, Nigerians.

INTRODUCTION

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder. For many years it remained a diagnosis of exclusion until the introduction of the Rome criteria for the diagnosis of functional gastrointestinal disorders (Thompson et al., 1989; Drossman et al., 1990; Thompson et al., 1992; Thompson et al., 1999; Drossman, 2006; Drossman et al., 2006). The Rome criteria have actually revolutionized the diagnosis and management of these diseases and have formed the basis of entry into research studies in this hitherto difficult field. The syndrome is defined on the basis of Rome III criteria as recurrent abdominal pain or discomfort at least 3 days per month in the last 3 months that started at least 6 months before diagnosis, cannot be explained by a structural or biochemical abnormality, and is associated with at least two of the following: improvement with defecation, onset associated with a change in frequency

of stool, and onset associated with a change in form or appearance of stool (Longstreth et al 2006).

In the western world the prevalence in the general population is between 10% and 20% (Agruis et al., 1994, Saito et al., 2002). Before the advent of symptom-based diagnosis, IBS was thought to be rare in Africans. Studies conducted recently on Nigerians using symptom-based criteria in diagnosis indicated that the condition is actually common, with a prevalence that ranges from 26.1% to 33% (Olubuyide et al., 1995, Okeke et al., 2005, Ladep et al., 2007; Okeke et al., 2009). No such study has been carried out in the South-Eastern region of the country. This part of the country differs significantly from the Northern region and therefore the environmental factors that affect the prevalence and symptomatology of IBS may be different. This study was designed to determine the prevalence of IBS and its subtypes in a population of clinical students of the University of Nigeria Enugu Campus.

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MATERIALS AND METHODS

In this descriptive cross-sectional study, clinical students of the College of Medicine, University of Nigeria Enugu Campus who gave informed consent to participate in the study were administered the IBS component of the Rome III diagnostic questionnaire for adult functional gastrointestinal disorders (Drossman et al., 2006). Those who had alarm symptom(s) and those who had predominantly nocturnal symptoms were excluded. Such alarm symptoms included blood in stool, black stool, hematemesis, pallor (evidence of anemia), weight loss, family history of gastrointestinal cancer, and family history of ulcerative colitis, Crohn's disease or Celiac disease. The responses were analysed using the scoring algorithm of the questionnaire. The results were expressed as means \pm SD and proportions. Differences between means and proportions were determined and a p value of ≤ 0.05 was considered statistically significant.

RESULTS

Out of 410 students who participated in the study, 380 returned their completed questionnaires giving a response rate of 92.7%. They consisted of 208 males (54.7%) and 172 females (45.3%). Their ages ranged from 21 years to 50 years (mean \pm SD = 27.25 \pm 4.3). Fifty two students satisfied the Rome III diagnostic criteria for IBS giving a prevalence of 13.7%. Within the IBS group there were 20 males (38.5%) and 32 females (61.5%). Those with IBS were subcategorized according to predominant stool pattern into IBS with constipation (IBS-C), IBS with diarrhea (IBS-D), and IBS with diarrhea alternating with constipation (IBS-A), also called mixed IBS (IBS-M). Table 1 illustrates the frequencies of the IBS subtypes.

The mean age (\pm SD) of the students who satisfied the criteria for IBS was 27.25 \pm 4.3 years while the mean age (\pm SD) of the students who did not have IBS was 27.54 \pm 4.4 years. The difference between the 2 means was not statistically significant ($p = 0.9907$). The mean age of the 20 males with IBS was 26.2 \pm 2.4 years while the mean age of the 32 females with IBS was 25.0 \pm 2.5 years. The difference between the means was not statistically significant ($p = 0.15$).

DISCUSSION

The prevalence of IBS in this study (using Rome III criteria) was 13.7%. This is by far lower than what was reported by Olubuyide et al (1995) in Ibadan, Western Nigeria where the prevalence was 30%. Reports from Jos, Northern Nigeria put the prevalence at 26.1% in medical students (Okeke et al 2005), 33% in patients attending a general outpatient clinic (Ladep et al 2007) and 31.6% in a rural community (Okeke et al 2009). While the study in Ibadan used the Manning criteria for diagnosis, the studies from Jos utilized the Rome II guideline which has more stringent inclusion criteria

compared to Rome III. The time requirement for a diagnosis of IBS in Rome III originates at 6 months prior to clinical presentation and must be currently active for 3 months. This time factor is less stringent than Rome II (12 weeks of symptoms over 12 months). However, the time requirement in Rome III is easier to understand in a questionnaire. One of the studies from Jos was carried out on a similar population to this study (medical students) and the prevalence was 26.1%. The difference may actually be real considering the fact that IBS prevalence is determined by both host and environmental factors. An important environmental factor that may explain this observation is diet. The role of diet in IBS was amply demonstrated in a study by Atkinson et al (2004). There is a clear difference between the diets of people in South East Nigeria and those in the North. The staples in the east are mainly cassava and yam tubers which are high in fibre. There is also a high consumption of green leaves (vegetables) in the east. An increase in intake of fibre is generally recommended for patients with IBS and studies have actually demonstrated some modest improvement in patients with IBS whose complaints are abdominal pain and constipation (Lucey et al., 1987; Cook et al., 1990). Conversely the staples in the north include dairy products like milk and cream. A lot of milk from animal and plant sources is consumed in the north. Meat consumption is also high in the north because of abundant livestock. Gas producing foods like cabbage, cauliflower, dried peas, lentils and onions are widely available and form part of the diet in the north. Other foods widely consumed in the north that may cause or aggravate IBS include cereals (wheat, millet and corn), sugar (sugar cane), oranges, lemons, grapes and citrus. There is need to conduct more studies using the same diagnostic criteria in all the regions to further elucidate this.

This study also illustrates the effect of gender on disease prevalence. There is a clear female preponderance, similar to what has been reported severally from the western world (Mitchel et al., 1987; Talley et al., 1992; Taub et al., 1995; Muller-Lissner et al., 2001; Hungin et al., 2005; Chang et al., 2006). Female gender is a significant independent factor for the development of IBS (Ford et al., 2007). Female preponderance has been reported in US (Andrews et al., 2005), Canada (Thompson et al., 2005), and Israel (Sperber et al., 2005). However, some studies in Asia suggest that the prevalence of IBS in men and women is similar (Lu et al., 2003; Xiong et al., 2004; Gwee et al., 2004; Gwee, 2005). The difference may be related to health-seeking behaviour, cultural factors and economic reasons (Pimparkar et al., 1970; Jain et al., 1991; Lu et al., 2006; Drossman et al., 2008).

This study clearly showed male predominance in the IBS

Table 1. Gender Distribution of IBS Subtypes

IBS Subtype	Male	Female	Total	Percentage (%)
IBS-D	4	16	20	38.5
IBS-C	4	0	4	7.7
IBS-A	12	16	28	53.8
Grand Total	20	32	52	100

IBS-D = Diarrhea-predominant IBS

IBS-C = Constipation-predominant IBS

IBS-A = IBS with alternating diarrhea and constipation

with constipation subtype (IBS-C). Several previous studies showed female predominance in the IBS-C subtype compared with the other phenotypes (Talley et al., 1995; Andrews et al., 2005, Jun et al., 2006; Katsinelos et al., 2009; Adeyemo et al., 2010). Although gender differences in pathophysiological studies (eg gastrointestinal transit, rectal perception, brain activation patterns) have been reported in IBS and healthy controls (Rao et al., 2000; Viramontes et al., 2001) in support of this observation, there are also conflicting reports that failed to identify differences between men and women (Soffer et al., 2000).

Another unresolved issue is the role of progesterone in IBS symptom pattern. Pregnant women frequently report abdominal bloating and constipation, and the prevalence of these conditions ranges from 25% to 40% in some studies from the western countries (Baron, 1993; Cullen et al., 2007; Bradley et al., 2007; Ponce et al., 2008). Many women who are affected by constipation when they are not pregnant experience a worsening of this symptom during pregnancy. Reasons for the increased prevalence of constipation and bloating during pregnancy include changes in water absorption, mechanical factors, dietary factors, reduced physical activity and particularly hypomotility of the small and large bowel consequent upon increased progesterone levels (Cullen et al., 2007). On the other hand, several studies have shown that patients with IBS symptoms such as abdominal pain, diarrhea and constipation experience an increase in their symptoms during the menstrual phase of the monthly cycle (Whitehead et al 1990, Kane et al 1998, Houghton et al 2002). The explanation that has been advanced for this is the low ovarian hormone level at the time of menses. There is thus a confusing situation where low hormone levels lead to worsening of IBS symptoms as in the menstrual phase of the monthly cycle; and high hormone levels also lead to worsening of IBS symptoms as in pregnancy.

From the foregoing, it is obvious that gender differences in IBS symptomatology cannot be fully explained by a simple hormonal theory. In support of this

is the observation that most patients with IBS in India are middle-aged men (Ghoshal et al., 2008). The male preponderance of IBS-C in this study is thus another case of failure of IBS symptomatology to conform with a subsisting theory. It does appear that environmental factors such as diet have a stronger influence on the symptomatology of IBS. There is a need for larger studies on this subject.

In conclusion, the prevalence of IBS in a population of medical students in South-East Nigeria is 13.7% , with a clear female preponderance and over half of them have the mixed subtype in which diarrhea alternates with constipation. However, the constipation predominant IBS subtype (IBS-C) occurred exclusively in male subjects thereby placing a strong question on the hormone theory of IBS symptomatology. Environmental factors may be more important in producing the subtypes of IBS. There is a need for more studies in this aspect of IBS.

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