

Gender and Irritable Bowel Syndrome

The Male Connection

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Background/Goals: Irritable bowel syndrome is more common in women; and this is generally considered to be caused by increased susceptibility. However, the opposite possibility that being male might actually protect from the disorder in some way, has largely been ignored. We have noticed that men with IBS seem to display less masculine and more feminine qualities and it was the purpose of this study to confirm or refute this clinical observation.

Study: Seventy consecutive male, secondary care outpatients fulfilling the Rome 1 criteria for irritable bowel syndrome and 70 controls completed a questionnaire to determine male and female-trait scores. In addition, all subjects were assessed using the hospital anxiety depression inventory.

Results: A highly significant reduction in male-trait scores was observed in the irritable bowel syndrome patients compared with controls ($-10.5[-15.7, -5.2]$ $P < 0.001$). There were no differences between the groups with respect to female-trait scores. The prevalence of homosexuality was no different between patients and controls.

Conclusion: Men with irritable bowel syndrome exhibit less male characteristics and it remains to be determined whether this is cause or effect. Whatever the explanation, this study adds another dimension to the role of gender in functional gastrointestinal disorders.

Key Words: gender, irritable bowel syndrome

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It is well known that irritable bowel syndrome (IBS) is more common in women^{1,2} although the reason for this observation is obscure. Most explanations have focused on the concept that women might be more susceptible in some way and little attention has been given to the possibility that being male is

protective. One possible mechanism by which men could be protected from IBS is via their sex hormones in which case, it might be predicted that in IBS these may be altered in some way. We have recently found some evidence to support this possibility by finding significantly reduced levels of luteinizing hormone coupled with a tendency toward lower testosterone values in male patients with IBS compared with healthy controls.³

We have also noticed that male patients with IBS seem to lack some of the more dominant male characteristics and on occasions even appear to have some feminine qualities. We therefore considered it would be of interest to assess whether male patients with IBS differed from controls in any way with respect to male and female characteristics. Male and female trait scores can be measured by means of a questionnaire⁴ and it is the purpose of this study to undertake such an assessment in men with and without IBS.

MATERIALS AND METHODS

Seventy consecutive white men, secondary care outpatients, with a firm diagnosis of IBS and fulfilling the Rome 1 Criteria⁵ were compared with 70 healthy controls. All patients were symptomatic at the time of study and any with concomitant disease were excluded. Controls were recruited from hospital employees of matching social class and those with IBS or any other disease were excluded. No subject refused to participate in the study. All subjects completed a validated questionnaire designed to measure male and female trait scores.⁴ The questionnaire (Table 1) consisted of 20 male, 20 female and 20 neutral gender questions, which could be scored on a 7 point scale allowing a total score to be calculated for each domain. The 20 neutral questions served only to balance the questionnaire and were not used in any way to determine the final masculinity or femininity scores. All subjects also completed a hospital anxiety depression (HAD) questionnaire⁶ and were asked specifically about their sexual orientation. Trait scores in the IBS and healthy control groups were compared using two-sample *t* tests. An analysis of covariance was used to adjust these comparisons for age. The relationships between age and trait scores were assessed using Pearson correlations. The study was approved by the local research ethics committee.

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TABLE 1. Masculine, Feminine, and Neutral Questions

Masculine	Feminine	Neutral
Acts as a leader	Affectionate	Adaptable
Aggressive	Cheerful	Conceited
Ambitious	Childlike	Conscientious
Analytical	Compassionate	Conventional
Assertive	Does not use harsh language	Friendly
Athletic	Eager to soothe hurt feelings	Happy
Competitive	Feminine	Helpful
Defends own beliefs	Flatterable	Inefficient
Dominant	Gentle	Jealous
Forceful	Gullible	Likeable
Has leadership abilities	Loves children	Moody
Independent	Loyal	Reliable
Individualistic	Sensitive to needs of others	Secretive
Makes decisions easily	Shy	Sincere
Masculine	Soft spoken	Solemn
Self-reliant	Sympathetic	Tactful
Self-sufficient	Tender	Theatrical
Strong personality	Understanding	Truthful
Willing to take a stand	Warm	Unpredictable
Willing to take risks	Yielding	Unsystematic

RESULTS

Table 2 shows the male and female-trait scores for the 2 groups as well as the ages and HAD scores. As can be seen, there was a highly significant reduction in the male-trait scores ($P < 0.001$) although there were no differences in the female-trait scores. As would be expected in a hospital population of IBS patients, the HAD scores were elevated compared with the control group. As the controls were slightly younger than the IBS patients, the data were re-analyzed first by statistically adjusting for age using an analysis of covariance and second, by restricting the analysis to patients and controls of comparable

age. The reanalysis of covariance resulted in no changes in the highly significant results with the age adjusted male-trait scores significantly lower for IBS patients (mean IBS 94.6, control 104.5, $P < 0.001$), whereas the age adjusted female-trait scores were similar in the 2 groups (mean IBS 92.3, control 92.9, $P = 0.69$). Similarly, the same highly significant reduction of male-trait scores was observed when the analysis was confined to patients of a similar age (Table 3). As a further precaution, the data for both controls and patients were analyzed for a possible correlation of either male or female-trait scores with age but no such correlation emerged (female-trait score: IBS $r = 0.06$; $P = 0.62$. controls: $r = -0.13$; $P = 0.28$. male-trait score: IBS $r = -0.08$; $P = 0.51$. controls: $r = -0.07$; $P = 0.56$). There was no difference in the prevalence of homosexuality between the 2 groups.

DISCUSSION

This study clearly shows that men with IBS have significantly reduced male-trait scores compared with healthy controls. Not only does this confirm a clinical impression but this observation may also have practical implications with respect to therapy. There is some evidence to suggest that gender may influence response to treatment in patients with IBS^{7,8} although the mechanism by which this is mediated is unknown. Depending on what factors are involved in this phenomenon the gender trait status of a male with IBS may be of relevance.

There are a number of possible explanations for our findings which are not necessarily mutually exclusive. First, men with low male trait scores might be more susceptible to IBS in some way either in terms of their physiologic or psychologic make up. Our previously reported observation that men with IBS have reductions in their sex hormonal status³ could possibly explain a reduction in the male trait score and lend some support to a physiologic explanation. For example, it has previously been shown that men are less likely to develop IBS following dysentery⁹ and other potentially sensitizing events.¹⁰ Therefore, if this protection is mediated hormonally, then a reduction in male trait score could act as a marker for predisposition to IBS in men exposed to initiating factors.

TABLE 2. Female/Male Trait Scores in Male Patients With IBS

	Mean (sd)		95% CI of Difference of IBS vs Control	
	IBS	Control		
Male trait score	94.3 (16.8)	104.8 (14.4)	-15.7, -5.2	$P < 0.001$
Female trait score	92.1 (13.3)	93.1 (14.0)	-5.5, 3.6	$P = 0.68$
Age	47.2 (11.7)	40.3 (14.5)	2.5, 11.3	$P = 0.002$
HAD depression	7.7 (4.6)	2.8 (2.6)	3.7, 6.2	$P < 0.001$
HAD anxiety	10.9 (4.1)	5.0 (3.1)	4.8, 7.2	$P < 0.001$

TABLE 3. Female/Male Trait Scores in Male Patients With IBS Restricting Analysis to 63 IBS and 47 Controls With Age >30

	Mean (sd)		95% CI of Difference of IBS vs Control	
	IBS	Control		
Male trait score	93.8 (17.3)	105.1 (14.2)	-17.4, -5.2	<i>P</i> < 0.001
Female trait score	91.6 (13.4)	92.6 (12.8)	-6.0, 4.0	<i>P</i> = 0.69
Age	49.4 (10.0)	47.2 (12.6)	-2.1, 6.5	<i>P</i> = 0.31

Alternatively, a reduced male trait score may be a reflection of a component of the psychologic constitution of a man with IBS. For instance, it could be that men with low male trait scores tend to consult more often and that those with higher scores are inclined to tolerate their symptoms and not seek medical attention. This question could only be answered by endeavoring to identify a group of non-consulting male IBS sufferers, measuring their male-trait scores and comparing them with consulters but this would be a very difficult undertaking from a practical point of view.

Another possibility is that IBS, or its psychologic consequences, has a negative effect on the male-trait score. It is now well recognized that IBS can have a profound effect on quality of life¹¹ and this, coupled with the chronic nature of the disorder, might lead to attrition of the male trait score. Furthermore, the psychopathology reflected in the HAD scores could be having a similar effect. The tendency to lower trait scores in male IBS patients could also be interpreted as showing a trend toward androgyny in these subjects. Although androgyny is perceived by some as being a potentially positive social characteristic in men, it is possible that it could in some way predispose to the development of IBS.

This study was specifically designed to confirm a clinical impression but it does raise issues worthy of further investigation. For instance, it would be of interest to assess gender traits in other categories of IBS such as non-consulters and patients from primary care. Furthermore an assessment of

what trends, if any, exist in women with and without IBS might also be worthy of consideration. Finally, as already discussed, these findings may have implications with regard to response to therapy.

REFERENCES

1. Heaton KW, O'Donnell LD, Braddon FM, et al. Symptoms of irritable bowel syndrome in a British urban community: consulters and nonconsulters. *Gastroenterology*. 1992;102:1962-1967.
2. Drossman DA, Li Z, Andruzzi E, et al. US householders survey of functional gastrointestinal disorders. Prevalence, sociodemography, and health impact. *Dig Dis Sci*. 1993;38:1569-1580.
3. Houghton LA, Jackson NA, Whorwell PJ, et al. Do male sex hormones protect from irritable bowel syndrome? *Am J Gastroenterol*. 2000;95:2296-2300.
4. Bem SL. The measurement of psychological androgyny. *J Consult Clin Psychol*. 1974;42:155-162.
5. Drossman DA, Thompson WG, Talley NJ. Identification of sub-groups of functional gastrointestinal disorders. *Gastroenterol Int*. 1990;3:159-172.
6. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand*. 1983;67:361-370.
7. Chang L, Heitkemper MM. Gender differences in irritable bowel syndrome. *Gastroenterology*. 2002;123:1686-1701.
8. Gonsalkorale WM, Houghton LA, Whorwell PJ. Hypnotherapy in irritable bowel syndrome: a large scale audit of a clinical service with examination of factors influencing responsiveness. *Am J Gastroenterol*. 2002;97:954-961.
9. Neal KR, Barker L, Spiller RC. Prognosis in post-infective irritable bowel syndrome: a six year follow-up study. *Gut*. 2002;51:410-413.
10. Houghton LA, Wych J, Whorwell PJ. Acute diarrhea induces rectal sensitivity in women but not men. *Gut*. 1995;37:270-274.
11. Lea R, Whorwell PJ. Quality of life in irritable bowel syndrome. *Pharmacoeconomics*. 2001;19:643-653.