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IBS - Beyond the Bowel: The Meaning of Co-existing Medical Problems

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Irritable bowel syndrome (IBS) is a disorder that is defined by a specific pattern of gastrointestinal (GI) symptoms in the absence of abnormal physical findings. The latest diagnostic criteria for IBS -- the Rome II criteria created by an international team of experts -- require that the patient have abdominal pain for at least 12 weeks within the past 12 months and that the pain meets two of the following three criteria: it is relieved after bowel movement, associated with change in stool frequency, or associated with stool form. It is becoming clear, however, that these bowel symptoms do not tell the whole story of symptoms experienced by IBS patients. People with this disorder often have many uncomfortable non-gastrointestinal (non-GI) symptoms and other health problems in addition to their intestinal troubles.

SYMPTOMS ALL OVER THE BODY IN IBS

Several research reports have established that IBS patients report non-bowel symptoms more frequently than other GI patients and general medical patients. For example, four studies that have asked IBS patients about a wide variety of body symptoms(1-4) all found headaches (reported by 23-45% of IBS patients), back pain (28-81%), and frequent urination (20-56%) to be unusually common in individuals with IBS compared to other people. Fatigue (36-63%) and bad breath or unpleasant taste in the mouth (16-63%) were found in three of these four studies to be more common among IBS patients, as well. Furthermore, a large number of other symptoms have been reported to occur with unusually high frequency in single studies. In our recent systematic review of the medical literature(5), we found a total 26 different symptoms, that are reported to be more common in IBS patients than comparison groups in at least one study. Non-gastrointestinal symptoms more common in irritable bowel syndrome patients than in comparison groups(5).

1. Headache
2. Dizziness
3. Heart palpitations or racing heart
4. Back pain
5. Shortness of breath
6. Muscle ache
7. Frequent urinating
8. Difficulty urinating
9. Sensitivity to heat or cold
10. Constant tiredness

11. Pain during intercourse (sex)
12. Trembling hands
13. Sleeping difficulties
14. Bad breath/unpleasant taste in mouth
15. Grinding your teeth
16. Jaw pain
17. Flushing of your face and neck
18. Dry mouth
19. Weak or wobbly legs
20. Scratchy throat
21. Tightness or pressure in chest
22. Low sex drive
23. Poor appetite
24. Eye pain
25. Stiff muscles
26. Eye twitching

OVERLAP WITH OTHER MEDICAL CONDITIONS

Results from numerous studies (reviewed by Whitehead, Palsson & Jones, 2002(5)) also indicate that IBS overlaps or co-exists more often than would be expected with other medical conditions that appear to have little logical connection with the gut. The most researched example of such an overlap is the co-existence of IBS with fibromyalgia, a disorder characterized by widespread muscle pain. Fibromyalgia affects an estimated 2% of the general population, but 28-65% of IBS patients have the disorder. Similar results are obtained when this overlap is examined the opposite way, by studying fibromyalgia patients and looking for IBS -- 32-77% of fibromyalgia patients have IBS.

Chronic fatigue syndrome (CFS) is another medical condition that has been found to have many times the expected co-occurrence with IBS. CFS is thought to affect only 0.4% of the general population, but it has been reported in 14% of IBS patients. Conversely, 35- 92% of chronic fatigue syndrome patients have IBS. Other conditions documented in multiple studies to have excess overlap with IBS are temporomandibular joint disorder (TMJ), found in 16-25% of IBS patients(2,6), and chronic pelvic pain (35% of IBS patients(7). In addition to these well established relationships, many other medical conditions appear (judging from single study reports) to have an excess overlap with IBS, although the frequencies of most of them in IBS are much lower than for the disorders already discussed. In fact, we recently(8) compared the frequencies of a broad range of diagnoses in the medical records of 3153 IBS patients in a large health maintenance organization in the U.S. Northwest to an equal number of non-GI patients in the same HMO, and found that the IBS patients had a higher frequency of almost half of all non-GI diagnoses, or 64 of the 136 sampled diagnoses.

In summary, non-GI symptoms and co-existing medical problems seen in many IBS patients far exceed what is typical for medical patients or GI patients in general. This raises important questions about what causes this phenomenon and what the implications are for IBS patients.

WHAT EXPLAINS NON-GI SYMPTOMS AND CO-EXISTENCE OF OTHER DISORDERS IN IBS?

There are several possible explanations for the preponderance of general symptoms and disorders in IBS. Our research group is engaged in several research studies that may help shed some light on this mystery, but it is still too early to come to definitive conclusions. We will list here some of the possible explanations, and discuss relevant data coming from work by our team and other investigators.

1. A common physical cause? One explanation for the high rates of co-existing symptoms and conditions in IBS patients would be that there is something biologically wrong in IBS patients that also cause other symptoms or conditions. There are a number of distinct physiological characteristics or "abnormalities" seen in many IBS patients, although none of them are found in all IBS patients. These include: heightened pain sensitivity in the gut, increased intestinal contractions (motility) or hyper-reactivity in response to meals or stress (too much movement of the intestines - this is the reason why IBS was called spastic colon in the past), patterns of dysfunction in the autonomic nervous system (that part of the nervous system that helps regulate our inner body functions), and vague signs of immune activation seen in some IBS patients. Although one could suggest ways in which these physiological abnormalities would play a role in some other disorders that co-exist with IBS, there is little evidence so far of a common pattern of physical abnormality that could link IBS and its most common coexisting conditions and symptoms. Patterns of autonomic dysfunction in IBS are not like the ones seen in fibromyalgia and chronic fatigue syndrome, for example. And, fibromyalgia patients do not show the same gut pain sensitivity as IBS patients, while conversely, IBS patients do not show the pain-sensitive tender points that are characteristic of fibromyalgia(9-10). Furthermore, as can be seen from reviewing the symptom list in Table 1, the non-GI symptoms that plague IBS patients are so varied and cover so many different organ systems, that it would be hard to identify a specific biological connection between them. On the contrary, it seems like the only overall commonality between these symptoms may be that they are non-specific - they are, in other words, not clear symptoms of any identifiable disease processes or diagnosable disorders. Indeed, the symptoms that are most common among IBS patients are generally those that are also common in the general healthy population - they just tend to occur at a higher level in people with IBS.

2. Physical expression of emotional discomfort? Another possible explanation for the high number of non-GI symptoms and disorders in IBS patients is the tendency to translate strong emotions into physical symptoms. This is sometimes called *somatization* ("soma" is the Greek word for "body" and somatization therefore literally means "to express in the body"). All people "somatize" to some degree; it is normal to feel butterflies in your stomach, to blush or go pale, get a lump in your throat, or feel the heart beating in your chest when you get very emotional. Shaky hands, stiff neck or excess sweating are likewise quite ordinary when people are under a great deal of stress. However, some people are more vulnerable than others to letting negative emotions express themselves physically. This is often thought to be an alternative and less healthy way of exhibiting or feeling emotional discomfort. Some people may develop a strong tendency to do this because they have a basic personality trait that shies away from interpersonal expressiveness. For others, it could be the result of growing up in the care of strict, repressive or abusive parents or caretakers, where normal expression of negative emotions was not allowed or would have been dangerous. Getting a headache or a stomach ache may be an alternative way to "give voice" to negative emotions under such circumstances. It seems that excessive habitual suppression of ordinary verbal and emotional expressions of negative emotions, regardless of the reason for it, may lead to the tendency to somatize. There is evidence that this tendency may be at work in IBS, at least among some women with the disorder. Dr. Brenda Toner has found in two studies(11-12) that women with IBS score

higher than depressed women and healthy women on questionnaires measuring of the tendency to avoid the expression of negative emotions or views.

3. Learned over-attention to body symptoms and excess disease attribution?

All people ignore most of the sensations from their bodies most of the time. This is necessary so that we are not overwhelmed by the vast amount of information our senses supply to our brains every moment of our lives. For example, if you are reading this sitting down, you have probably not been at all aware of the sensations of the seat under your body until right now. Our brains constantly sift through the mass of incoming body information and decide what is important for us to become consciously aware of, based on such things as our past experiences and how likely the information is to indicate a threat to our health or well-being. Most minor symptoms (those that might be uncomfortable and bothersome if they would get our attention), are simply dismissed in our busy everyday lives, because other things win out in the moment-to-moment competition for our limited attention resources. More frequent attention to mild physical symptoms can be learned, however, and can become a habit. As with most things, such habitual over-attention is probably most easily learned in childhood. It would seem reasonable, for example, that a child could get into the habit of noticing physical symptoms more if his or her parents are always talking about their own symptoms. We have recently found(13) that the more medical problems the parents in the childhood home had, the more general physical symptoms adult IBS patients report. The possible consequence of a childhood where the child grew up with parents or others who were seriously ill, is a tendency to interpret common normal physical sensations as symptoms of serious illness. Such a serious view of symptoms can also be modeled after the parent's approach to common illness. Dr. Whitehead and colleagues found in a telephone survey of 832 adults 20 years ago(14) that people whose parents paid more attention to cold or flu symptoms in childhood were more likely to view such symptoms as serious in adulthood and to visit doctors for them. They were also more likely to have IBS diagnosis. Evidence that IBS patients interpret physical sensations differently than others is emerging from brain imaging studies. This type of research takes a "snapshot" of the amount of activity in different parts of the brain in response to sensations, using techniques such as PET scans (positron emission tomography) and fMRI (functional Magnetic Resonance Imaging). By examining which parts of the brain react the most to painful sensations, it is possible to deduce to some degree how the brain processes the information. In one such study, by Silverman and colleagues(15), IBS patients but not control subjects reacted to physical sensations from a painful balloon inflation in the rectum with increased blood flow in the left prefrontal cortex, a part of the brain known to process personally threatening information. In contrast, this study and others(16-17) found that IBS patients do not show activity in the anterior cingulate cortex that is indicative of general discomfort in healthy subjects. IBS patients are also more likely to respond to physical stimuli in the GI tract by activating brain centers that handle emotional events. Collectively, this suggests that IBS patients may process body information associated with bowel sensations (and perhaps other physical sensations, as well) differently than other people, interpreting them as personally threatening and more emotionally relevant events rather than just ordinary discomfort. Such different interpretations of physical sensations would also explain hyper-attention to such sensations.

4. Faulty neurological filtering?

After entering the spine (the information highway from the body to the brain), information destined for the brain about body pain is sent along nerves through gates that control how much of this information passes through. Our brains continually send signals down these spinal gates to cause them to block signals that are of too low intensity to provide valuable information (you do not want to constantly know about all of your minor aches and discomforts from regular body activity). This is one of the ways the

brain uses to limit the vast amounts of information constantly streaming in from millions of nerve sensors throughout our bodies. A current popular hypothesis in the field of IBS research is that an inadequate amount of this "descending inhibition" of incoming pain information is, at least partly, to blame for the hypersensitivity to intestinal discomfort and pain seen in IBS patients. Some researchers have further suggested that the same kind of slack traffic control could be more widespread in IBS patients and may explain the observed proneness to headaches, back pain or muscle aches. People who have more open pain gates because of faulty inhibition would theoretically be like the princess in "The Princess and the Pea." who could feel a pea through 20 mattresses. The problem with this as an explanation for symptom overabundance among IBS patients is that it would explain only excess in pain-type symptoms, which are just one of many types of overabundant symptoms in IBS. There are also no direct data on IBS patients to prove how valid this view is.

5. Result of greater psychological distress?

As was explained earlier, it is normal for people who are emotionally distressed to experience more physical symptoms. At least half of IBS patients who have consulted doctors have been diagnosed with an affective ("emotional") disorder - generally either depression or an anxiety disorder. Additionally, many people with IBS who have no affective disorder diagnosis have significant symptoms of anxiety and depression. One might, therefore, ask whether the physical symptoms reported could simply be a side effect of psychological distress.

We have addressed this question in two studies presented at the 2003 Annual Meeting of the American Gastroenterological Association(18-19). In the HMO data mentioned earlier (18), we found that having a psychological diagnosis was associated with increased numbers of physical diagnoses that these IBS patients had received (from an average of 7.1 to 9.7). However, we also found that even patients with no psychiatric diagnosis had more physical diagnoses per person than the other HMO patients (7.5 vs. 5.5), so the presence of psychological problems is not the whole answer. In the other study(19), we examined the relationship between depression and anxiety scores of 795 people with IBS and the number of physical symptoms they had experienced over the past month.

Statistical methods that estimate how much of the variability in one measured characteristic can be explained by other measured factors tell us that the psychological symptoms roughly accounted for 25-30% of physical symptoms of these people. In short, psychological distress is almost certainly part of the explanation for greater body symptoms in IBS, but not nearly the whole story.

Further research will have to determine which of the above explanations are applicable in IBS, but it is likely that more than one of them, and maybe some other factors unrecognized so far, work together to account for the high frequency of symptoms and disorders that co-exist with IBS.

THE IMPACT OF EXTRA PHYSICAL SYMPTOMS AND DISORDERS ON IBS PATIENTS.

What do these extra ("non-IBS") symptoms and co-existing medical conditions mean in practical terms for patients with IBS? The first thing to note is that not all IBS patients experience additional health problems and symptoms, so it is not a concern for all people with IBS. For those who do, however, symptoms and disorders beyond the bowel can add measurably to the overall burden of illness for the individual and also lead to greater health care needs and health care costs for IBS patients.

It is by now well established that IBS patients visit doctors more than the general population. Only recently has it been recognized, howver, that most of the extra health care visits that people with IBS make are not for their bowel problems. Levy et al.(20) reported that IBS patients had about twice as many

doctor visits compared to other patients in the same HMO, but they found that 78% of the additional visits were due to problems other than IBS. It seems quite likely that these extra non-GI doctor visits of IBS patients are due to the tendency to experience more general body symptoms over time, based on study results we presented at the Annual Meeting of the American Gastroenterological Association last year(21). Using a scale asking patients about the 26 physical symptoms in Table 1, we found that those IBS patients who report an unusually high number of these symptoms over the past month missed six times as many days from school or work due to illness compared to those with low or moderate (normal) symptoms. The "high-symptom" IBS patients also had twice as many doctor visits and more hospital days, and their quality of life was furthermore measurably poorer on the average. A general tendency to have a large number of body symptoms is, therefore, very costly in terms of the IBS patient's overall wellbeing and ability to function normally in life, and increases substantially the health care costs for these individuals. These findings clearly underline the need to find a way to help the many IBS patients who score unusually high on body symptom questionnaires to reduce that tendency.

IS IT POSSIBLE TO REDUCE NON-GI SYMPTOMS IN IBS?

It is unknown to what degree standard medical treatment for IBS, when successful, also results in improvement in non-GI symptoms. The problem is that most IBS treatment research has not examined how non-IBS symptoms change. Non-IBS symptoms have also not been a focus of standard IBS treatment. An exception to this is psychological treatment trials for IBS, which sometimes have included general physical symptom questionnaires among the measures of treatment effects. We, therefore, know from our two studies of hypnosis treatment for IBS(22) as well as from research in England(23) that hypnosis treatment for IBS regularly improves non-GI symptoms substantially in addition to its beneficial effects on bowel symptoms. Less is known about improvement in non-GI symptoms from cognitive-behavioral therapy (CBT), which is the other widely researched psychological treatment for IBS. However, there is every reason to believe that CBT can reduce the tendency to experience a lot of general physical symptoms, based on a review of over 30 such treatment studies(24). These benefits of psychological treatment for IBS point to extra value of such treatments for the subgroup of IBS patients who have many non-GI symptoms.

Research in coming years will hopefully identify other ways to improve the well-being and life functioning of IBS patients by reducing non-GI symptoms. This is likely to become an integral part of managing IBS effectively in the subset of patients who suffer many symptoms and conditions beyond the bowel.

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