Understanding and Managing Pain in Irritable Bowel Syndrome (IBS)

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INTRODUCTION

Pain, by definition, is the dominant symptom experienced by patients with irritable bowel syndrome (IBS). Three out of 4 people with IBS report continuous or frequent abdominal pain, with pain the primary factor that makes their IBS severe. Importantly, and unlike chronic pain in general, IBS pain is often associated with alterations in bowel movements (diarrhea, constipation, or both).

The standard general definition for pain is, an unpleasant sensory and emotional experience that’s associated with actual or perceived damage to the body. Pain that is short-lived is termed acute, while pain that lasts 6 months or longer is termed chronic. Chronic pain may be constant or recurring frequently for extended periods of time.

The chronic pain in IBS can be felt anywhere in the abdomen, though is most often reported in the lower abdomen. It may be worsened soon after eating, and relieved or at times worsened after a bowel movement. It is not always predictable and may change over time. People with IBS use different descriptors to explain how the pain feels; some examples include cramping, stabbing, aching, sharp or throbbing.

IBS is a long-term condition that is challenging both to patients and healthcare providers. It affects 10–15% of adults. Less than half of those see a doctor for their symptoms. Yet patients with IBS consume more overall healthcare than those without IBS. The primary reason people with IBS see a clinician is for relief of abdominal pain.

Standard diagnostic test results are normal in people with IBS; diagnosis is based on certain symptoms that meet defined (Rome IV) criteria. How can IBS be so painful when nothing irregular shows up on tests?

The answer is that IBS is a condition where the symptoms relate to alterations in normal gastrointestinal function; that is, dysregulation of brain and gut affecting both pain signals and motility (movement of the bowels). The aim of this publication is to explain this relationship between the brain and the gut in order to help those affected understand why and how pain in IBS occurs, and how it can be confidently managed.

UNDERSTANDING PAIN IN IBS

The pain in IBS is referred to as chronic visceral pain. Visceral pain involves the internal organs – in the intestines or bowels, commonly called the gut. The sensation arises at the level of the body and with IBS is usually increased, and when it goes to the brain where pain is experienced, it often has an emotional effect, which is distressing. The general pain experience is associated with actual or perceived damage to the body. The concept of perceived damage to the body is very important in IBS, and very typical in chronic pain. The pain is not associated with actual damage to the body that can be seen, like a broken bone. Thus, chronic abdominal pain in IBS is not associated with structural damage as seen with other gastrointestinal disorders like inflammatory bowel disease or ulcers, but the pain is just as real. Just like chronic headache, there is no visible abnormality.

Most people with chronic abdominal pain in IBS have normal results on blood tests, endoscopy, and x-rays. Despite this, new research shows that IBS has biological features that can be measured. So while no damage or injury is seen on tests certain biological features not easily seen are happening inside the body to produce the pain and other symptoms of IBS. Above all this involves the alteration of the connections between the brain and the gut, known as the brain-gut axis, the effects on sensation and motility, and ultimately the symptom expression.

Research, using brain-imaging work, shows that given a level of stress people with IBS feel more pain than other people. Those with IBS are hypersensitive, that is they have an increased response that makes a stimulus more painful.

They may experience pain from sensations that other people are unaware of (called allodynia) or also have more severe pain than others who may also feel some pain (called hyperalgesia).

How is the pain experienced?

It is important to understand that pain is processed in the brain. In IBS, signals that arise in the bowels are relayed to certain areas of the brain where these signals are experienced as painful sensations, which can be modified by emotional centers that can produce a more noxious, or emotionally distressing, quality.

The brain not only receives information about pain, but it may also influence or modify the information coming from the gut to increase or reduce the signals arising from there. This is called the gate control theory of pain. Signals between the body to the brain pass through the spinal cord, which can serve as a kind of a “gate.” The brain can also open and close this gate, much like a volume switch on a stereo. Closing the gate decreases signals and blocks pain, while opening the gate increases the signals that reach the brain.
brain and amplifies pain. Things like focused attention or various treatments like hypnosis or meditation close the gate. Things like emotional distress or prolonged stress open the gate. Thus, it is no surprise when someone is running a race and sprains an ankle, the pain may not be felt until the race is over. Or conversely when someone is having a bad day at work, sometimes more minor discomfort may become more painful—all as a result of the brain-gut axis.

In other words, pain is a perception that is interpreted depending on a number of variable factors. The experience of pain involves processing in different areas of the brain where it is influenced not only by sensory input from the body, but also by up and down regulation from the brain depending upon life events, and other psychologic and social factors that modify pain regulation. All of these interactions differ from person to person, accounting for differences in symptom expression and severity in people with the same condition. This system is so powerful that its effects can be seen even with structural diseases like ulcerative colitis or Crohn’s disease. It’s well recognized that some people with severe ulcerated disease may feel little or no discomfort, while others with minimal disease may experience very severe pain.

What causes the pain to be more severe?
Several things can make a person with IBS vulnerable to experience something as more painful. Information from the bowels involving things like altered gut bacteria, changes in the gut’s response to foods, or altered gut immune system activation can increase nerve signals going up to the brain and stimulate responses that increase pain perception. This is called visceral hypersensitivity. Emotional or psychological distress can also increase the pain signals by disrupting the brain’s usual ability to down-regulate, or reduce, the incoming pain signals. In addition, negative experiences stored in the memory like trauma, neglect, or deprivation, can prime the brain and spinal cord (central nervous system) to be even less effective in influencing the incoming nerve signals.

The chronic, or long lasting, pain in IBS is related to the effect of central sensitization, which can happen when pain is continuous or keeps coming back. It modifies the way the central nervous system works causing greater sensitivity so the person more easily experiences pain. In effect, chronic pain over time can cause more pain.

Chronic pain starts to develop from recurrent episodes of acute pain passing through the spinal cord. Research has shown that when people have these signals going to the spinal cord over and over again they have what’s called the wind-up phenomenon. That is, the signal that goes to the brain keeps increasing. It becomes greater than the actual signal originally going to the spinal cord. There’s an amplification effect, and as noted, there is turning up of the volume and the pain gets worse. Then the psychological consequences, as discussed above, further amplify the pain.

When people experience chronic pain it also changes them; their thoughts and feelings about it change. Consider the difference of how one responds to an occasional stomach flu. Because one considers the experience to be short lived, he or she can readily cope with it and expectation is full recovery. However, with chronic pain it doesn’t end, the expectation changes to a state where it is believed that it will happen again and again. This has consequences such as hypervigilance and selective attention, meaning thinking about it throughout the day even when feeling no pain and even anticipating it will surely come back. Now there is no predictability, the person feels no sense of control and pain is no longer an occasional occurrence, but a seemingly never ending phenomenon. Thoughts turn to: “Will I ever get better,” or “Why can’t someone help me,” or “Do I have to live with this.” These thoughts, often catastrophic in their nature, create a sense of pessimism and hopelessness that in turn create more distress, which decreases the brain’s ability to down-regulate or control the pain, and so it continues. The pain becomes chronic not only because it lasts a longer time, but also because it’s a functional and structural change in the body that leads the person to be in a state where the pain is always there.

The structural effects in pain relate to the concept of neuroplasticity; that is, of the nerve cells in the brain to grow and die at different rates. It also relates to the brain’s ability to form new nerves and nerve connections, which is called neurogenesis. People in chronic pain have a loss of nerve cells in pain control areas. It occurs in severe situations like major depression and anxiety, post-traumatic stress, chronic pain in general, and it occurs in severe IBS.

Chronic pain is not just a biomedical phenomenon, as if the body were a machine with a broken part. Chronic pain is influenced by multiple factors within the biologic, psychologic, and environmental or social framework of the mind, brain, and body. Although multi-faceted, this all opens the door to treatment, because if the brain can make pain worse then treatments on the brain can make it better. That is why treatments work that affect mind and brain.

MANAGING PAIN IN IBS
All treatment for IBS begins with education to understand the nature of the condition, including why and how symptoms arise. IBS is a brain-gut disorder. For people with IBS that is mild, the treatment is at the level of the gut. But, when more severe chronic pain is present, the treatment also needs to be at the level of the brain. The primary activity of the newer medications for IBS that have been developed over the past decade is at the level of the gut, not of the brain. Their principal effect is to address the bowel irregularity of IBS and is more limited in their effect on chronic pain in IBS.

The relationship between the doctor and the patient is important. The right relationship with the patient is created when the person is heard, validated, and valued by the provider. This is the interpersonal level that can strengthen positive beliefs, which help with pain management.

It is important for people with chronic IBS pain to find a healthcare provider that listens to them, is respectful, and addresses their expressed needs. The provider must understand and address how the pain is impacting the
person’s daily life. He or she needs to offer guidance, not only to help make treatment decisions but also to help identify related factors that the person can influence and control on their own. This includes a process of education, explaining the close relationship between the brain and the gut, and the factors that influence pain intensity and reduction. Individuals then can understand why they are having pain and how they can most effectively manage and improve long-term.

**Can the chronic pain state be reversed?**

Chronic pain can be turned around and reversed if done with the proper treatment interventions. This often includes the use of central acting agents, or neuromodulators, and psychological approaches, along with self-management steps that individuals can take on their own. Combining therapies together can be more effective than using just one approach.

While still theoretical, it’s been shown in practice that even the structural changes involving nerve cells can be reversed. Although chronic severe pain can reduce the number of brain cells, studies using brain imaging have shown that various interventions can result in neurogenesis, the regrowth of nerve cells.

**How can chronic pain in IBS be managed?**

When pain is chronic it takes time for it to go away. Because pain is an emotional experience, taking steps to improve emotions can lead to reduction of the harmful effects of the pain even when it is still present. Maintaining an active role in life, engaging in physical activity, and addressing emotional and social health are important to help promote a sense of well-being, which counters negative expectations.

**Psychological approaches** – Psychological approaches harness the mind’s own ability to affect pain sensations by sending signals, thoughts or nerve impulses, which close the pain gate. There are many of these techniques, ranging from hypnosis to relaxation therapies to meditation to cognitive-behavioral therapy. They can help ease symptoms and restore a sense of control over the disorder.

**Medications** – Anticholinergic agents taken before meals may provide short-term reduction of abdominal pain after meals. The newer gut-targeted medications treat multiple symptoms, including pain, in IBS with diarrhea (IBS-D) and IBS with constipation (IBS-C). When these medications do not adequately treat the pain, *centrally targeted medications* may be tried. They can be used in addition to other IBS medications and are prescribed to provide long-term relief of severe chronic pain.

Central acting or targeted medications are agents that can block signals from the brain. They modify nerve activity in order to restore function or relieve symptoms that have a basis in brain activity and may help influence recovery through neurogenesis. Antidepressants are a type of central acting agents. Usually in doses lower than used to treat depression they decrease intestinal and central hypersensitivity, help the brain control the pain better, and also act on motility and secretion in the gut. Other existing agents appear to have similar effects. At the present time, the descriptive terms used are changing from ‘antidepressants’ to ‘central neuromodulators’ in order to be consistent with their true effects on influencing, or modulating, brain-gut pathways rather than for their original intent to treat psychiatric disease.

**How quickly does a central agent effect the pain?**

There are two levels to taking one of these agents. At the first level the medication increases the brain’s ability to down-regulate nerve signals through the gate control mechanism, closing the gate to reduce pain. Within four to six weeks the pain is generally 30–50% better. The second level is the neurogenesis, and that can take six months to a year or more. This is important to help prevent the pain from coming back, or relapsing. The two effects are the physiologic effect of the pain control through the gating mechanism, and the neuroplastic effect through the brain to regrow those nerves that have been damaged by the chronic pain.

**Are opioids useful for treating chronic pain in IBS?**

There is no evidence that opioids, narcotics, have any long-term benefit. Yet, there is an epidemic of opioid use. Furthermore, opioids slow down the gut causing constipation, gastroparesis, nausea, and vomiting, particularly in those with IBS. In addition, about 5–6% of people who go on opioids develop a condition called *narcotic bowel syndrome*, also called *opioid induced central hyperalgesia*. It was identified in 2007, but is not always recognized. Typically, the person who has chronic pain is given opioids, the pain gets worse, and more opioids are given. What the opioids are doing is in people with narcotic bowel syndrome is activating the spinal cord mechanisms to amplify and increase the signaling to the brain. Discontinuing the opioids while substituting effective alternatives is the only way the condition can be treated. This requires the doctor and patient working closely together.

Opioids are not a treatment for chronic pain in IBS. Not only is this because of the risk for getting narcotic bowel syndrome, but it deflects from proper treatment where there is clear benefit. There is no evidence for long-term benefit of opioids.

**What kind of healthcare provider best treats IBS pain?**

A gastroenterologist who works in neurogastroenterology addressing the brain-gut axis, or a primary care practitioner who knows how to work with chronic pain is usually best trained to treat IBS pain. They may work with a multi-disciplinary team of therapists trained in treating chronic visceral pain. Good pain clinicians are likely going to use the right treatment. They need to be familiar with neurogastroenterology and how to use centrally targeted approaches to manage the chronic visceral pain in IBS. Be on the alert for pain management clinics that use opioids as treatment.

**I have chronic abdominal pain from IBS. What things can I do on my own to manage my pain?**
In managing chronic IBS pain there is benefit from taking an active role, working in partnership with a knowledgeable healthcare provider.

Here is a Ten Step Plan of self-management things you can do to help reach your treatment goals:

1 – Acceptance
   • Accept that the pain is there
   • Learn all you can about your condition and it’s management; knowledge is therapeutic

2 – Get Involved
   • Take an active role in your care
   • Develop with your provider a partnership in the care
   • Understand your provider’s recommendations and maintain an open dialogue

3 – Set Priorities
   • Look beyond your symptoms to the things important in your life – do what is important
   • Eliminate or reduce what is not important

4 – Set Realistic Goals
   • Set goals within your power to accomplish
   • Break a larger goal into small manageable steps
   • Take the time to enjoy the success of reaching your goals

5 – Know Your Rights with your Healthcare Provider
   • To be treated with respect
   • To ask questions and voice your opinions
   • To disagree as well as agree
   • To say no without guilt

6 – Recognize and Accept Emotions
   • Mind and body are connected
   • Strong emotion affects pain
   • By acknowledging and dealing with your emotions you can reduce stress and decrease the pain

7 - Relaxation
   • Stress lowers pain threshold and increases symptoms
   • Relaxation helps reclaim control over your body and reduces pain
   • Examples of relaxation options to consider (taught or guided by an expert):
     o Deep breathing exercises
     o Progressive relaxation
     o Gut-directed hypnosis
     o Yoga
     o Meditation

8 – Exercise
   • Diverts attention from your symptoms
   • Increases your sense of control in life
   • Helps you feel better about yourself

9 – Refocus
   • With these steps your symptoms are no longer the center of your life
   • Focus on abilities not disabilities
   • You will then see you can live a more normal life

10 – Reach Out
   • Share your thoughts and feelings with your provider
   • Interact with family and friends in healthy ways
   • Support others and seek support from them as well

SUMMARY
Pain is the dominant symptom of IBS, regardless of the IBS subtype – IBS-D, IBS-C, or IBS mixed (IBS-M). It is the main contributor to severity in IBS. Seeking relief from pain is the most common reason that people with IBS consult with their doctor.

Like all functional gastrointestinal disorders, IBS is a disorder of brain-gut interactions. Symptoms of IBS in general are caused by the presence of biological factors that are happening inside the body, which are not easily visible. Advances in science over the past two decades, including the microbiota of the gut, alteration of gut sensitivity, and brain imaging, have led to improved understanding about the interactions between the brain and the gut. The pain in IBS is closely related to an altered response on the part of the brain to normal signals that arise from the gut, which “turn up the volume” on sensations. This understanding of the brain-gut connection is essential, not only to the cause of the chronic pain, but also to its treatment.

Currently, there is no sure treatment that will eliminate 100% of the chronic pain in IBS. But, there are a number of approaches that can reduce and bring the pain under control. These include self-management approaches, psychological approaches, and medications. Opioids are not a treatment for IBS pain; there is no evidence of long-term benefit.

Finding and working with a patient-centered healthcare provider familiar with the concepts presented here will help ensure the best available care for the chronic pain and other symptoms of irritable bowel syndrome.

Where can I learn more?
The International Foundation for Functional Gastrointestinal Disorders (IFFGD) is a nonprofit education and research organization. Our mission is to inform, assist, and support people affected by gastrointestinal (GI) disorders. Visit our websites at www.iffgd.org and www.aboutIBS.org or phone 414-964-1799.

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