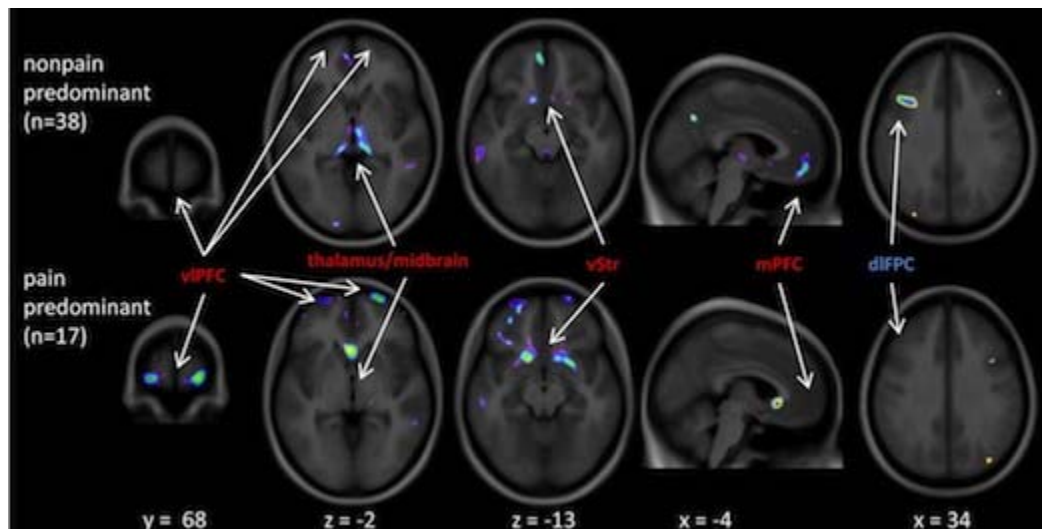


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Courtesy of Dr. Emeran Mayer and UCLA

The brains of female patients with irritable bowel syndrome tended to amplify pain signals from the gut, said Dr. Emeran Mayer, a gastroenterologist at UCLA. The research suggests unfortunate, preexisting structural differences in the brain, especially in the regions that deal with pain perception and regulation. But the physical symptoms of IBS are very real as well.

## New treatment, new hope to control irritable bowel syndrome

by **RENEE PARK**

Aug 18, 2010

Betsy Nicosia was scanning the aisles of Home Depot for decorating ideas when she felt the familiar, insistent rumblings in her gut.

Combining the care of three households under one roof after a recent move had taken its toll on the retired real estate broker. But the 61-year-old was shopping at the Algonquin branch of the store that day, determined to transform her new house in Huntley into a home.

"So I'm walking through the aisles [with my husband], looking for hardware, looking for items for the house, and all of a sudden, I said, 'you know what? I just can't do this anymore. I have to find the bathroom right away before I have an accident.'"

But this was no normal diarrhea attack spurred by indulging in a too-spicy vindaloo curry. And it wasn't food poisoning caused by a dragon roll that had languished for too long at the sushi counter.

Nicosia suffers from irritable bowel syndrome (IBS), a disorder of the bowels that affects an estimated 20 percent of the U.S. population, according to the National Institutes of Health (NIH). Symptoms range from painful cramps, to bloating, diarrhea, and or constipation. It's often accompanied by a whole litany of other unpleasant and embarrassing features.

Syndromes, such as IBS, differ from diseases in that they currently have no established physical cause. Doctors make diagnoses by grouping common symptoms together.

It mystifies doctors, because unlike other digestive disorders such as celiac disease---an inability of the body to digest gluten---the bowels of IBS patients lack the characteristic signs of sickness, such as lesions and inflammation. Endoscopies---fiber optics technology that allows doctors to look at the inner body organs---often reveal intestines that look perfectly pink and healthy.

IBS also plagues more women, though this statistical difference may be due to the fact that more women seek help for gastrointestinal pain, skewing the patient population, according to doctors interviewed for this article.

Since the mechanisms behind IBS aren't clearly understood, it is sometimes considered to be a "mind" problem with no organic basis.

One thing is clear: stress and anxiety add to the problem. As a result, some doctors dismiss IBS sufferers as hypochondriacs while others refer patients for counseling.

New research, however, increasingly indicates that IBS may be caused by physical abnormalities in the body.

### **The mind-gut relationship**

A team of researchers from the University of California, Los Angeles, and McGill University in Montreal, Canada, found significant brain changes in female IBS patients, especially in regions that deal with pain perception and management. They released their findings in July in the journal "Gastroenterology."

After comparing the brains of female IBS patients and healthy women via computer-based imaging techniques, the researchers found that women with moderate to severe IBS exhibited differences in their brain structures. These included "decreased gray matter density in the lateral prefrontal cortex, [which plays a role in emotional responses], and the periaqueductal gray, [a region that] plays a major role in pain inhibition," said Dr. Emeran Mayer, a UCLA gastroenterologist involved in the research.

In healthy persons, the brain and gut relationship is "bi-directional," with sensory neurons from either end firing information to each other via communicative channels such as the vagus nerve, which runs from the head to the abdomen, Mayer said.

But for unknown reasons, the brains of these female IBS patients tended to amplify, or increase, the feeling of pain after receiving signals from the gut. At the same time, their brains exhibited a type of handicap that caused them difficulty in suppressing bodily discomfort.

The study's findings are exciting because they document "biological changes in patients with IBS," and suggest that a faulty brain-gut communication plays a crucial role in the development of this syndrome, according to Mayer.

It also means new outlooks and options for treatment.

"So we can't really say that the longer you have the disorder, the more compromised your systems are. What we find is more consistent, I would say, to an underlying compromised ability of the brain to suppress pain perception," due to genetics and early environment, he said. The researchers found that "shrinking" in these brain regions wasn't related to the duration of IBS.

Nicosia is certainly no stranger to pain. She said she has had intermittent IBS flare ups for years. When coupled with her chronic back pain, due in part to a herniated disc in her spine, and sciatica -- a numbing, and at times, shooting pain that runs down her lower back and her leg, causing sensations of heaviness -- she lives under a cloud of discomfort that is as faithful as her shadow.

Mayer is planning to run a series of studies, one of which will be to see if cognitive behavioral therapy (CBT), which trains the brain to think differently, can normalize these structural differences and possibly even reverse the abnormalities in these regions.

### **Cognitive behavioral therapy for IBS**

A study is already underway that will measure the effectiveness -- both long-term and short-term -- of CBT for treating irritable bowel syndrome, as an alternative to treating the condition solely with stomach and bowel remedies.

Led by Jeffrey Lackner, a behavioral scientist at the State University of New York at Buffalo, this seven-year clinical trial will compare two different behavioral intervention techniques, one self-administered and the other, led by a therapist, for treating symptoms. The study combines the research efforts of several universities, including Northwestern University in this area, and is currently in its third year.

Nicosia is a beneficiary of this novel way of treating IBS. Though she suffered pain and gastrointestinal discomfort for the last 10 to 15 years, she was only formally diagnosed this January.

This is consistent with diagnostic trends seen in the general IBS patient population. While IBS is seen in all age ranges, most people don't seek treatment until their later years, according to study collaborator Laurie Keefer, a clinical psychologist at Northwestern University who personally treated Nicosia.

With the help of Keefer, Nicosia underwent two months of intensive cognitive behavioral therapy sessions, both in person and on the phone. She finished the program in June and will soon have a follow up to see how well the therapy has worked. So far,

she has found immense improvement in her symptoms.

"I felt that it was a better way than going the medicinal route. I really found an improvement, it was really related to the stress as far as I was concerned," she said.

She was even able to use some of the CBT techniques, such as relaxation, to help cope with other stressful life situations.

"When I went for an MRI the other day [for my back problems], that relaxation [technique] helped me a great deal to get through that," Nicosia said.

IBS is probably caused by a combination of many different things. But stress definitely plays a role in the onset of symptoms, according to Keefer.

"Even if you don't have irritable bowel [syndrome], any type of psychological stress affects your gut," Keefer said. This is reflected in the lexicon of digestion-related phrases in the English language that relate to feelings, she said. Nervousness, for example, can literally make a person feel "sick to his stomach."

### **The "second brain"**

Interestingly, serotonin, the "feel good" hormone, is also found in the digestive tract in such quantities that the gut has even been called the "second brain," a term first devised by Columbia University gastroenterologist Dr. Michael Gershon in his book, "The Second Brain: A Groundbreaking New Understanding of Nervous Disorders of the Stomach and Intestine" (Harper, 1999).

"Your gut has its very own nervous system called the enteric nervous system, and that operates the flow of material and waste through your system. [It] is hooked up to your central nervous system, so your brain. And many chemicals allow communication for that process to happen, one being serotonin," Keefer said.

In IBS patients, too much serotonin in the digestive tract may be the culprit. Usually, epithelial cells---which form the inner lining of the gut---produce this neurotransmitter. Serotonin helps rouse sensory nerves in the intestines---responsible for routing information to the brain about the gut's "feelings," such as nausea or pain.

Excess serotonin is usually ferried away by other cells in the gut, and a problem with this transportation process may contribute to IBS, according to Gershon.

Some of the medications used for treating IBS thus incorporate very low doses of selective serotonin reuptake inhibitors (SSRIs), commonly used for treating depression. In very low doses -- less than 20mg -- they can help alleviate IBS symptoms such as diarrhea and constipation without impacting mood.

### **Equipping the brain with coping mechanisms**

Cognitive behavioral therapy helps patients learn certain skills that will help them cope better with their symptoms, Keefer said.

Techniques such as "decatastrophizing," where patients learn to deal with the worst-case scenario, are especially effective, she said.

One such example would be for an IBS patient worried about having an "accident" in a public place.

"If you don't make it to the bathroom in time, what's the worst case scenario? You clean up, and you go home," Keefer said.

While anxiety often accompanies IBS, it's important not to confuse this with a full-blown anxiety disorder, according to Keefer.

"Many [IBS] patients that experience anxiety actually have anxiety about their IBS. So they're not generally just anxious about just work issues, or family issues, they're worried about whether or not their symptoms are going to occur," Keefer said.

Over time, they may start to become overly reactive to even the slightest sensation, she said.

"[A person] might experience rumbling in [his] stomach because [he's] hungry. A patient with irritable bowel might interpret that as something to be nervous about," and that sets off a nervous reaction, Keefer said. "And that's actually partly what Dr. Mayer found in [his study]."

Cognitive behavioral therapy manages symptoms by training the brain to think that it can cope with these bodily curve balls.

### **Bacterial overgrowth as a possible cause**

Extra bacteria in the gut also can impact bowel movements and may result in IBS-related symptoms, such as diarrhea,

according to Dr. Carline Quander, a gastroenterologist at Rush University Medical Center.

As the intestines squeeze and contract, they push fluids and material through the digestive tract. The small intestines absorb nutrients, while the large intestines transfer waste products to the colon, where waste is eventually excreted from the body.

This intestinal "motility," or movement, is a complex process governed by the enteric nervous system, which controls bodily functions related to digestion. Millions of gut bacteria happily live in the digestive tract, where they play a jack-of-all-trades role, from helping with nutrient absorption to curbing attacks from harmful microorganisms.

But sometimes, these helpful gut bacteria can run unchecked and wreak havoc on the body. Certain medications or surgery in the digestive tract, for example, can increase the number of bacteria in the gut to harmful levels, Quander said.

With her colleagues from Rush University Medical Center, she is currently researching how bacterial overgrowth may contribute to a number of medical conditions, and not just abdominal pain, bloating, and constipation---symptoms normally associated with IBS.

She uses a technique called "bacterial fingerprinting" to culture and analyze tissue samples from patients during endoscopies. Her findings suggest that while in the past, doctors have referred to "good" bacteria and "bad" bacteria in the gut, "the types of bacteria may not differ as much as the number. More bacteria [will] mean overgrowth," she said.

Most people are familiar with the concept of "good" bacteria in the gut, thanks to the recent popularity of probiotic foods, such as kombucha, a type of fermented tea that lines grocery shelves.

But Quander cautions that bacterial overgrowth, which is most commonly diagnosed by a hydrogen breath test (similar to a Breathalyzer test except it measures hydrogen and other gaseous byproducts of bacteria) should first be treated with antibiotics. These "nutritional" and fermented foods, since they usually don't have FDA approval, have not been scientifically proven to improve symptoms, she said.

Others go so far as to believe bacteria may be the sole culprits behind IBS. Gas and bloating are other symptoms that have been associated with the syndrome, and too much bacteria in the small intestines cause gas and bloating, stated Dr. Mark Pimentel, a gastroenterologist at Cedars-Sinai Medical Center in Los Angeles, Calif. His book, "A New IBS Solution" (Health Point Press, 2005), covers the topic.

He proposes treating IBS solely with antibiotics to eradicate the bacterial overgrowth.

People try over-the-counter relief as well.

Wanda Hartmann Oehrli, 39, said her IBS started in her early twenties, while she was a graduate student studying chemistry at Michigan State University.

"I would just eat Tums like it was candy, and I could never quite figure out why I felt like I needed to do that," said Oehrli, 39, a Rolling Meadows-based contractor who is now seeking an MBA.

She recalls being gripped with alternating periods of constipation, diarrhea, bloating and abdominal distention that caused her severe pain. With the help of her gastroenterologist several years later, while working as a contractor for the National Cancer Institute in Bethesda, Md., Oehrli turned to prescription medications for treatment.

While she has other medical conditions, though not gastrointestinal, that she believes may contribute to her IBS, she has lived on and off with the disease for several years.

Her IBS symptoms worsened this January after she had her thyroid removed and that led her to re-seek treatment for irritable bowel syndrome. She now takes another over-the-counter medication, Miralax, to combat her IBS symptoms, now mostly limited to painful constipation.

Unlike Nicosia, but like many IBS sufferers, Oehrli closely monitors her diet to identify her "trigger foods" that include red meat and sodas. Oehrli tries to keep a healthy, "clean" style of eating, she said.

The worsening of her IBS symptoms earlier this year also led her to start a Chicago-based support group for fellow patients. They meet once a month in a private room reserved at the Schaumburg Public Library.

### **No "one-fits-all" treatment**

Opting for one course of treatment over another, or even combining drug therapy with other therapeutic methods, such as CBT, should be made as an informed choice by the patient after consulting with his gastroenterologist.

As it currently stands, there is a wide range of opinions in this field as to what causes IBS, Mayer said.

"The work at our center for the last 20 years or so in trying to identify changes at the gut level, we just have come to this conclusion that the brain plays a crucial role overall in the clinical syndrome. But it's an interesting area to talk about, because you wonder, are we all talking about the same clinical problem?" he said.



*Courtesy of Betsy Nicosia*

*Betsy Nicosia, 61, credits cognitive behavioral therapy (CBT) with alleviating her painful IBS symptoms. "Rather than altering my body chemistry, I chose to alter my actions," she said.*



*Renee Park/Medill*

*Wanda Hartmann Oehrli relies on medication to cope with her symptoms. The 39-year-old acts as an informal "sounding board" for members of her Chicago-based IBS support group, which she founded earlier this year. The group meets in Schaumburg.*