It’s Time To Rethink the Origins of Pain

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Every person who has ever felt pain has their origin story, and I certainly have mine.

While performing a bench press more than a decade ago when I was in medical school, I heard a loud click and felt my whole body go limp, and the weights came crashing down. As pain gripped my entire body in a vise, I was rushed to emergency room where I got intravenous painkillers and was told the pain would eventually disappear.

But it didn’t. And what I’ve learned about pain since has me seriously questioning how we diagnose and treat it.

I’m a doctor now, and in researching a book on pain, I’ve begun to understand that the reason the acute pain from my back injury turned into unrelenting chronic pain was likely in my brain. What determines the transformation of transient aches into ceaseless agony is not only explained by anatomy but often by psychology. Our perception of pain—and our fear of it—can play a huge role in clinical outcomes. However, far from minimizing people’s experiences, this understanding is opening the door to treatments that might finally (and durably) help the millions living in unending torment.

I’m now a doctor, and our traditional approach in medicine has been to find mechanical and anatomic explanations for chronic pain; I was told from the MRI of my back that I had abnormalities so profound for a young person (I was just 20 years old), I had become the dreaded “interesting case” discussed at the radiology department’s weekly conference. My bones were degenerating, and I had multiple damaged discs in my spine. Without any visible scars or deformities that were outwardly apparent, the MRI scans were the only evidence for what turned my acute injury into never-ending torment.

Chronic pain is usually defined as pain that affects someone frequently for three months or more, and mine exceeded that defined period by many years. I was reluctant to take painkillers and focused all of my energies on physical therapy. My pain has improved over time, but my origin story—the injury and the resulting abnormalities that showed up on the MRI—has had little to do with the pain I felt years afterward. “The classic idea is that if the injury is bad enough, it will stay on,” Vania Apkarian, one of the world’s leading pain researchers, told me. “But the injury itself has no value.”

MRIs, while reliable indicators of injury, are not reliable indicators of pain. A review of studies that involved scanning images from about 3,000 people with no symptoms of back pain found that in 20-year-olds without any back pain, 37 percent had disc degeneration, and 30 percent had disc bulges. These abnormalities should cause pain, but for these people, they didn’t. These abnormalities that show up in medical scans only increase with age, as 96 percent of 80-year-olds had disk degeneration and 84 percent had bulges. Even

in people whose backs hurt, MRI abnormalities have shown absolutely no correlation with their pain—in other words, an MRI doesn't help us figure out what hurts and what doesn't. These data upended my narrative.

This is a really big deal: millions of people in the U.S., alone get MRIs and CT scans for back pain, which is the most common cause of disability around the world. Most of these tests are inappropriate since guidelines now recommend against the routine use of imaging for people with back pain. Yet a recent study showed that only 5 percent of MRIs ordered by clinicians for back pain were appropriate, and of those who received MRIs, 65 percent received potentially harmful advice emanating from the scans—including calls for back surgery.

Spine surgery is one of the most commonly performed procedures in the United States and around the world, but it can have devastating effects: in one study of people who had chronic back pain, of the people who had spine fusion surgery, only 26 percent returned to work compared with 67 percent of people who didn't have surgery. The people who chose surgery were more likely to develop complications and permanent disability than the people who didn't. I could have been one of those people: when I took my MRI films to Ather Enam, a renowned surgeon, he told me that an operation might leave my back worse off. "I could do the surgery, but a spine that's been touched by a surgeon is never the same again," he said.

So if anatomy doesn't explain why pain turns chronic, what does? Turns out that at least part of the cause was in my head.

One of the major reasons why pain becomes immortal in our bodies is how we feel in our minds. People who fear being in pain or are anxious about it are up to twice as likely to develop chronic pain after undergoing an operation. A study from Finland published this April showed that the presence of psychological distress significantly affected the presence or absence of back pain in those with degenerated spines. In fact, one small study showed that past traumatic events such as being robbed, bullied or sexually assaulted, were the strongest predictors of back pain turning chronic in the study's 84 participants; even the early fear of pain becoming permanent becomes a self-fulfilling prophecy.

Although in clinical medicine and societal discourse, mind and body, sensation and emotion, biology and psychology, are often considered as distinct, human nature begs to differ. In fact, these dichotomies collapse most dramatically when it comes to pain. As acute pain turns chronic, Apkarian's research shows it activates parts of the brain more responsible for emotions than physical sensations.

A recent clinical trial published in the *Journal of the American Medical Association: Psychiatry* indicates the power of therapies that target how we feel about hurting. In the study, led by Yoni Ashar and Tor Wager, the scientist who discovered the neurologic signature of pain in the brain, patients with chronic low back either received usual care mostly involving pain medications and physical therapy, were told they were getting a

placebo (which can be quite effective for back pain) or received pain reprocessing therapy, which teaches people that the brain actively constructs chronic pain in the absence of an active injury and that simply reframing the threat pain represents can reduce or eliminate it. Such therapy defangs chronic pain of its sharpest weapon—fear. The results were quite remarkable: Of those people who received pain processing therapy twice-weekly for a month, 52 percent were pain-free at one year, compared with 27 percent of those receiving placebo and 16 percent receiving usual care. Patients also experienced improvements in disability, anger, sleep and depression.

Embracing the complexity of pain, especially chronic pain, can open the door to new and innovative ways to ensure that even if we hurt, we don't suffer. Therapies like pain reprocessing therapy embrace pain for what the science reveals it to be—as much an emotional and traumatic construct as a physical sensation. Such a holistic embrace of pain's nature, far from making us not take it seriously, should spur efforts even further to make sure everyone in agony receives kindness and respect, as well as access to more than pills and surgical procedures on their path to healing.