When Pain Goes Rogue

Why do we experience pain? While this question has been grist for philosophers and other deep thinkers for centuries, I wish to consider this question within a biomedical context. Nearly everyone appreciates from direct experience that our sense of pain is a vitally protective part of our nervous system, relaying emergency signals regarding physically threatening intrusions upon our bodies. I say nearly everyone to mention the rare individual who is born without a sense of pain. Such a person, you may think, would enjoy a pain-free life. But, this is not the case. The necessity of our pain system becomes very apparent for these individuals, who do not recognize when they tear muscles or overextend joints, or are subject to several other forms of tissue injury can occur without their feeling it. These individuals have a shorter life expectancy than average.

So clearly, the ability to feel pain is a vital capacity. But, there are times when pain "goes rogue". There are instances when people feel pain, but there is nothing that seems to be causing it. Or, if some identified pathology could be underlying it, the pain is out of proportion to the apparent cause. These chronic pain conditions are often referred to as functional pain syndromes, and can occur in various forms. Some of the more well-recognized conditions of this type include fibromyalgia (FM), irritable bowel syndrome (IBS), interstitial cystitis (IC), and temporomandibular disorder (TMD).

In less informed times (and, unfortunately, with less enlightened care providers even today), people complaining of pain without an obvious cause can be too easily dismissed as hysterical. While some individuals deserve such identification, it should not be the default diagnosis, as it is not the most common basis for this problem. Considerable research over the last decade or two has established that an altered central nervous system is associated with long-term pain. In biomedical parlance, regions of the brain and spinal cord that process sensory information from the body have become "sensitized". This phenomenon of "central sensitization" results from several structural and physiological changes at synapses (sites of communication between neurons). Under this sensitized condition, sensory signals from the body are amplified to a greater extent than normal, leading the brain to interpret pain from signals that would otherwise be interpreted as harmless. Additionally, the pain system can become "always on", like a faulty home alarm system that cannot be shut off. Just as the faulty home alarm system cannot be silenced by the routine way, the common ways to treat pain are often insufficient for these "rogue pain" disorders.

Research continues on many fronts to better understand the causes of these varied, but often overlapping pain conditions. It is with greater understanding that we expect to identify alternative treatment approaches that improve the lives of people suffering with unremitting pain. Currently, at the University of Maryland, two research studies are being conducted in this area. One of these is focusing on chronic jaw pain, referred to as Temporomandibular Disorder (TMD). This study, called the OPPERA study, is a multi-center investigation into the large array of physical, physiological, psychological, and behavioral features that can contribute to TMD. While one might logically expect that pain in the jaw is due to a problem with the jaw, this does not always turn out to be the case. Furthermore, as described above, a small problem with the jaw could result in a major pain problem, if the nervous system is inappropriately amplifying

sensory signals. This study seeks to determine to what extent this is happening in the general population of TMD sufferers.

The second study addresses chronic pelvic pain in women. While many women who suffer pelvic pain will have conditions such as endometriosis or tissue adhesions, there are those with chronic pelvic pain who do not have any such obvious pathology, or only minor pathology relative to the pain. Additionally, a significant number of women who undergo successful surgery for the removal of such pathology fail to enjoy full pain relief. Again, these examples may be indicative of a pain system "gone rogue". Our current research work in this area is evaluating a novel treatment for chronic pelvic pain, which addresses this possibility of central sensitization, leading to "rogue pain".

Anyone interested in more information in either of these clinical research studies or other research initiatives at the Department of Neural and Pain Sciences of the University of Maryland should contact the University of Maryland Brotman Pain Center at 443-740-5452 or 443-740-5464.

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