Why do I still have pain? The role of Central Sensitization

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Pain is generally a useful function. It serves to warn us of potentially serious harm to the body. When you place your hand on a hot stove, pain signals from your hand are transmitted to the brain to alert you to the potential for or actually occurring damage that is occurring to your body. After one has abdominal surgery, pain is beneficial in that it helps to ensure that the individual is guarded in his or her movements so that appropriate healing can occur. In both of these examples the pain is expected, appropriate, serves a function, and resolves with time. We call this type of pain, Acute Pain.

Sometimes, however, for some individuals, the pain doesn’t resolve after injury, even though the damaged tissues have healed and no further injury is occurring. We call this, Chronic Pain. Many health care professionals will use different time frames as to when they feel pain should be termed, “chronic”. Often you will hear a time frame of 3 months or so being used. Others will use time frames that are longer or shorter than this timeframe. The actual exact time frame used to make this categorization is not of much importance; The key to understanding the term Chronic Pain is that this characterization is used in the instances where the initial injury has resolved and no tissue damage is actually occurring. Chronic Pain does not serve a useful purpose. In fact, Chronic Pain is the cause of great suffering for many individuals.

It can be very distressing to individuals that they have ongoing pain that seems to continue unexplained. They often, and understandably, seek out the opinion of many medical professionals and undergo many investigations (MRIs, CTs, Ultrasounds, Nerve tests, Blood tests) in the search of the cause of their pain. When the results of these tests do not show any harmful process, patients are left confused and anxious as to why they are still experiencing pain. This is where education around chronic pain can be very helpful to the individual.

In order to understand current thoughts as to why chronic pain occurs, one must have a quick understanding as to the mechanism in which we experience pain. The pathway in which pain is experienced is complex. Our various bodily tissues (muscles, bones, ligaments, organs) contain nerves. When a bodily tissue is injured (eg. Bone fracture, ligament sprain, skin burn, etc) these nerves send electrical and chemical signals to the spinal cord and up into the brain. All pain, whether it is acute or chronic, is interpreted in the brain. In that way the brain is the “final common pathway” for all pain. When pain becomes chronic, it is thought that this pathway has been altered in an abnormal way.
Current research suggests that the abnormalities occur at the level of the brain and spinal cord such that continued, heightened, inappropriate signalling of pain is occurring in the pain pathway despite their being no actual harm to the body. The term for this amongst health care professionals and researchers is “Central Sensitization”. The word “Central” is used because the abnormalities are occurring in the part of the body called the Central Nervous System (Brain and Spinal Cord). The word “Sensitization” is used because the abnormalities that have occurred in the brain and spinal cord serve to make the individual more sensitive to the feelings of persistent pain when no tissue damage is actually occurring.

Complex changes in the pain pathway don’t have a simple solution. We are realizing that the abnormalities that occur due to central sensitization and the patient’s perception of pain occur in the context of biological, psychological, and social factors that can serve to promote these unwanted changes. Thus, attempts at treating chronic pain need to address all of these factors for the best chance of success. This is why studies show that the best results for those who have widespread chronic pain are programs for these individuals that allow many healthcare practitioners to come together (eg. doctor, pharmacist, nurse, social worker, psychologist, physical therapists, etc) to utilize many strategies to best help the patient. However, a big part of these programs is to empower the patient to take charge of their pain condition. This empowerment rests on the patient recognizing that although there is pain due to central sensitization, there is no ongoing bodily harm (health practitioners describe this as realizing the difference between “hurt” versus “harm”). Once the patient understands this concept, it is easier for him or her to move forward with strategies to cope with chronic pain and obtain the highest function and quality of life.

Bio

Dr. Harp Sangha is a member of the College of Physicians and Surgeons of Ontario. He is a licentiate of the Medical Council of Canada and certified by the Royal College of Physicians and Surgeons of Canada in Physical Medicine and Rehabilitation. Dr. Sangha is a Diplomat of the Canadian Society of Clinical Neurophysiologists in EMG (Dip. CSCN - EMG). He has additional fellowship training in Pain Medicine from the University of Toronto, Department of Anesthesia. Dr. Sangha currently holds a full-time clinical appointment at Toronto Rehabilitation Institute-University Health network, a University of Toronto Teaching and Research Hospital, where he has dual appointments on both the Musculoskeletal Rehabilitation Program and Neuro-Rehabilitation services. Dr. Sangha has a full-time academic appointment as a lecturer (clinician-teacher) at the University of Toronto.