Neurobiology and Linguistic Aspect of Sng and Pain

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“Do you know my sng?” In Chinese society, pain is often described as a compound word “sng-pain” (痠痛), in which sng (pronounced as sә-ng, 痠) is a Taiwanese word that represents the state of feeling sore. However, although chronic sng is a major complaint in many chronic pain diseases and largely affects the quality of life among patients, sng is notoriously ignored in current medicine and is always treated as a mild symptom of pain. In the pain clinic, acid or soreness sensation is a characteristic sensory phenotype of various acute and chronic pain syndromes, such as delayed onset muscle soreness, fibromyalgia, and radicular pain. Physiologically, sensing tissue acidosis is an important function of somatosensory nervous system to response to noxious stimuli. However, acid or soreness sensation is also a sign of successful analgesia for acupuncture and noxipoint therapy. Thus, the nature of acid or soreness sensation is not always nociceptive (or painful) and could be anti-nociceptive. To facilitate the investigation of the molecular and neurobiological mechanisms of soreness sensation, we propose a new concept called “sngception (sng- ception)” to describe the response of the somatosensory nervous system to sense tissue acidosis and to distinguish it from nociception (pain sensation). Sngception could partially overlap with nociception, but it could also transmit antinociception, proprioception, and pruriception. Although proton-sensing ion channels and/or receptors contributing to sngception is not known, candidate membrane proteins include members of acid-sensing ion channels, transient receptor potential channels, proton-sensing G-proton-coupled receptors, and two pore potassium channels. We have thus designed a series of genetic manipulation to explore possible proton-sensing molecules and/or acid-sensitive neurons involved in sngception in mouse models. Moreover, from clinical aspect, we demonstrate sng (soreness) and pain are two distinguishable clinical symptoms with different clinical impacts on patients of chronic low-back pain and fibromyalgia. Together, here we propose sngception as a specific somatosensory function that transmits the acid sensation from the peripheral to the central nervous system.