Chronic pain as well as local pain in neuroma and in other usually painless conditions may be due to compressive paraspinal neural lesion

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Abstract

It has been little discussed why chronic pain (ChP) does not invariably accompany ChP-prone disorders. This question-driven, hypothesis-based narrative review suggests that the reason may be varying occurrence of concomitant compressive proximal (peripheral) neural lesion (cPNL). Nociceptive hypersensitivity induced and/or maintained by cPNL may be responsible for all types of non-organic ChP as well as for pain in isolated tissue conditions that are usually painless, e.g., neuroma, scar, and Dupuytren's fibromatosis. Distal and physiologically silent healed lesions may be insufficient to maintain ChP without accompanying noxious input by cPNL, e.g., by radiculopathy and entrapment plexopathies. Focal neuroinflammation induced by cPNL maintains dorsal root ganglion neuron (DRGn) hyperexcitability (i.e., peripheral sensitization) and thus fuels central sensitization (i.e., hyperexcitability of central nociceptive pathway) and a vicious cycle of ChP. DRGn hyperexcitability and cPNL may reciprocally maintain each other, because cPNL can result from reflexive myospasm-induced myofascial tension and consequent muscle imbalance- and/or pain-provoked compensatory overuse. Sensitization increases nerve vulnerability and thus catalyzes the ChP cycle. Because of these mechanisms and relatively greater number of neurons involved, cPNL, in comparison to distal neural and non-neural lesions, is more likely to maintain DRGn hyperexcitability. Sensitization is accompanied by pressure pain threshold (PPT) decrease, which can cause unusual local pain via natural pressure exerted by space occupying lesions or by their examination. Worsening of local pain is similarly explainable. Neuroma pain may be due to cPNL-induced axonal mechanical sensitivity and hypersensitivity of the nociceptive *nervi nervorum* of the nerve trunk and its stump.

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