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Dorsal root ganglion activation in below-level pain - 602

Spinal cord injury (SCI) is often accompanied by chronic pain which can present below the site of injury. The underlying mechanisms for this below level pain are not known. Pain afferent information is transmitted to the spinal cord is through the dorsal root ganglia (DRG). Deafferentation as is regularly used in standard chronic pain models leads to an increase in sympathetic fibers in the associated and neighboring DRGs. These fibers develop such that they form “baskets” around the cell bodies within the DRG. The increase in sympathetic fibers increases pain in animal models and is associated with pain in human patients. The goal of the current study was to investigate sympathetic basket formation in two models of SCI, contusion models general SCI physiology and avulsion developed specifically to investigate below level pain. At-level (thoracic), above level (cervical) and below level (lumbar) DRGs were analyzed. The at-level DRGs from the contusion model showed the greatest increase in sympathetic fibers compared to avulsion and at-level DRGs showed the greatest increase compared to DRGs distant to the injury. These data support that central nerve injury leads to sympathetic basket formation and that this innervation may drive pain distant from the site of injury.