

Can Lumbar Spine be a Cause of Visceral Pain?

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DESCRIPTION

The nerves innervating the intervertebral discs in the lumbar spine has several cross connections with sympathetic system. The ventral ramus of the lumbar spinal nerve forms the sinuvertebral nerve, which carries pain signals from the posterior aspect of the disc and gives off another branch, the grey ramus communicans, connecting to the sympathetic trunk of the autonomic nervous system. While the posterior and posterolateral regions of the disc are innervated by the sinuvertebral nerve, the lateral part of the disc is innervated by the grey ramus communicans and the anterior part of the lumbar intervertebral disc is innervated directly by the sympathetic branches of the sympathetic trunk or ganglion.

The true nociceptors of the lumbar disc have a greater concentration in the posterior and posterolateral aspects of the annulus of the disc, as compared to the lateral and anterior regions. This suggests that the posterior and posterolateral regions of the disc are more sensitive to pain and possibly to the development of chronic back pain. Annular tears and other types of disc lesion like disc herniation are found most frequently on the posterior and posterolateral regions of the disc since the annulus is the weakest in these regions and can give rise to bulges or protrusion of the nucleus which can range in severity from a mild disc bulge to disc extrusion. For most lower back pain radiating to the leg/s it would seem appropriate to focus on the sinuvertebral nerve, the primary nerve that carries pain sensation from the posterior and posterolateral aspect of the disc.

The intervertebral discs in the lumbar spine do bulge/herniate in their anterior and anterolateral aspect albeit much less commonly than the posterior or posterolateral aspect. When the discs bulge/herniate in the anterior and/or anterolateral aspect the nerve fibers innervating them directly stimulate the sympathetic chain where the sensation from abdominal and pelvic viscera are also criss crossing.

Visceral pain coming from anterior and anterolateral disc herniation is an underappreciated entity due to a general lack of

understanding of innervation of the lumbar intervertebral disc. There are times when some patients who suffer from visceral pain symptoms go through a multitude of investigations including diagnostic surgical laparoscopy and laparotomies with no obvious source for their chronic unrelenting visceral pain. The physician community should be educated about the possibility of lumbar intervertebral disc as being a source of the cramping, dull and a spasmodic kind of pain that can easily be confused with a pelvic source or an abdominal source rather than attributing it to the spine if the patient presents with symptoms and signs related to abdominal or pelvic pain [1] and the initial investigations like an ultrasound or CT scan of the abdomen and pelvis turns out to be negative. An imaging of the spine should then be the next obvious step if routine imaging of the abdomen and pelvis turns out to be negative rather than subjecting the patient to a much more invasive diagnostic laparoscopy. The imaging of choice for a spinal pathology is an MRI without contrast which can look for details of any disc bulges or protrusion in the anterior or anterolateral parts of the disc. A disco gram or a diagnostic lumbar transforaminal epidural steroid injection can confirm the bulging lumbar disc as the source of the visceral pain. Depending on the severity and duration of symptoms as well as the degree of lumbar disc degeneration, the management could range from conservative treatment options with physical therapy, medications, and chiropractic interventions or in more resistant cases lumbar epidural steroid injection can be tried before a minimally invasive vs. open surgical decompression of the bulging intervertebral disc is attempted.

REFERENCE

1. Bennett AS, Gray CM, Ruchi R, Kumar S. Anterolateral intervertebral disc herniation presenting as visceral pain in a patient with renal keratinising desquamative squamous metaplasia. *BMJ Case Rep.* 2021;14(4):e240124.

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