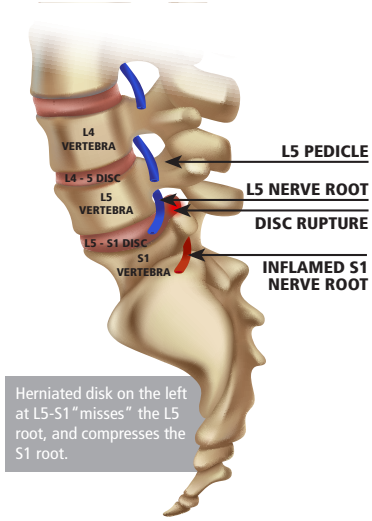
MediScene

Keeping You Up-to-Date with the Industrial Commission's Medical Services

July 2022, Issue 3

Words Matter: "Rooting" Out Spine Terminology

Why is this important? First, Spinal injuries are a commonly occurring injury in workers' compensation medicine. Secondly, the Ohio Industrial Commission (IC) requires independent specialist examiners to reference *AMA Guides to the Evaluation of Permanent Impairment* (the *Guides*), to help reviewers understand the justification for an impairment rating. The Guides are very specific regarding information required for estimating impairment arising from spinal conditions, whether it be by the Diagnosis-Related Estimate (DRE) method, or the Range of Motion (ROM) method. Therefore, penning a report which will be helpful to reviewers' understanding demands fundamental knowledge of the functional anatomy of the spine, and the use of the accurate terminology, as outlined in the *Guides*.



Herniated disk on the left at L5-S1 "misses" the L5 root, and compresses the S1 root.

What is the root of the problem? The lumbar disk anatomically cushions the space between two vertebral bodies (the building blocks of the spine), and is appropriately named by the vertebral body above and below. For instance, "the L4-5 disk" sits in the space between the L4 and L5 vertebral bodies. However, the spinal nerve roots, which are destined for specific areas of skin (dermatomes) and specific groups of muscles (myotomes), are appropriately named for the pedicle of the vertebra under which the nerve root exits the spine (please see diagram to the right). Therefore, there are no "L4-5" or "L5-S1" nerve roots, but rather L4, L5, and S1 roots. Likewise, in functional spinal anatomy, there is no such thing as a an "L4-5 radiculopathy, dermatome, or myotome." Radiculopathy, dermatome, and myotome each refer to one specific root.

How is the disk injury related to a radiculopathy, dermatome, or myotome? Radiculopathy refers to the clinical manifestations of pressure on, or injury to, a specific nerve root. These manifestations include pain and sensory loss in a dermatomal distribution, and weakness or reflex change in a myotomal distribution. For instance, a disk herniation at L5-S1 to the left, will generally result in left S1 radiculopathy. How do we know? By our physical examination. The table below shows the primary dermatomal and myotomal distributions of the most commonly affected lumbar roots- in order of prevalence- and the physical findings associated with radiculopathy involving those individual lumbar spinal nerves:

NERVE ROOT	DERMATOME	MYOTOME	CLINICAL FINDINGS
S1	Lateral foot	Gastrocnemius-soleus	asymmetrical absence of Achilles response, sensory loss lateral foot, soleus-gastrocnemius atrophy and/or weakness (difficulty standing on tip toes)
L5	Lateral calf and dorsum foot	EHL and tibialis anterior	extensor hallucis longus (EHL) weakness (inability to extend big toe under pressure) and sensory loss lateral calf to dorsum of foot
L4	Medial calf	Quadriceps	asymmetrical absence of knee jerk response, sensory loss medial calf, and quadricep atrophy and/or weakness (knee-buckling with partial one-legged squat)

Back to the *Guides*. In both the lumbar DRE and ROM methods of impairment rating described in the *Guides*, knowing the functional anatomy of the spine and specific spinal nerve roots and being able to accurately document physical examination findings are requisite to a well-supported impairment rating. In the DRE method, Table 15-3 clearly relies on the clinical findings described above for assignment to the correct category. The lumbar ROM method requires identifying and rating motor and sensory deficits related to specific lumbar nerve roots to support the estimated impairment rating. Below are some real-life examples of documentation we have seen in the physical examination section of reports, and then suggested alternatives. These alternatives are based on the *Guides*, as well as well-established principles of functional anatomy and medical documentation of findings*:

"The injured worker has a non-verifiable radicular complaints in the right upper limb."

Alternative anatomically correct documentation: "The injured worker reports diminished light touch (sensory grade 4) in a patchy and non-dermatomal distribution throughout the arm."

"The injured worker's motors were within normal limits with the exception of L4-5 innervated musculature on the right."

Alternative anatomically correct documentation: "Motor testing in the legs revealed intact strength, except for 4/5 weakness in the right EHL and quadriceps muscles. The right knee jerk response was blunted."

"The injured worker had persistent decreased sensation in the dermatome of the L4-5 nerve root on the left."

Alternative anatomically correct documentation: "Testing of two-point discrimination revealed consistent decreased sensation (sensory grade 3) in the left medial and lateral calf."

MediScene Review Questions

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Your Name: _____ **Time Spent on CME Activity:** _____

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MEDISCENE REVIEW QUESTIONS, JULY 2022 - ISSUE 3

1. What is the most common lumbar radiculopathy?
   - ☐ a. L4
   - ☐ b. L5
   - ☐ c. S1
2. What findings are associated with L5-S1 radiculopathy? (Choose all which apply.)
   - ☐ a. EHL weakness
   - ☐ b. Loss of Achilles reflex
   - ☐ c. None- this is a misnomer which doesn't exist!
3. Each of the following statements may have a place in a medical report. Indicate which of them are properly considered examination findings (EF); subjective symptoms (SS), or; examiner conclusions (EC):
   - ___ a. non-verifiable radicular complaints
   - ___ b. 4/5 weakness right EHL
   - ___ c. needs orthotic to walk
   - ___ d. pain and tingling in the big toe
   - ___ e. left ankle jerk response absent
   - ___ f. decreased sensation anterolateral right calf
   - ___ g. decreased sensation in the right L5 distribution

Did You Know?

*"A finding," in the context of a medical examination, is something which has been found, or observed by the examiner, rather than the examiner's (or examinee's) conclusions regarding what was seen, heard, or felt. Findings are reported in the examination section of the report. Symptoms and reported functional abilities are part of the history. Conclusions, or "examiner impressions" regarding what was observed, belong at the end of the report.

NOTE: This activity is not a certified AMA category 1 activity, and so it cannot be used as credit toward medical board licensure in Ohio. However, it can be used toward the Ohio Industrial Commission requirement for continuing education credit specific to impairment rating, at the time of your five-year application for reappointment to the specialist examiners' panel.

ANSWERS: 1. c; 2. c; 3. a: EC, b: EF, c: SS, d: SS, e: EF, f: EF, g: EC