

Orthopedic Diagnosis: Differentiate the Similarities

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When I was in chiropractic college, technique classes were taught by region. We had cervical class, thoracic class, lumbar class, etc. Each class consisted of the diagnostic and adjusting techniques for the region studied.

Subdividing the spine worked, but there was one subtle inconsistency that occurred among the classes. It was not unusual for orthopedic tests in different regions to be remarkably similar in performance, yet be described under different names and as detecting different pathologies.

Using Soto-Hall's and Lindner's tests as an example, there are a few differences between the two tests, but the primary maneuver for both is flexing the cervical spine of a supine patient.

When the primary maneuver is used in cervical diagnosis, it is Soto-Hall's test for general pathologies of the cervical and upper thoracic regions. When the primary maneuver is used in lumbar diagnosis, it is Lindner's test for lower extremity radiculopathy.

The mechanisms that differentiate these tests were never made completely clear in class. My classmates and I memorized the interpretation related to the current class. Separation by course was the only clear line of demarcation.

Guiding Principles

With time, the mechanisms of what differentiates similar tests or combinations of tests from one another became clear. The mechanisms can be narrowed down to two principles:

1. Multiple tissues are stressed during testing.
2. Positive and negative results are dependent upon which tissues are pathological.

During cervical flexion, as in Soto-Hall's and Lindner's tests, the spinal cord, nerve roots, joints / ligaments, muscles, blood vessels and other tissues are all stretched or compressed. The same occurs during other cervical ranges of motion.

Multiple tissues are also stretched or compressed during most orthopedic tests. There is minimal isolation of any tissue. Since multiple tissues are affected, you must be aware of the signs and symptoms particular to each tissue. This knowledge increases accuracy in differential diagnosis.

There are other examples of tests that overlap in performance. The combination of Kernig's and Brudzinski's tests for meningitis, and the combination of straight-leg raising (SLR) and Lindner's tests for lower extremity radiculopathy, share similar mechanisms of performance.

The primary maneuver for Kernig's test involves raising the straightened leg of a supine patient. This maneuver is the same primary maneuver as SLR.

Like Kernig's test, crossed straight-leg raising (CSLR) for contralateral radiculopathy shares the same primary maneuver as SLR. They differ only on the side of performance. Thus, Kernig's, SLR and CSLR tests are all quite similar.

The primary maneuver for Brudzinski's test is flexing the cervical spine of a supine patient. This is the same primary maneuver as Soto-Hall's and Lindner's tests, as described earlier.

Efficient Differential Diagnosis: Combining Test Maneuvers

The overlapping performances I have described provide great opportunities for making patient examination and differential diagnosis more efficient. For example, during an examination, you could instruct a supine patient to flex his / her cervical spine, moving the chin to the chest. Then, with the patient maintaining this posture, you would raise the patient's straightened leg.

Combining these maneuvers represents the performance of multiple tests. Lindner's and SLR tests for ipsilateral lower extremity radiculopathy, Kernig's and Brudzinski's tests for meningitis, and Lindner's and CSLR for contralateral radiculopathy all occurred. Soto-Hall's test also occurred.

Six tests are completed using only two maneuvers. The examination is efficient. If the patient does not react to the maneuvers in any way, the individual tests can be considered negative or non-pathological, and you can move on to other tests.

A caveat occurs while testing in this manner, and it is a big caveat. If the patient reacts or reports any symptoms while using a combination of tests, you must separate the combination and perform each test individually for differential diagnosis.

Clinical Value

Understanding how the mechanisms of tests overlap helps prevent a common mistake in orthopedic testing: recording any response to a test as a pathological finding. Each test has specific findings and interpretations. Reactions other than those specific to a test are negative findings. However, negative findings for one test may be positive findings for another test that has a similar, overlapping mechanism of performance.

We were taught orthopedic tests by region, then by name, performance, positive and negative findings, and finally, pathology. Organization of the information in this manner is beneficial for textbooks, training and academic testing. It is not as useful for clinical practice.

An alternative method of study is recommended. Look first at the tissues affected during a specific movement. For example, consider which tissues are affected when the knee is flexed and extended. Think about which tissues move, which are stretched and which are compressed. Think about the signs and symptoms that occur for each of these tissues when they are pathological. Name the pathologies associated with those signs and symptoms. Finally, correlate the signs, symptoms and pathologies with their associated test names. This inside-out or nontraditional method of thinking improve examination efficiency and differential diagnosis.

