The Sensitivity of the Seated Straight-Leg Raise Test Compared With the Supine Straight-Leg Raise Test in Patients Presenting With Magnetic Resonance Imaging Evidence of Lumbar Nerve Root Compression

Archives of Physical Medicine and Rehabilitation
Volume 88, Issue 7, July 2007, Pages 840-843

Alon Rabin DPT, MS, Peter C. Gerszten MD, MPH, Pat Karausky RN, BSN, Clareann H. Bunker PhD, Douglas M. Potter PhD and William C. Welch MD

FROM ABSTRACT

The sensitivity of the seated straight-leg raise test compared with the supine straight-leg raise test in patients presenting with magnetic resonance imaging evidence of lumbar nerve root compression.

Objective
To compare the sensitivity of 2 methods of performing the straight-leg raise (SLR) test, one in the supine position and the other in the seated position, in patients presenting with signs and symptoms consistent with lumbar radiculopathy.

Design
A cohort study in which patients with signs and symptoms consistent with lumbar radiculopathy and magnetic resonance imaging (MRI) results available for review at the time of participation were assessed with both the supine and the seated SLR test.

Setting
A large neurosurgical referral office.

Participants
Seventy-one consecutive patients with signs and symptoms consistent with lumbar radiculopathy referred for evaluation of low back pain were prospectively recruited.

Main Outcome Measures
Supine SLR and seated SLR. MRI was used as the criterion standard.

Results
The sensitivity of the supine SLR test was .67 compared with a sensitivity of .41 of the seated SLR test.

Conclusions
The traditional SLR test performed in a supine position is more sensitive in reproducing leg pain than the seated SLR test in patients presenting with signs of and symptoms consistent with lumbar radiculopathy and MRI evidence of nerve root compression.
THESE AUTHORS ALSO NOTE:

Two thirds of adults will suffer low back pain (LBP) at some time in their lives.

The features of lumbar radiculopathy include pain, paresthesia, weakness, reflex change, and sensory loss in the territory innervated by the affected nerve root.

Magnetic resonance imaging (MRI) can show bulging, protruding, or herniated disks and any associated nerve root compression.

MRI findings such as bulging or even protruding disks are common in completely asymptomatic persons. “For this reason, it is extremely important to correlate these imaging results to the history and physical examination to establish an accurate diagnosis.”

The diagnostic accuracy of the straight-leg raise (SLR) test is a high sensitivity (91%) but low specificity (26%) in detecting lumbar disk herniation. “This high sensitivity rate [91%] suggests that, given a negative SLR, the diagnosis of acute lumbar radiculopathy may be ruled out with reasonable confidence.”

An alternative to the traditional supine SLR test is the seated SLR test, performed by extending the patient’s knee and assessing for the reproduction of symptoms.

The SLR test was performed on all subjects in both supine and seated positions. A positive response was the reproduction of symptoms distal to the knee joint. “The reproduction of back pain only or thigh pain (not extending distal to the knee) was considered a negative test.”

In this study, the sensitivity of the supine SLR test in reproducing the patient’s radicular pain in light of an MRI scan indicating the presence of nerve root compression was 67%.

The sensitivity of the seated SLR test was at 41%.

The interrater reliability was 69% for the supine test and 60% for the seated test.

DISCUSSION

“The supine SLR test definitely has a significantly greater sensitivity than the seated SLR test.”

“The supine SLR more accurately reflects the radiologic findings of lumbar nerve root compression.”
CONCLUSIONS

“In patients complaining of LBP and lower lumbar radicular symptoms who present with an MRI scan indicating lumbar nerve root compression, the supine SLR test is more sensitive than the seated SLR test in detecting acute nerve root compression symptoms.”

“Clinicians performing the SLR test exclusively in the seated position may not detect the symptoms of acute lumbar radiculopathy at the same rate as those performing the SLR in a supine position.”

KEY POINTS FROM DAN MURPHY

1) Two thirds of adults will suffer low back pain at some time in their lives.

2) The features of lumbar radiculopathy include pain, paresthesia, weakness, reflex change, and sensory loss in the territory innervated by the affected nerve root.

3) MRI findings such as bulging or even protruding disks are common in completely asymptomatic persons. “For this reason, it is extremely important to correlate these imaging results to the history and physical examination to establish an accurate diagnosis.”

4) The traditional diagnostic accuracy of the straight-leg raise (SLR) test is a sensitivity of 91% and a specificity of 26% in detecting lumbar disk herniation.

5) The high sensitivity rate of 91% suggests that, “given a negative SLR, the diagnosis of acute lumbar radiculopathy may be ruled out with reasonable confidence.”

6) A positive supine and seated SLR response was the reproduction of symptoms distal to the knee joint. “The reproduction of back pain only or thigh pain (not extending distal to the knee) was considered a negative test.”

7) In this study, the sensitivity of the supine SLR test in reproducing the patient’s radicular pain in light of an MRI scan indicating the presence of nerve root compression was 67%, and the sensitivity of the seated SLR test was at 41%.

8) The interrater reliability was 69% for the supine test and 60% for the seated test.

9) “The supine SLR test definitely has a significantly greater sensitivity than the seated SLR test.”

10) “The supine SLR more accurately reflects the radiologic findings of lumbar nerve root compression.”
11) “In patients complaining of LBP and lower lumbar radicular symptoms who present with an MRI scan indicating lumbar nerve root compression, the supine SLR test is more sensitive than the seated SLR test in detecting acute nerve root compression symptoms.”

12) “Clinicians performing the SLR test exclusively in the seated position may not detect the symptoms of acute lumbar radiculopathy at the same rate as those performing the SLR in a supine position.”

COMMENT FROM DAN MURPHY

An interesting finding in this study is that the interrater reliability for the reproduction of leg symptoms below the knee for the supine SLR was only 69%, and for the seated SLR it was only 60%. The examiners were experienced clinicians. At Life Chiropractic College West, 69% constitutes a non-passing grade. Imagine the problems with interrater reliability in determining the existence of more complex entities, such as the subluxation complex.