

**Diagnostic value of Lasègue test in discopathy in patients with acute low back pain**

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**Abstract: Introduction:** Low back pain is one of the most important health problems. Disk herniation is one of the common reasons of low back pain. Accurate examination is the best and the simplest diagnostic methods. Physical finding and Straight Leg Raising (SLR) test, neurologic tests and other tests are used to know the exact site of herniation. Para clinical studies such as MRI should be used, because physical examination has not high specificity.

**Methods:** 100 patients, who were referred with back pain or radicular pain to the emergency department of Imam-Reza hospital of Tabriz city, were enrolled in study. SLR, Reverse SLR and Cross SLR tests were done for all patients. Then patients were referred to the neurosurgeon for treatment. Lumbar MRI was taken for all patients. Then all patients were followed up and there data were collected. **Results:** Sensitivity and specificity of SLR test, Cross SLR test and Reverse SLR test was 100%, 0% and 94.68%, 100% and 88.89%, 100%, respectively. There was no significant relationship between MRI and positive discopathy in examination and SLR (P=0.11). **Conclusion:** SLR has low sensitivity but high specificity. If it uses with physical examination it's sensitivity increases but it's specificity decreases. The most sensitive test for detection of low back pain is SLR and most specific test is Cross SLR.

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**Keywords:** Straight Leg Raising, Low Back Pain, Discopathy

**1. Introduction:**

Back pain is one of the most common causes of referring to clinics and medical services. It affects two third of adults during their life [1]. Acute back pain of most patients recovers automatically and there is not found any cause for back pain in 95% of the patients. It usually results from muscular or ligament injuries [2, 3]. To find need to any intervention for disc hernia, quad equine syndrome, or myeloid stenosis constituting 5% of back pains and focus on them, further evaluations will be required when back pain is associated with neurological findings [1].

Exact clinical examination is the best and the easiest way of detection. Physical findings in SLR (Straight Leg Raising) test, neurological tests, and others are not only helpful in detecting the problem but also they can be used in specifying exact pathological location. Since clinical examination is of high specificity, Para-clinical modalities such as MRI should also be used [4,5]. Although MRI is of high sensitivity in detecting intervertebral disc hernia, it is not recommended to use it without considering clinical symptoms and it is better that MRI is used to confirm clinical detection and help in determining

exact pathological location to surgery. Unfortunately, it is often used as the first step in detecting back pain and deciding for surgery in spite of its high expenses and lack of its public availability [6].

Whether SLR is positive or negative, MRI is finally used to detect discopathy. There is not any study conducted on importance of SLR test in patients referring to emergency departments while complaining of acute back pain attack indicating to the relationship found between positive SLR and discopathy. Therefore, we aimed to evaluate the validity of positive Lasègue test in identifying the patients with discopathy and acute back pain attack, referring to emergency departments.

**2. Materials and Method:**

This descriptive cross sectional study was conducted on 100 patients suffering from radiculopathy and acute low back pain referring to the emergency department of Imam Reza hospital from 21 March 2011 to 22 November 2011.

The patients were selected randomly. Lasègue test was conducted for all patients. The patients were treated at emergency department and then were referred to neurosurgery service. MRI of the patients

was evaluated during follow-up period. Additionally, exclusion criteria for patients were:

- History of back surgery (laminectomy and disc surgery)
- Lumbar penetrating or blunt trauma
- TB
- Paravertebral infection
- Cancer

All patients were studied considering positive and negative SLR and the obtained results were registered. The patients were referred to neurosurgery clinic. Since most patients with back pain underwent MRI even with negative SLR, most of them had one of the findings related to radiculopathy, chronic back pain, muscular force reduction, sphincter impairment, decreased sensory. Financial costs of the patients were supported by researchers and results were registered either through phone call or reference to emergency department.

Considering lack of any special intervention, the plan was executed in accordance with instructions of Tabriz University of medical Sciences- ethical committee of the medical faculty. All trusteeship principles were observed and the patients name and address was not disclosed anywhere.

The data were analyzed using SPSS15.0 statistical software and chi-square or Fisher's exact test. Descriptive statistical methods (frequency, percentage, mean  $\pm$  standard deviation) were used to statistically evaluate the data. In this study,  $P < 0.05$  was regarded statistically significance. Finally, accuracy and specificity of SLR test were calculated to predict discopathy.

### 3. Results:

The present study was conducted on 100 patients. 74 (74%) patients experienced back pain again while 26 (26%) cases had not any history of back pain in the past.

Clinical examinations of SLR test was positive in 76 (76%) and was negative in 24 (24%) patients. Reverse SLR test was positive and negative in 36 (36%) and 64 (64%) patients, respectively. Also, cross SLR test was positive in 27 (27%) and negative in 73 (73%) patients.

According to the reports, discopathy was seen in 89 (89%) patients but there was not any sign of discopathy in 11 (11%) cases.

All patients mentioned back pain following activity. Back pain with diffusion to leg was reported in 99 (99%) patients.

Urinary and fecal incontinence was reported only in 3 (3%) patients while 97 (97%) did not suffer from incontinence.

Increasing factor was mentioned in 94 (94%) patients.

Results of SLR test demonstrated that 99 (99%) patients suffered from discopathy while one patient did not experience it.

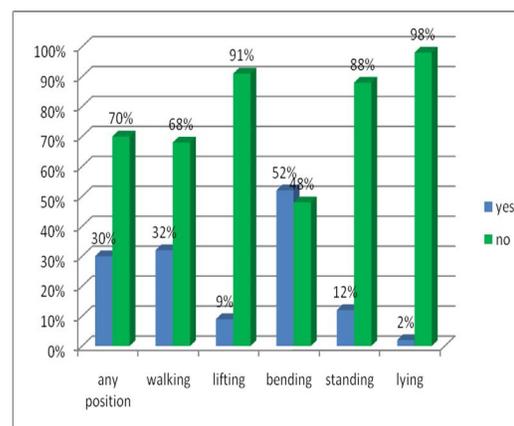
Results of the study indicated lack of any meaningful relationship between reverse SLR and positive discopathy result in MRI ( $P=0.97$ ). Also, there was not any meaningful relationship between cross SLR and positive discopathy result in MRI ( $P=0.15$ ). Additionally, the present study demonstrated that there was not any meaningful relationship between Lasik test and positive discopathy result in MRI ( $P=0.3$ ).

Fisher's exact test did not show any significant difference between back pain with diffusion to leg and positive discopathy result in MRI ( $P=0.11$ ).

The study showed that there was a meaningful difference between positive discopathy result in MRI and positive SLR test ( $P=0.004$ ).

There was a meaningful relationship between history of back pain and MRI findings ( $P=0.02$ ). Also, there was not any meaningful relationship between increasing factors and MRI findings ( $P=0.64$ ).

There was not any statistically meaningful relationship between positive discopathy finding in MRI and disposition ( $P=0.62$ ), walking ( $P=0.29$ ), lifting heavy objects ( $P=0.269$ ), bending ( $P=0.64$ ), and standing ( $P=0.119$ ). Fisher's exact test did not indicate any meaningful difference between lying and positive discopathy finding in MRI ( $P=0.2$ ) (diagram 1).



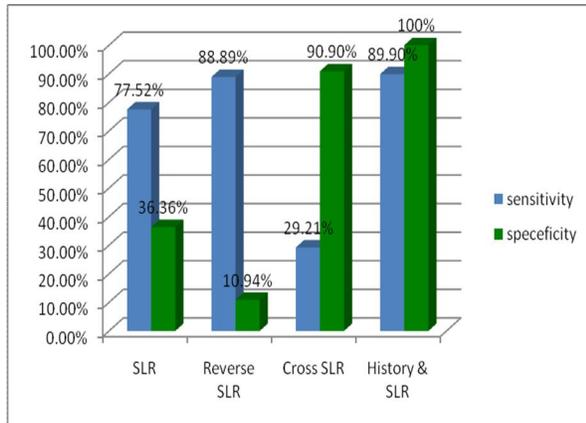
**Diagram1:** Cause of low back pain

In this study, accuracy and specificity rate as well as positive and negative diagnostic value of SLR test was 77.52%, 36.36%, 90.6%, and 16.66%, respectively.

Additionally, accuracy and specificity rate of cross SLR test was respectively 29.21%, 90.9% and positive and negative indicative value of the test was calculated 96.29% and 13.96%, respectively.

Accuracy and specificity rate of reverse SLR test was respectively 88.89%, 10.94% and positive and negative indicative value of the test was calculated 35.96% and 63.64%, respectively.

Accuracy and specificity rate of associating the description of the patients' conditions with positive Lasik test in diagnosing discopathy was calculated 89.90% and 100%, respectively. Positive and negative indicative value of the method was 100% and 9.09% (diagram 2).



**Diagram 2:** specificity and sensitivity of SLR, Reverse SLR, Cross SLR, History and positive SLR

#### 4. Discussion:

Back pain is a great health problem such that back and spine pain is regarded as one of disability factors and reduces life quality of people [7]. Statistics indicate that 80% of people refer to physician because of back pain at least once during their life. It is believed that people having to stand or walk for many hours, do heavy and repetitive physical activities associated with several bending, pushing, pulling, and lifting, experience vibration during driving and long-term tiredness as well as those who are dissatisfied from their occupation more suffer from back pain. Therefore, such occupations are being affected by back pain in several ways [8].

SLR is used as the first test to detect disc hernia and it is of 70-80% accuracy. More accurate test such as Slump may be used in diagnosing disc hernia where SLR is negative [9].

In a study, Capla et al referred to 36% as accuracy of the test [10]. Accuracy rate of Lasègue test was measured as 72% in a similar study conducted by Mohseni et al [11] while it was 72% in the study conducted by Masoud et al [12].

Specificity rate of SLR test was 89% in the study conducted by Majlesi et al [9]. Walter et al referred to 26% as specificity rate of the test [13]. Our study also showed that specificity rate of the test equals 36.36%.

Accuracy rate of cross SLR test was 29.21% in the above-mentioned study. It was 29% in the study conducted by Walter et al [13]. Specificity rate of cross SLR test was 88% in the same study [13]. It was 90.9% in the present study.

Capla et al calculated positive and negative indicative value of SLR test as 69% and 52% [10] while it was 90.6% and 16.16% in our study, respectively. Also, accuracy and specificity rate of reverse test was respectively 89.89% and 10.94% in the above-mentioned study.

In the study conducted by Masoud et al, 47% of the patients suffered from Achilles reflex disorder, 31% of them experienced sensory disorders, and 2% of the patients complained from muscular atrophy. There were sphangtory disorders in 5% of the patients [12]. Considering neural disorders, urinary and fecal incontinence was reported by 3 (3%) patients in our study.

Accuracy and specificity rate of associating the description of the patients' conditions with positive Lasègue test in diagnosing discopathy was calculated 89.90% and 100%, respectively.

The present study suggested that incidence of back pain in housewives is more frequent than other groups and low back pain was seen in 28% of housewives. Additionally, Masoud et al demonstrated that incidence rate of acute back pain and discopathy in housewives is higher than other groups [12].

#### Conclusion:

Results of the present study demonstrate that SLR is of high accuracy by itself but of low specificity. When the test is associated with clinical examination, slight decrease of accuracy and significant increase of specificity are observed. SLR and cross SLR are the most accurate and specific tests to diagnose back pain, respectively

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