Skin temperature changes in patients with unilateral lumbosacral radiculopathy.

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Ra JY¹, An S, Lee GH, Kim TU, Lee SJ, Hyun JK.

Author information

¹Department of Rehabilitation Medicine, Dankook University College of Medicine, Cheonan, Korea.

Abstract

OBJECTIVE:
To clarify the relationship of skin temperature changes to clinical, radiologic, and electrophysiological findings in unilateral lumbosacral radiculopathy and to delineate the possible temperature-change mechanisms involved.

METHODS:
One hundred and one patients who had clinical symptoms and for whom there were physical findings suggestive or indicative of unilateral lumbosacral radiculopathy, along with 27 normal controls, were selected for the study, and the thermal-pattern results of digital infrared thermographic imaging (DITI) performed on the back and lower extremities were analyzed. Local temperatures were assessed by comparing the mean temperature differences (∆T) in 30 regions of interest (ROIs), and abnormal thermal patterns were divided into seven regions. To aid the diagnosis of radiculopathy, magnetic resonance imaging (MRI) and electrophysiological tests were also carried out.

RESULTS:
The incidence of disc herniation on MRI was 86%; 43% of patients showed electrophysiological abnormalities. On DITI, 97% of the patients showed abnormal ∆T in at least one of the 30 ROIs, and 79% showed hypothermia on the involved side. Seventy-eight percent of the patients also showed abnormal thermal patterns in at least one of the seven regions. Patients who had motor weakness or lateral-type disc herniation showed some correlations with abnormal DITI findings. However, neither pain severity nor other physical or electrophysiological findings were related to the DITI findings.

CONCLUSION:
Skin temperature change following lumbosacral radiculopathy was related to some clinical and MRI findings, suggesting muscle atrophy. DITI, despite its limitations, might be useful as a complementary tool in the diagnosis of unilateral lumbosacral radiculopathy.

KEYWORDS:
Electrodiagnosis; Magnetic resonance imaging; Muscle atrophy; Radiculopathy; Thermography

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