

Thermal Hypoesthesia Differentiates Secondary Restless Legs Syndrome Associated with Small Fibre Neuropathy from Primary Restless Legs Syndrome

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The aim of our study was to assess thermal and mechanical perception and pain thresholds in primary idiopathic restless legs syndrome (RLS) and secondary RLS associated with small fibre neuropathy (SFN).

Twenty-one patients (age 53.3 ± 8.4 , $n=3$ male) with primary RLS and 13 patients (age 62.4 ± 7.6 , $n=1$ male) with secondary RLS associated with SFN were compared with 20 healthy subjects (58 ± 7 ; $n=2$ male). Differential diagnosis of secondary RLS associated with SFN was made based on clinical symptoms, particularly burning feet and confirmed with skin biopsies in all patients. A comprehensive quantitative sensory testing (QST) protocol encompassing thermal and mechanical detection and pain thresholds as devised by the German Research Network on Neuropathic Pain (DFNS) was performed on the dorsum of both feet between 2pm and 1am while RLS symptoms were present in all patients.

Patients with idiopathic RLS showed hyperalgesia to heat ($p < 0.05$), blunt pressure (PPT: $p < 0.001$), pinprick ($p < 0.001$), and vibratory hyperesthesia (VDT: $p < 0.01$). Patients with secondary RLS associated with SFN showed thermal hypoesthesia to cold ($A\delta$ -fibre mediated) and warm (C-fibre mediated) (all $p < 0.001$), and hyperalgesia to blunt pressure ($p < 0.05$) and pinprick ($p < 0.001$).

Patients with secondary RLS showed significantly increased thermal detection thresholds. Static mechanical hyperalgesia in primary and secondary RLS is consistent with the concept of central disinhibition of nociceptive pathways, which might be induced by conditioning afferent input from damaged small fibre neurons in secondary RLS.