Peripheral nerve compressions in the lower extremities aggravating restless legs syndrome (RLS) severity: a new therapeutical option for selected patients

Martin Raghunath, MD

Plastic Surgeon and Hand surgeon, Munich/ Frankfurt, Germany

Introduction: RLS is a clinically diagnosed somatosensory network disorder. The pathophysiology is not completely understood. Until now the role of the peripheral nerve system remains unclear. A key role of spinal neuromodulation by dopamine and a hyperexcitability of the spinal cord with disinhibition of spinal cord reflexes is assumed. Considering the afferent part of the spinal cord reflexes, peripheral nerve pathology could play a role by triggering the reflexes and symptoms of RLS. This paper investigates the effect of surgical treatment of peripheral nerve compression in the lower extremities on the RLS severity and pain level.

Methods: From 06/08 to 06/11 70 decompression procedures have been performed after identification of combined peripheral nerve compressions in the lower extremities of patients with severe RLS and pain. N=16 patients have been treated on both sides (32 decompression procedures) and examined after a follow-up of at least 4 months to 3 years (ø 16,7 months).

All 16 patients (8 women, 8 men) met the four RLS diagnostic essential criteria. They were diagnosed and conservatively treated by neurologists. The average age was 65.9 years (44-76 y), age of onset 14- 67 years (ø 47,4 y), duration of RLS 3-55 y (ø 18,86 y).

The sites of peripheral nerve compressions were identified by careful localisation of the symptoms, by clinical examination of the anatomical sites of potential compression of the corresponding nerve (tenderness, Tinel-sign) and sensory testing (pressure specified sensory device, PSSD ^{TM}) for 1- and two point touch. Neurologists diagnosed neuropathy in 6 cases. 5 patients had diabetes, 2 with neuropathy.

The combined nerve compressions were surgically treated in both lower extremities in a two-step procedure. The decompressed nerves were common peroneal nerve and branches (14), tibial nerve and branches in the tarsal tunnels (12), tibial nerve at the hiatus m. solei (3), N. saphenous /femoral nerve branches in the adductor canal (3), lateral femoral cutaneous (3), Nn. digitales plantares communes between the heads of metatarsal bones (3).

Pre- und postoperative assessments of the RLS severity and pain level was performed by the International RLS Study Group Severity Scale (IRLS), visual analogue scale (VAS) and the pain detect questionnaire (Pfizer).The patients were asked to estimate the improvement in percentage and the drug intake was documented.

Results: The average IRLS score improved from preoperatively 32.8, postoperative 14.1. Assessment by patients showed a global improvement of >75% in 8 cases, > 50% in 5 cases and 3 patients did not improve.
The pain level (VAS) was reduced from ø 7.68 preoperative to 3.09 postoperative. The Pain detect scores improved from an average 17.6 (7-28) preoperative to 8.9 (4-19) postoperatively.
Thirteen patients were able to reduce specific drugs, 7 patients reduced drugs by approximately 75-100%. Two patients no longer required drugs (follow-up 13 and 19 months after second surgery).
Fourteen patients had an improvement of sensibility measured by the PSSD.

Conclusion: The influence of peripheral nerve compression in RLS is shown.
There seems to be a subgroup of RLS patients, whose symptoms are aggravated by peripheral nerve compressions. These patients are characterised by high severity of RLS and a high level of pain. High levels of pain, higher than those seen in other RLS studies, may be an additional indicator to search for nerve compression, which could then be surgically treated.