TITLE: **IDENTIFICATION OF PERIPHERAL NEUROPATHIC PAIN SENSORY PHENOTYPES BASED ON SPECIFIC COMBINATIONS OF SYMPTOMS IDENTIFIED WITH THE NPSI (NEUROPATHIC PAIN SYMPTOM INVENTORY)**

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Abstract

One way to better personalized the treatment of peripheral neuropathic pain (PNP) would be to identify specific sensory phenotypes of patients responding to different classes of drugs. Recent results have suggested that quantitative sensory testing (QST) could be useful, but these psychopysical methods are expensive and time consuming. Here we tested whether sensory phenotyping could rely on neuropathic pain symptoms assessed with a simple self-questionnaire: the Neuropathic Pain Symptom Inventory (NPSI).
We first performed a clustering analysis of the 10 NPSI items in a cohort of 628 PNP patients. Three clusters were identified on the basis of specific combinations of neuropathic pain symptoms: above-average pressing pain (cluster 1); higher evoked pain (cluster 2), and above-average paresthesia/dysesthesia (cluster 3). To verify the clinical relevance of these three pain phenotypes, we performed post hoc analyses of two pooled multicenter randomized controlled trials of the effects of subcutaneous injections of botulinum toxin A. All 94 PNP patients included in these studies were assigned at baseline to one of three predefined NPSI clusters. In the placebo arm, no difference was observed between clusters. In the active arm, patients from cluster 3 had no treatment response and were not better than placebo patients. By contrast, in patients included in clusters 1 and 2, the effects of botulinum toxin were significantly better than those of placebo. These results tend to confirm that it is possible to identify relevant sensory phenotypes of neuropathic pain patients predictive of treatment response on the basis of specific combinations of symptoms

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