Update on laser-evoked potential findings in fibromyalgia patients in light of clinical and skin biopsy features

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Abstract In fibromyalgia (FM), reduced habituation of laser-evoked potentials (LEPs) suggests a dysfunction of pain processing at a central level. In this study, we aimed to further examine the nociceptive pathways at the peripheral to the central level in a large group of FM patients by means of LEPs and skin biopsy, in light of healthy controls findings and main clinical features. One hundred and ninety-nine FM patients and 109 age- and sex-matched controls were submitted to LEPs by the dorsum of the right hand and the skin over the right chest and knee tender point stimulation. Skin biopsy was performed in 21 randomly selected FM patients and 60 age- and sex-matched controls. The mean N2–P2 amplitude was reduced in the whole FM group, with normal or even increased values in patients with migraine as comorbidity and reduced values in other patients including those presenting with distal sensory deficits. All patients had reduced N2–P2 habituation in respect to controls. In the FM group, LEPs habituation was correlated with pain at tender points and bad quality of life. Epidermal fiber density was significantly reduced in FM patients versus controls, and correlated with N2–P2 amplitude by the hand and chest tender-point stimulation. Dysfunction in the nociceptive system at both the central and peripheral levels may concur to explain phenotypical heterogeneity and clinical symptom complexity in fibromyalgia.

Keywords Fibromyalgia · Laser-evoked potentials · Skin biopsy · Peripheral and central nervous system dysfunction

Introduction

Fibromyalgia (FM) is a chronic disorder characterized by widespread pain and tenderness on palpation. The associated symptoms, identified by new diagnostic criteria, include non-restorative sleep, fatigue, and cognitive dysfunction [1]. FM affects up to 5% of the general population worldwide and is associated with high medical and social costs [2]. The pathophysiology of FM remains largely unknown, however, an increase in central sensitization phenomena, probably based on abnormal pain modulation, is recognized in fibromyalgia as well as in other ‘centrally driven’ chronic pain syndromes [3]. There is increased