Small Fiber Neurophaty in a Cohort of Multiple Sclerosis: the Fidenza MS Centre experience

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Objective: Pain and sensory symptoms are reported in up to 80% of pwMS, with prevalence of neuropathic pain at approximately 26%. Historically, pain in MS has been mostly attributed to central lesions. Some recent studies have shown that also small, non-myelinated, fibers are affected in pwMS with neuropathic pain and autonomic symptoms. The aim of this study is to characterize the presentation of small fiber neuropathy (SFN) in people with multiple sclerosis (pwMS) who suffer from neuropathic pain and/or dysautonomia in a pwMS of Centre Fidenza.

Materials and Methods PwMS who present signs/symptoms of neuropathic pain and/or dysautonomia not justified by the underlying disease will be recruited. They will first undergo a clinical evaluation, including the use of **scales for neuropathic pain and dysautonomia (DN4Q and SFN-SIQ**), followed by a ENG. ENG will include the execution of: **VCS** (study of the sural nerve, dorsal branch of the sural nerve, and median nerve), **VCM** (study of the common peroneal and median nerves with F-wave recording), **sympathetic skin response** (recording in response to respiratory, acoustic, and electrical stimuli), **cutaneous silent period, and heart rate variability**. PwMS with a clinical picture compatible with small fiber neuropathy and whose neurophysiological study excludes the presence of neuropathy of large and medium caliber fibers, they will be subjected to a skin biopsy.

Results: From May until now, we have tested 25 pwMS. Age under 18 years, other CNS diseases, cognitive disturbances, psychiatric disorders, patients with symptoms and signs meeting the American College of Rheumatology criteria for fibromyalgia syndrome were considered a priori exclusion criteria; The **Besta criteria**, published in 2008 were applied. All PwMS were found to have reduced IENFD, 4 of wich had significantly decreased IENFD meeting criteria for a dg of SFN and 1 had borderline low IENFD with suggestive clinical history for SNF. None of them agreed to undergo a biopsy.

Discussion: This small case series, which will be implemented with data collection until May 2028, indicates small fiber neuropathy as a potential cause of neuropathic pain and dysautonomia in pwMS. Symptoms of SFN and dysautonomia have a wide range of manifestations in this population. At the moment, we cannot draw correlations between the SNF and presence or absence of therapy or of particular treatment.

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