



EVALUATING THE ROLE OF AUTONOMIC DYSFUNCTION IN MULTIPLE-SCLEROSIS RELATED FATIGUE

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Background

Autonomic dysfunction presents itself in a multitude of symptoms including nausea, bloating, and abdominal pain that are prevalent in patients diagnosed with multiple sclerosis and has previously been found in 45% to 80% of the MS-population (Racosta et al, 2015 p. 1). Numerous studies have determined the applicability of evaluating for autonomic dysfunction in individuals exhibiting multiple-sclerosis (MS) which includes quantitative measurements suggesting the interaction between autonomic dysfunction and MS duration and evolution. Autonomic dysfunction—specifically cardiovagal, sudomotor, and adrenergic dysfunction—has been well established in prior MS-populations, which contributes to the heterogenous, multi-focal nature of this specific disease burden. One of the main clinical symptoms that is anchored to cardiovascular autonomic dysfunction is fatigue (Pinter et al, 2015). Fatigue is a prevailing symptom that many MS patients experience which can manifest both mentally and physically and has the ability to influence daily function in these individuals. These manifestations can be evaluated both subjectively and objectively. The potential contributing neuroanatomical structures that contribute to MS-related fatigue include the vagus nerve and interoceptive brain portions, which are also considered to be central parts of the autonomic nervous system (Sander et al, 2017) . Further evaluation and understanding of present autonomic dysfunction in MS patients as well as the role between dysfunction and fatigue could provide valuable insight into the overlapping symptomatic burden experienced by these individuals. This understanding could have lasting effects clinically and could elucidate a more comprehensive treatment plan that emphasizes this cross-correlation.

Method and Objective

Our group has previously established a link between MS-related fatigue and patient-reported autonomic symptom burden in MS patients (Cortez et al, *Mult Scler Relat Disord* (2015) 4:258-63). One of the main objectives of this study is to confirm the severity of fatigue by the means of a short standardized and validated questionnaire, combined with evaluation of autonomic symptoms and *physiological* function in MS patients. For this, we plan to test autonomic function through a standardized battery of autonomic reflex testing, and co-administer the Composite Autonomic Symptom Score 31 (COMPASS 31) with the Fatigue Severity Scale (FSS). Lastly we will use this data to determine whether there is a correlation between autonomic function and fatigue scores, allowing us to test the hypothesis as to whether autonomic dysfunction is a contributor to MS-related fatigue.