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## Exploring the association between fatigue and autonomic dysfunction in Multiple Sclerosis

**Oliver W Tolson**  
Newcastle University, UK

**Background:** Fatigue is a common debilitating symptom of multiple sclerosis (MS) but its pathophysiology remains poorly understood. Recent studies in a variety of diseases have shown dysfunction of the cardiovascular autonomic nervous system correlates with fatigue severity.

**Objectives:** To investigate the prevalence of fatigue and orthostatic intolerance in a representative MS cohort. To objectively assess fatigued secondary-progressive patients for cardiovascular autonomic dysfunction.

**Methods:** Fatigue severity and orthostatic intolerance were measured using validated questionnaires in 144 patients (85.2% response). Subsequently, 11 fatigued secondary-progressive MS patients underwent objective assessment of resting heart rate variability (HRV) and blood pressure variability (BPV).

**Results:** Fatigue was identified in 74.8% of MS patients, with fatigue severity significantly higher in secondary-progressive patients. Moderate orthostatic intolerance was identified in 54.3% of patients and correlated significantly with fatigue ( $r=0.49$ ,  $p<0.0001$ ). Objective assessment revealed significant reductions in low-frequency HRV and BPV in the fatigued secondary-progressive group versus controls. A substantial reduction was seen in low-frequency systolic BPV (33.6% versus 48.9%,  $p=0.03$ ), an established marker of sympathetic vasomotor function. Furthermore reductions in this parameter correlated significantly with orthostatic symptoms ( $r=-0.87$ ,  $p=0.0007$ ) and fatigue severity ( $r=-0.66$ ,  $p=0.03$ ).

**Conclusions:** Fatigue severity correlates significantly with increasing orthostatic intolerance. Additionally, fatigued secondary-progressive patients have objective evidence of sympathetic vasomotor dysfunction.

### Biography

Oliver Tolson completed his medical degree at Newcastle University Medical School, following completion of his Masters in Research in 2014. He was awarded a Wolfson Intercalated Award in 2013 to fund this research into fatigue and autonomic dysfunction in multiple sclerosis.

[oliver.tolson@doctors.org.uk](mailto:oliver.tolson@doctors.org.uk)

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