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Title: Neurogenic Obesity and Body Composition to Determine Cardiometabolic Risk after Spinal Cord Injury

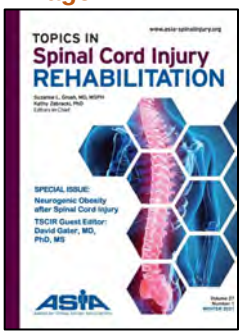
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Abstract (300 word limit)

The purpose of this presentation is to define neurogenic obesity and to describe the state-of-the-science regarding pathophysiology, consequences and potential interventions for persons with spinal cord injury (SCI). Neurogenic obesity, characterized by excess adipose tissue (AT) after SCI, occurs due to an obligatory sarcopenia, neurogenic osteoporosis, neurogenic anabolic deficiency, sympathetic dysfunction and blunted satiety. These physiological changes alter energy balance such that energy intake exceeds energy expenditure, and AT accumulates subcutaneously (SAT) and around the abdominal viscera (VAT). As the body composition changes from dense muscle and bone tissue to accumulated AT, body weight may remain the same or even decrease, leading clinicians to likely underestimate obesity if only considering body weight. Body composition assessment for SCI is a relatively expensive, labor-intensive process and recent regression equations have been provided to ease the assessment burden and estimate the percentage of AT relative to lean mass. AT drives the metabolic syndrome by secreting pro-inflammatory cytokines and other adipokines that facilitate systemic vascular inflammation, impair insulin sensitivity, mediate hypertension and promote dyslipidemia. Additional comorbidities associated with neurogenic obesity will also be discussed including upper extremity overuse, nociceptive pain, neuropathic pain and sleep disordered breathing. In addition to pharmacological management strategies, lifestyle interventions will be discussed to optimize energy balance and AT loss, including dietary and exercise interventions. The need for future research on satiety, body composition assessment, dietary intake and exercise interventions to reduce neurogenic obesity after SCI will be discussed.

Image



Recent Publications (minimum 5)

1. Gater DR, Farkas GJ, Tiozzo E. Pathophysiology of Neurogenic Obesity after Spinal Cord Injury. TSCIR 2021; 27(1):1-10.
2. Gater DR, Farkas GJ, Dolbow DR, Berg A, Gorgey AS. Body Composition and Metabolic Assessment after Motor Complete Spinal Cord Injury: Development of a Clinically Relevant Equation to Estimate Body Fat. TSCIR 2021; 27(1):11-22.
3. Gordon PS, Farkas GJ, Gater DR. Neurogenic Obesity-Induced Insulin Resistance and Type 2 Diabetes Mellitus in Chronic Spinal Cord Injury. TSCIR 2021; 27(1):36-56.
4. Farkas GJ, Sneij A, Gater DR. Energy Expenditure Following Spinal Cord Injury: A Delicate Balance. TSCIR 2021; 27(1):92-99.
5. McMillan D, Maher JL, Jacobs KA, Nash MS, Gater DR. Exercise Interventions Targeting Obesity in Persons with Spinal Cord Injury. TSCIR 2021; 27(1):109-120.



Photograph

Biography (150 word limit)

Dr. Gater is Professor and Chair of Physical Medicine & Rehabilitation at the University of Miami Miller School of Medicine as well as the Spinal Cord Injury Fellowship Program Director and the Chief Medical Officer of Rehabilitation at the Christine E. Lynn Rehabilitation Center for the Miami Project to Cure Paralysis. Dr. Gater has board-certifications in PM&R, Electrodiagnostic Medicine and the subspecialty of Spinal Cord Injury Medicine. He is currently President of the American Paraplegia Society, President-Elect of the Academy of Spinal Cord Injury Professionals and has published more than 125 manuscripts in peer-reviewed journals. His research emphasizes the effects of diet and exercise training on energy metabolism, glucose and lipid metabolism, obesity / body composition, cardiovascular fitness, neuroplasticity and functional outcomes in Spinal Cord Injury, and he has been funded by NIH, NIDILRR, AHA, PVA SCRF, CH Neilsen Foundation and the VHA.

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