ASSOCIATIONS BETWEEN HEART RATE VARIABILITY AND THE SENSORY-MOTOR NERVOUS SYSTEM IN NEUROREHABILITATION PATIENTS WITH SEVERE ACQUIRED BRAIN INJURY

Simon Tilma Vistisen¹,², Jim Jensen¹, Jesper Fleischer³, Jørgen Feldbæk Nielsen¹

¹ Hammel Neurorehabilitation Centre and University Research Clinic, Aarhus University
² Research centre for Emergency Medicine, Institute of Clinical Medicine, Aarhus University
³ Department of Endocrinology and Internal Medicine and the Medical Research Laboratories, Aarhus University Hospital.

Background
- Acquired brain injury (ABI) cause motor and cognitive neural deficits but the autonomic nervous system (ANS) is also affected.
- How the development of motor and cognitive function relates to ANS function during ABI neurorehabilitation has only been investigated sporadically and only in traumatic brain injury patients [1].

Aim
- To characterise ANS function and its relation to ABI patients’ clinical function

Hypothesis
- Clinical function and its development in severely injured patients is associated to autonomic nervous system function, defined as heart rate variability (HRV).

Methods
- 49 patients had admission HRV data extracted.
- Follow-up HRV extracted from 19 patients at least 28 days later.
- HRV variables extracted:
  - standard deviation of normal-to-normal intervals (SDNN)
  - low frequency (LF)

Results
- SDNN and LF statistically significantly correlated to EFA at follow-up but not on admission (figure 1 and 2).
- Generally, SDNN and LF development were statistically significantly correlated to EFA development (figure 3).
- Admission SDNN and LF were not prognostic regarding EFA development.

Conclusion
- HRV and its development was generally associated to EFA and its development in heterogenic acquired brain injury.
- Further studies are needed to clarify a number of issues and limitations arising from this hypothesis generating observational study.

References: