Cardiac Autonomic Dysfunction in Day and in Night Time Possible Predictor of Functional Outcome in Post-acute Ischaemic Stroke

A. Bassi 1, F. Colivicchi 2, L. Serra 3, M. Bozzali 3, C. Caltagirone 1, 4

1 Department of Clinical and Behavioural Neurology, Santa Lucia Foundation, IRCCS, Rome, Italy
2 Cardiovascular Department, San Filippo Neri Hospital, Rome, Italy - Department of Neuroscience, University of Rome 'Tor Vergata', Rome, Italy.

Introduction

Cardiac Autonomic dysfunction frequently occurs after an acute cerebrovascular accident and it is often asymptomatic (1). Predominance of sympathetic activity is common in patients with acute ischemic stroke, while autonomic unbalance has been associated with worse clinical and functional outcome. Aim of the study is to evaluate autonomic unbalance in post-stroke patients as assessed by selected Heart Rate Variability (HRV) measures. Besides, the role of such HRV parameters as possible predictors of functional outcome in the post-acute setting of stroke was also assessed.

Methods

STUDY DESIGN

Forty-six Consecutive patients reporting to the rehabilitation institute for acute stroke (in a 2.5-year period) were screened and included in the study only if they fulfilled the inclusion criteria (n=962). The presence of major concurrent medical conditions potentially interfering with HRV were carefully excluded in all patients. Patients in a sub-acute stage (within 15 days from the index event) after their first-ever acute stroke were recruited for the present study.

24-hours holter monitoring (HM) was performed to characterize HRV. Moreover, HRV values in time and frequency domain were achieved from selected and stabilized period (3 hours) from HM recording, during the day (06:00-13:00, not in supine position) and night (23:00-06:00).

Holter monitoring HRV assess cardio-autonomic control with calculations based on statistical operations on R-R intervals. Time-domain measures of HRV, including standard deviation of all normal-to-normal R-R intervals (SDNN) and root-mean-square of differences of adjacent normal-to-normal R-R intervals (rMSSD); frequency-domain measures are respectively assessed by the power of low and high frequency (HF, LF) components of the spectrum by beat interval. Cogntive Global cognitive performance, attention shifting and language disorders were evaluated on the basis of the final Barthel scale at discharge (cut-off=75). A two-way ANOVA (2x2) was employed to assess night and day differences. Moreover, multiple regressions were used to predict the functional outcome after rehabilitation treatment.

Bibliography