

Assessing Sympatho-Vagal Balance in Schizophrenia through Tone-Entropy Analysis

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Although schizophrenia patients more likely commit suicide, however, more than two thirds of patients with schizophrenia, compared with approximately one-half in the general population, die of coronary heart disease (CHD). Early screening and treatment of cardiovascular disease risk factors in those patients could prevent the adverse consequences. The aim of this study, therefore, is to determine whether Tone-Entropy (T-E) analysis method can determine how and to what extent the symaptho-vagal balance is altered with the severity of psychiatric disorders as determined by Global Assessment of Functioning (GAF) scale. Tone represents sympatho-vagal balance and entropy, the autonomic regularity activity. This study included 32 high-GAF, 32 low-GAF and 118 healthy control subjects. Evaluated tones $[-0.0090 \pm 0.0111$ (low-GAF); -0.0156 ± 0.0173 (high-GAF); -0.0620 ± 0.0476 (healthy)] and entropies $[4.2744 \pm 0.4205$ (low-GAF); 4.8619 ± 0.3070 (high-GAF); 5.0275 ± 0.2140 (healthy)] are significantly ($P < 0.01$) different among three groups. The curve-linear trend revealed in two-dimensional T-E space plot is consistent with standard T-E values obtained in an experiment of standard perturbations of autonomic function in healthy subjects obtained in our previous study [Khandoker et al, Med Engg & Phys, 32 (2010):161-167]. The significantly higher tone and lower entropy in the low-GAF group might suggest altered sympatho-vagal balance which could predict increasing risks of cardiovascular death.