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Elevated Circulating microRNAs and Vasoactive Amine Metabolites in Neurocardiogenic Syncope Patients

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O**bjective:** Syncope is a common clinical problem challenging both cardiologists and general practitioners. This study is an attempt to introduce possible biomarkers for syncope.

Materials and Methods: Nineteen patients with history of syncope and nineteen sex and age matched healthy controls participated. A detailed medical history was recorded and a cardiovascular examination followed by head up tilt table testing (HUTT) were performed. Three blood samples were withdrawn, first one at baseline, second during syncopal attack and third one after 30 minutes from the end of the tilt test. The levels of three circulating microRNAs (miR-210, miR-1 and miR-34a) and three vasoactive amine metabolites (endothelin-1, copeptin and serotonin) were quantified.

Results: In Group A, copeptin significantly increased during syncopal attack by 21.7 ± 0.45 pg/mL vs 4.3 ± 1.209 pg/mL in control subjects (Group B; P= 0.002). Similarly, endothelin-1 values significantly rose by an average of 28 ± 1.25 pg/mL in syncope patients versus 3.35 ± 0.75 pg/mL in healthy controls (P<0.001). While Serotonin (5-HT) levels were significantly greater during syncope relative to baseline in HUTT positive patients by 95.89 ± 3.7 pg/mL versus 9 ± 1.43 pg/ml (p<0.001) in control subjects. In summary, vasoactive amines increased with a 3-5 fold change in group A, but showed 1-2 fold increase in the control group. In group A, miR-210 increased by mean of 0.6 ± 0.09 (p<0.001) during syncope (95% CI [0.4, 0.79]). While miR-34a values increased by mean of 0.89 ± 0.22 during syncope than baseline value (95% CI [0.42, 1.36]) with significant difference of P =0.001. Likewise, miR-1 levels was elevated by an average of 0.42 ± 0.07 (95% CI [0.26, 0.58]) with a p<0.001 significance. miRNA levels were 3±1 fold higher in the syncope patients (Group A) than in controls.

Conclusion: The selected miRNAs and vasoactive amines have a very promising diagnostic and therapeutic potential as biomarkers in diagnosing syncope.

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