

Heart rate increment: an electrocardiological approach for the early detection of obstructive sleep apnoea-hypopnea syndrome.

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The prevalence of obstructive sleep apnoea-hypopnea syndrome (OSAHS) is high in developed countries and it is estimated that the vast majority of patients remain undiagnosed. Based on physiological evidence, we evaluated the frequency component of heart rate increment (HRI) as a simple and inexpensive screening tool for OSAHS detection in a first group of patients (G1) and validated their discriminant capacity in a second group (G2). The predictive accuracy of hourly frequency-domain HRI variable obtained from nocturnal ECG Holter monitoring "%VLFI", was analysed by comparison with hour by hour respiratory disturbances index assessed by complete polysomnography in 28 consecutive clinically suspected OSAHS patients for G1 and in 35 patients for G2. OSAHS was present in 20 patients according to a mean hourly apnoea plus hypopnea index > 10 in G1 and prevalence reached 77.1% in G2. Sensitivity, specificity, positive and negative predictive accuracy were calculated and a receiver operating characteristic (ROC) curve was constructed for several polysomnographic threshold values. In G1, hourly %VLFI appears as an evident predictor of apnoea plus hypopnea index ($W=0.848$, $p<0.0001$). Using an appropriate threshold (value > 3.2%), %VLFI demonstrated a sensitivity of 78.1% and a specificity of 70.4%. These threshold, applied to G2, yielded a sensitivity of 73.9% and a specificity of 76.6%. Frequency-domain analysis of the heart rate increment appears as a powerful tool for OSAHS prediction. The simplicity of its analysis and of its use makes of it a particularly well-suited variable for routinely mass screening in high-risk populations undergoing ECG Holter monitoring.

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