Screening of sleep apnea-hypopnea syndrome by ECG derived respiration of ambulatory electrocardiogram

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Abstract
Objective To evaluate the feasibility of screening sleep apnea-hypopnea syndrome (SAHS) by electrocardiogram derived respiration (EDR) of ambulatory electrocardiogram (AECG) monitoring. Methods The overnight sleep investigation was administered to 80 subjects by polysomnogram (PSG) and 24 hours AECG monitoring simultaneously during February through November, 2004. The electrocardiogram analyzers did not know the PSG results at all, They were both asked to give the apnea hypopnea index (AHI) by EDR and PSG respectively. The PSG result was considered as the gold standard so as to evaluate the feasibility of screening SAHS from EDR of AECG monitoring. Results The average age, male gender, body mass index, history of hypertension were higher in the SAHS(+) patients than those of the SAHS(-) patients. Automatic analysis was performed with software in a sensitivity of 75%, 87.5% and 100% respectively. When software sensitivity adjusted to 75%, the sensitivity of screening SAHS with EDR was 26.7%, with the specificity of 80%, the positive predictive value of 80%, the negative predictive value of 26.7%, the diagnose accordance rate of 40%. When software sensitivity was adjusted to 87.5%, the sensitivity of screening SAHS with EDR was 55%, with the specificity of 45%, the positive predictive value of 75%, the negative predictive value of 25%, and the diagnose accordance rate of 52.5%. When software sensitivity was adjusted to 100%, the sensitivity of screening SAHS with EDR was 88.3%, with the specificity of 35%, the positive predictive value of 84.1%, the negative predictive value of 50%, and the diagnose accordance rate of 75%. Conclusion: EDR technique of AECG was useful to screen the suspicious SAHS patients, sensitivity and the diagnosis coincidence rate was higher when the sensitivity of automatic analysis software was adjusted to 100%.