Keynote Speaker

Development of Easy SAS Checking System by Breath Sound Measurement

Zhongwei Jiang^{a,*}

^aYamaguchi University, Japan

*Corresponding Author: jiang@yamaguchi-u.ac.jp

Abstract

Sleep apnea syndrome is hard to be found and it may cause a serious problem if the state is gradually worsened. Since, sleep apnea syndrome applies big load on the heart, brain and blood vessel, the merging the risk of cardiovascular disease is higher compared to healthy individuals. According to the study over 18 years in the United States, the mild SAS patients, whose apnea-hypopnea index (AHI) is higher than 5, has the 5.2 times higher risk of death from cardiovascular disease than the normal persons.

Nocturnal polysomnography (PSG) is the only equipment used in hospital to monitor and quantify the number of respiratory events (i.e., obstructive, central, or complex) and the resultant hypoxemia and arousals related to the respiratory events or even independent of the respiratory events. However, night-to-night variability may exist in patients who have a high probability but a low apnea index. Further, it costs a lot and influences the normal sleeping state

The author presents a novel method and simple system to monitor the SAS events by measuring the breathing sound. The monitoring system consists of a wireless microphone and smartphone for breathing sound measurement and data transmission to the data analysis server. The breathing sound will be recorded during the whole night sleeping and the result will be reported when he/she waked up in the morning. The proposed system and method are validated with comparisons of the commercial devices such as the SleepScan made by Tanita and Sleep Meter by Omuron. Furthermore, the results obtained by our system has good agreement with the results obtained by the nocturnal polysomnography in the hospital. The proposed system shows the high potential to be a convenient device to monitor sleep apnea events and sleep state at home.