Shifting of phase-angle for diagnostics of sleep-related breathing disorders

Hein H. (1), Küchler G. (2)

(1) Practice for internal medicine, pneumology, allergology and somnology, D-21465 Reinbek

(2) SOMNOmedics GmbH, D-97236 Randersacker

Summary

Question:
We analyzed if breathing disorders can be identified by measuring the signals of phase-angle-shifting (periodic elapsed procedures with the same frequency, where the zero-value-trial appears at staggered moments) of thorax- and abdomen-belt.

Patients and Methods:
All data, both the cardio-respiratory polysomnographies that were recorded in a sleep laboratory during a consecutive period of 6 days and analyzed by hand acc to the DGSM standards and the generated quantity of obstructive and central breathing disorders that were calculated by signals from thorax and abdomen-belts via phase-angle-shifting where compared to each other.

Results:
There was data available from 36 patients (10 women and 26 men, age 58±13 years, BMI 31±4 kg/m², 14 measurements without and 22 measurements with CPAP). The generated breathing-disorder-index acc. To the DGSM-criteria (obstructive / mixed / central apnea, hyponea and flow-limitations) was at 16±10,8/hour, the index acc. To the phase-angle-shifting was at 13,9±9,1/h; both results correlate with r = 0911. A Bland-Altman-Plot illustrated the results:

Conclusion:
The phase-angle-shifting is a sensitive and very suitable instrument for the identification of sleep-related breathing disorders.

Keywords: sleep-related breathing disorders, shifting of phase-angle

Accepted for presentation at German Sleep Congress 2008 in Kassel