Poster
  Schlafmedizin: Sleeping Disorders

EEG-EMG-coherence in SDB patients with utilization of a support vector machine-algorithm

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Kongressbeitrag (/products/ejournals/abstract/10.1055/s-0038-1640952)	Volltext

Background:

We investigated whether the EEG-EMG-coherence allows a differentiation between patients with sleep-disordered breathing (SDB) without OSA and SDB-patients with mild, moderate or severe OSA.

Methods:

Polysomnographic recordings of 102 patients with SDB (33 female; age: 53,± 12,4 years) were analyzed with the multitaper coherence method (MTM). Recordings contained 2 EEG-channels (C3 and C4) and a chin EMG-channel for one night.

Four epochs (each 30 seconds, classified manually by AASM 2007 criteria) of each sleep stage were marked (1632 epochs in total), which were included in the classification analysis. The collected data sets were supplied to the support vector machine (SVM) algorithm to classify OSA severity. Twenty patients had a mild (RDI ≥10/h and < 15/h), 30 patients had a moderate (RDI ≥15/h and < 30/h) and 27 patients had a severe OSA (RDI ≥30/h). 25 patients had a RDI < 10/h. The AUC (area under the curve) value was calculated for each receiver operator curve (ROC) curve.

Results:

EEG-EMG coherence was able to distinguish between the SDB-patients without OSA and SDB-patients with OSA in each of the 3 severity groups using an SVM algorithm. In mild OSA, the AUC was 0.616 (p = 0.024), in moderate OSA the AUC was 0.659 (p = 0.003), and in severe OSA the AUC was 0.823 (p < 0.001).

Conclusions:

SDB patients with OSA can be differentiated from SDB patients without OSA on the basis of EEG-EMG coherence by using the Multitaper Coherence Method (MTM) and SVM algorithm.

No conflict of interest has been declared by the author(s).

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