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Does REM sleep Fragmentation affect micro- and macro-structure features of Slow Wave Sleep?

Saturday, September 13, 2025 2:10 PM (20 minutes)

In sleep disorders characterized by alterations in REM sleep, such as REM sleep behavioral disorder (RBD), also the quality of slow-wave sleep (SWS) is often affected. However, no direct causal relationship between REM sleep disruption and SWS impairment has been demonstrated.
In the current study, we examined the effects of experimental REM sleep fragmentation through vibrotactile stimulation on the macro- and micro-structural characteristics of SWS in healthy subjects.
Eleven healthy participants underwent high-density EEG polysomnography during two counterbalanced conditions: "Fragmentation"night, with vibrotactile stimulation to induce cortical arousals during REM sleep, and a "Control"night of undisturbed sleep.
We assessed sleep macrostructural variables and SWS spectral power in standard frequency bands for periods following the first REM sleep cycle. Additionally, we analyzed the morphological characteristics (amplitude, duration, frequency, slope) of slow waves using an automatic detection algorithm. The two conditions were compared using paired sample t-tests.
Analysis of the macrostructural variables confirmed the effectiveness of the experimental REM sleep fragmentation, with an increase in the REM sleep fragmentation index ($t_{11}=9.41$; $p<.001$) and a slight reduction in its duration ($t_{11}=-5.67$; $p<.001$). Data analysis revealed no significant differences in SWS duration or spectral power across frequency bands nor in slow wave characteristics between the control and fragmentation nights.
These findings suggest that experimentally induced REM sleep fragmentation in healthy subjects does not significantly affect the macrostructure or microstructure of SWS. However, further research is needed to fully understand the effects of REM sleep fragmentation on overall sleep quality and its clinical relevance.

If you're submitting a symposium talk, what's the symposium title?

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?

No

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