

## Sleep Perception in Patients with Sleep Disorders

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**INTRODUCTION** If healthy young sleepers are deliberately awakened from REM sleep (REMS) they perceive the preceding state in more than 80% as sleep, while this is the case in only about 60% after awakening from consolidated stage 2 (S2) sleep [1]. The aim of the present study was to evaluate the perception of sleep in sleep disordered patients after deliberate awakenings from either stage 2 (S2) or REM sleep (REMS).

**METHODS** Seventy-four patients (24 males, 50 females; age median: 53 years, range: 21 – 72 years) were woken up once during the second night in the sleep laboratory, either out of undisturbed S2 sleep (39 patients) or REMS (35 patients) and interviewed in a standardised manner. The awakening condition was randomly allocated. 21 patients had a diagnosis of excessive daytime sleepiness (EDS, mainly narcolepsy or hypersomnia), 44 had a disorder of initiating or maintaining sleep (DIMS, mainly insomnia or restless legs syndrome, RLS), while 9 patients had other diagnoses (e. g. parasomnias, or sleep schedule disturbances).

**RESULTS** Sleep perception differed clearly between S2 and REMS. While REMS was perceived as sleep in 88.9% (32/36) of all awakenings, the percentage of sleep ratings was only 59.0% (23/39) for S2. When S2 was perceived as sleep, patients were *absolutely sure* in 65.2% and *quite sure* in 34.8%. The estimates were similar for REMS with 50.0% *absolutely sure*, 31.3% *quite sure* 18.7% *not so sure*. S2 sleep was perceived as deep sleep in 47.9% (11 cases), as light sleep in 17.4% (4 cases), and as a transitional state in 30.4% (7 cases), while one case was undecided. In REMS the state was perceived as deep sleep in 34.4% (11 cases), as light sleep in 40.6% (13 cases) and as a transitional state in 12.5% (4 cases), while 4 other cases were undecided. From those subjects who reported to be awake in S2 sleep, only two (14.3%) were *wide awake*, while five (33.3%) were *awake but sleepy*, and eight (53.4%) were in a *transitional state between sleep and wakefulness*.

While REMS was perceived as sleep from the great majority of patients, independent from diagnosis, there was a clear difference in S2 sleep. The latter state was rated as sleep by 33.3% (n=8) of the EDS patients, by 45.9% (n=11) of the DIMS patients, and by 20.8% (n=5) of the patients with other diagnoses. In contrast, S2 sleep was rated as wakefulness by only 13.3% (n=2) of the EDS patients but 86.7% (13) of the DIMS patients.

**DISCUSSION** Subjective perception of the actual state after deliberate awakenings from physiologically defined sleep seems to be quite similar in patients with sleep disturbances and normal sleepers. While more than 80% of all subjects perceived REMS as sleep, this was the case for only about 60% of awakenings from consolidated S2 sleep. Patients with a diagnosis of EDS or DIMS differed only in S2 sleep but not in REMS judgements. The results suggest (a) that patients are as accurate as normal sleepers in their perception of the actual behavioural state, and (b) that diagnosis related differences are restricted to non-REM sleep, while the groups do not differ in the rating of REMS.

[1] Amrhein C, Schulz H: Selbstberichte nach dem Wecken aus dem Schlaf – ein Beitrag zur Wahrnehmung des Schlafes. *Somnologie* 4: 61-67, 2000.