Conclusions: The addition of microsleep onset to the MWT score markedly enhance the percentage of OSA considered as very sleepy and at risk at the wheel.

P1039

Comparison of visual sleep stage classification according to AASM and Rechtschaffen & Kales rules

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Objectives: In 2007, the Rechtschaffen and Kales (R&K) manual for visual sleep scoring [1] was revised, resulting in the new guidelines of the American Academy of Sleep Medicine (AASM) [2]. The goal of this study was to investigate the implication of these new criteria on the visual sleep stage classification.

Methods: 37 whole night sleep recordings were visually scored by an expert, according to the R&K and AASM rules. This data base was separated in two parts: the healthy subjects' one (16 women and 4 men aged between 20 and 65 years) and the patients' one (10 women and 17 men aged between 19 and 74 years) presenting various sleep disorders (dysomnia, periodic leg movements, insomnia, sleep apnoea, etc.). For each group, we determined the proportion of the different sleep stages according to R&K and AASM. We also examined of what previous R&K sleep stage (Wake-Movement REM-S1-S2-S3-S4) was composed each new epoch of AASM (W-R-N1-N2-N3).

Results: We noticed that the global time spent in each sleep stage were roughly similar whatever the guidelines used. Indeed, differences of only 1.01%, 0.39%, 0.35%, 1.94% and 3.23% were observed for stages Wake/W, REM/R, S1/N1, S2/N2, (S3 + S4)/N3 respectively. Nevertheless, we noted significant modifications in the distribution of sleep stages, particularly for stage N1 which is not only composed of previous stage S1 but which also comprised 25.89% of epochs classified as S2 according to R&K, 16.25% of Wake and 5.95% of REM. Similar results were observed for both the subjects and patients databases.

Conclusion: This study showed that application of the new standard guidelines does not limit to the gathering of the slow wave sleep stages. In particular, rules related to the determination of the beginnings and ends of periods of stage REM have considerable impact on the sleep stages distribution. This aspect is important to consider, especially by those who plan to adapt their automatic sleep scoring algorithm in the future.

P1040

Development of a non-invasive EEG recording technique for recording sleep in barn owls (Tyto alba pratincola)

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Objectives: Insight into the function of sleep may be gained by studying animals in the ecological context in which sleep evolved. Until recently, technological constraints prevented EEG studies of animals sleeping in the wild. However, the recent development of a small recorder (Neurologger 2) that animals can carry on their head permitted the first recordings of sleep in nature (Rattenborg et al., Biol. Lett., 2008). Herein we test the feasibility of using this technology in conjunction with non-invasive surface EEG electrodes in barn owls.

Methods: The EEG and behaviour of 2 adult male owls were recorded for 5 d in an aviary (13:11 L:D). The feathers on top of the head were cut and 2 electrodes (modified Blue Sensor BRS, Ambu) were glued to the skin symmetrically over each hemisphere. The anterior electrodes were placed over the middle portion of the hyperpallium (visual Wulst) and referenced to electrodes placed posterior to the Wulst. A ground electrode was centered between the other electrodes. The position of the electrodes was verified in a dead owl. A plastic cover was glued over the electrodes and logger for protection. The weight of the logger and batteries was 3.5 g. Bipolar recordings from each hemisphere were recorded at 200 Hz. We scored a 24-h baseline period for wakefulness, slow-wave sleep (SWS), and REM sleep using 4 s epochs, starting after a habituation period of about 40 h.

Results: We obtained good EEG signals that could be used to readily identify the owls' state. As in other birds, high-amplitude, low-frequency (1–3 Hz) waves distinguished SWS from wakefulness and REM sleep. However, power in the ~5–15 Hz band was higher during all states when compared to epidural recordings from other birds, including owls. The first owl spent 3.64 h awake, 8.11 h in SWS, and 1.31 h in REM sleep during the light phase and was mainly awake during the dark phase (7.41 h awake, 3.27 h SWS, 0.24 h REM sleep). The second owl was awake during the entire dark phase (10.94 h) and spent 3.90 h awake, 7.76 h in SWS, and 1.38 h in REM sleep during the light phase.

Conclusions: We demonstrate that non-invasive methods can be used to measure EEG-defined wakefulness, SWS, and REM sleep in owls. Interestingly, 5–15 Hz power was higher than that observed in other birds. Potential sources for this difference are currently under investigation. They include the species studied and electrode type, attachment and placement. Regardless of the source of this signal, the current method is suitable for recording sleep in owls in the wild.

P1041

The added value of dim light melatonin onset in diagnosing delayed sleep phase syndrome

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Objective: The aim of this study was to investigate the potential added value of the Dim Light Melatonin Onset test (DLMO) in diagnosing Delayed Sleep Phase Syndrome (DSPS) in adults and in children.

Methods: A PubMed, Embase and CINAHL search was performed to find relevant evidence concerning the clinical question. Title and abstract were screened using predetermined inclusion and exclusion criteria. The relevance and validity in selected articles were critically appraised.

Results: The literature search yielded 2881 articles of which 5 articles were selected for critical appraisal. One article was assessed as relevant to answer the clinical question in adults. The positive and negative predictive values of the test were both 87,5%. There was no relevant article to answer the clinical question in children, just a significant phase delay of salivary melatonin secretion onset in DSPS patients compared to controls is reported.

Conclusion: In adults, the added value of DLMO above sleep diaries combined with polysomnography is 32,5%. In children, the added value is still unclear. The added value of DLMO is only known in combination with polysomnography and sleep diary. Measuring DLMO can be recommended for adults suspected of DSPS only in

