psychomotor retardation and facial dysmorphia, that revealed a microduplication of X chromosome. In this context, OSAS must be discussed as an additional phenotypic manifestation of this chromosomic abnormality.
**Methods:** Case study and bibliographic review.
**Results:** Associations have been reported between: Genetic abnormalities and sleep disorders, genetic abnormalities and sleep apnea (for further review [2]), and especially genetic abnormalities and epilepsy, with 176 identified phenotypes in Orphanet website.
Regarding our case, the Xq25 microduplication, few relevant articles have been published. This rare genetic disorder is expressed through various phenotypes. However, epilepsy or OSAS are not identified as a phenotypic expression of this genetic anomaly.
Nevertheless, epilepsy is found in other distal microduplications of the X chromosome short arm, especially Xq26 and Xq28 (for further review). Regarding OSAS, Xq22 or Xq22-24 microduplications have been found, through obesity.
**Conclusions:** Our case has an unusual feature including OSAS, obesity, epilepsy and Xq25 microduplication. Of course, this association can be incidental, but can be also considered as a phenotypic and genetic intersection.
**Disclosure:** As investigator: RESMED Orcades study As study coordinator: SOMNOMED retrospective and prospective study of efficacy and side effects of the mandibular advance device "Somnodent" As principal investigator: FDA multicentric study of the ImThera Aura 6000 (Hypoglossal nerve stimulator for OSAS) - 3rd step.

## P155

### Effects of acupuncture of Zusanli (ST-36) on pain-induced sleep disruption

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**Objectives:** Chronic pain and sleep disruption reciprocally influence each other. Acupuncture of Zusanli (ST-36) has demonstrated the efficacy in analgesia and sleep improvement in ancient Chinese literature, however, there is a lack of scientific evidence. This study investigates the effects of acupuncture on analgesia and pain-induced sleep disruption, and further reveals the involvement of opioids in nucleus tractus solitarii (NTS).
**Methods:** Rats were implanted with electroencephalogram and electromyogram electrodes to record sleep, and a guide cannulae into the NTS for microinjecting opioid receptor antagonist. A 30-minute manual acupuncture at ST-36 was performed before the dark period and sleep was recorded for 24 h. Complete freund´s adjuvant (CFA) was injected intradermally into right hind paw to induce pain and the Von Frey hair was used for evaluating the pain threshold.
**Results:** Non-rapid eye movement sleep (NREMS) obtained from acupuncture group was significantly higher than that obtained from sham acupuncture group. Rapid eye movement sleep (REMS) obtained from acupuncture group was also significantly higher than that obtained from sham acupuncture group. CFA decreased pain threshold and reduced both NREM sleep and REM sleep with sleep fragmentation. Acupuncture of ST-36 blocked CFA's effects on both pain threshold and sleep disturbances. Furthermore, acupuncture effects were inhibited after microinjection of naloxone into the NTS.
**Conclusion:** Our results indicated that acupuncture of ST-36 *per se* increased spontaneous NREMS and REMS. Acupuncture of ST-36 increased pain threshold and blocked pain-induced sleep disruption. Furthermore, our results also suggest that endogenous opioids of NTS involves in the acupuncture mechanisms.
**Disclosure:** Nothing to disclose.

## P166

### 30 Hz transcranial alternating current stimulation on frontal cortex blocks the spontaneous sleepiness associated with resting state with eyes closed

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**Objectives:** Several studies reported frequency-specific modulations of brain physiology by using transcranial current stimulation. We recently showed that 5 Hz anodal oscillatory stimulation on frontal cortex enhances subjective sleepiness by increasing delta EEG activity. Here, we evaluated the ability of an high-frequency transcranial Alternating Current Stimulation (tACS) to modulate sleepiness in the opposite direction.
**Methods:** Ten volunteers participated in two within-subject stimulation protocols (active/sham), each consisting in: 10-min baseline resting-state EEG (28 derivations); 10-min 30 Hz-tACS/sham stimulation; 10-min post-stimulation EEG. During the whole protocol (total duration: 30 min) subjects were asked to stay relaxed and take their eyes closed. Self-reported sleepiness measures were collected before and after each protocol.
**Results:** The two stimulation conditions show a significant difference in sleepiness changes during the protocol ($\Delta Sleepiness_{Active}$ *vs.* $\Delta Sleepiness_{Sham}$: $t_9 = -2.88$, $P = 0.018$). In the control condition, the resting-state period results in a mean increase in sleepiness scores of ~20.7%, while 30 Hz-tACS induces a mean sleepiness reduction of ~8.8%. EEG power shows coherent pattern of changes in delta (1–4 Hz) and gamma (30–39 Hz) bands. Compared to sham condition, the active stimulation results in smaller increases of low-frequency activity and an increase of high-frequency activity.
**Conclusions:** Frontal tACS at 30 Hz is able to contrast the spontaneous sleepiness increase during resting-state, by interfering with the associated increase in low-frequency cortical activity. This finding and its complementary with 5 Hz anodal stimulation (D´Atri et al., 2016) open up fascinating perspectives for bidirectional manipulations of sleepiness by using non-invasive transcranial stimulations, with several applications in basic and clinical sleep research.
**Disclosure:** Nothing to disclose.

## P167

### Spike-wave discharges and sleep-wake cycle alterations in a mouse model of epileptic encephalopathy

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**Objectives:** Epileptic encephalopathies characterized by frequent spike-wave discharges (SWDs) during sleep are accompanied by developmental delays and permanent neuropsychological deficits. To establish a viable experimental model of such conditions, we here