

central nervous system and a peripheral metabolic disorder, respectively, it is now widely recognized that AD and T2DM share several common abnormalities including impaired glucose metabolism, increased oxidative stress, insulin resistance and amyloidogenesis. The major constituent of the amyloid deposits is a peptide amyloid  $\beta$  ( $A\beta$ ) derived from the proteolysis of a large membrane-spanning precursor protein, the amyloid precursor protein (APP).

**Objectives:** Since presenilin-1 (PS1) is a subunit that cleaves APP at multiple sites within the transmembrane domain, generating  $A\beta$  peptides, in this study, we aimed to investigate whether sleep deprivation affects PS1 expression.

**Methods:** We have analyzed the effect of 72 hours of sleep deprivation with the platform technique on PS1 expression using real-time PCR analysis in hippocampi of adult male mice (sleep-deprived, n=8; controls, n=6).

**Results:** Our results demonstrate that PS1 expression increased 50% in deprived sleep mice as compared to controls (p=0,048).

**Conclusion:** Sleep deprivation alters the expression pattern of  $\gamma$ -secretase PS1, which cleaves APP. Despite the multifactorial nature of T2DM and AD, we can infer that sleep disorders associated with both syndromes may affect the amyloid deposits. This could be a point of connection that contributes to overlapping pathologies and to the progression of these diseases.

**Financial Support:** FAPESP, CNPq, CAPES and AFIP.

### 053 CLINICAL AND POLYSOMNOGRAPH EVALUATION OF SLEEP DISORDERS IN SCA2 PATIENTS: A PHENOTYPICAL AND MOLECULAR CORRELATION

L. Velazquez-Perez<sup>1</sup>, R. Rodriguez-Labrada<sup>1</sup>, I. Tuin<sup>2</sup>, L. Galicia-Polo<sup>3</sup>, N. Canales-Ochoa<sup>1</sup>, G. Sanchez-Cruz<sup>1</sup>, R. Haro-Valencia<sup>3</sup>, J. Laffita-Mesa<sup>1</sup>, G. Auburger<sup>2</sup>. <sup>1</sup>Centre for Rehabilitation and Research Of Hereditary Ataxias; <sup>2</sup>Clinic for Neurology, University Hospital, Frankfurt am Main, Germany; <sup>3</sup>Clinic for Sleep Research, UNAM, Mexico

Sleep disorders are common complaints of spinocerebellar ataxia type 2 (SCA2) patients and their relatives.

**Objective:** The aim of this study was to characterize the sleep pathology in SCA2 and to evaluate its association with the clinical and molecular features of the disease.

**Methods:** An electrophysiological characterization of sleep disorders in a large population of SCA2 patients, presymptomatic relatives and healthy controls was performed using a standardized sleep questionnaire and two all-night video-polysomnography (VPSG) recordings. PCR was used to determine the number of CAG repeats.

**Results:** SCA2 patients and presymptomatic individuals show a significant reduction in sleep efficiency, an increase in the number of wake periods after sleep onset and an increased arousal index. REM sleep was abnormal in approximately 60% of the SCA2 patients and the presymptomatic individuals. The pathology of REM sleep was characterized by a reduction in the mean duration of REM episodes, the loss of muscle tone and a decrease in REM density. In patients, the percentage of REM sleep was negatively correlated with the scale for the assessment and rating of ataxia (SARA) score but not with the size of the polyglutamine expansion. The number of CAG repeats, however, influenced the arousal index during REM sleep. REM density shows a negative correlation with SARA score. Periodic legs movements (PLMs) were observed in approximately 42% of SCA2 patients. This alteration was significantly accentuated in patients with larger SARA scores and longer disease durations. The PLM index was not influenced by CAG repeats. SCA2 patients showed a significant increase in the central, but not obstructive, sleep apnea-hypopnea index. The mean Epworth scores of the patients and presymptomatic individuals were not significantly different from healthy controls, which were supported by the results of multiple sleep latency tests (MSLT).

**Conclusions:** The early and progressive REM sleep reduction in SCA2 patients has been associated with the degeneration of the pons, nigrostriatus and thalamus and is considered to be a novel marker for the progression of the disease. The decrease of REMs density is in agreement with the sacadic pathology in SCA2. REM sleep without atonia may be interpreted as subclinical REM sleep behavior disorder (RBD) and suggest neurodegenerative lesions in subcortical regions. PLMs may be related to a dysfunction of the dopaminergic pathways, which could be complemented by deficits of serum iron concentration in some patients. Central apneas may reflect dysfunctions, which are related to neurodegenerative processes within the respiratory center in the brainstem.

## Heath Care Delivery and Utilization

### 054 A BIBLIOMETRIC ANALYSIS OF SLEEP RESEARCH INDEXED IN PUBMED, 2003-2007

D.A. Bernardo<sup>1</sup>, S. Protzko<sup>2</sup>, J. Harrington<sup>2</sup>, R.F. Dudden<sup>2</sup>, T. Lee-Chiong Jr.<sup>2</sup>. <sup>1</sup>SLMC; <sup>2</sup>NJH

**Introduction:** Sleep Medicine has grown into a multi-disciplinary field due to the rapid progression in knowledge, which resulted in an increase in scientific literature publications on this topic.

**Objective:** To review the current status of publication activity on the subject of sleep and sleep disorders for the period 2003–2007 in the top 20 journal publications of chosen specialties based on the journals' five-year impact factor. Specifically, to determine which journals publish the most articles and the ratio of sleep articles in each publication, the types of references being published, and which subjects are most written about.

**Methods:** The top 20 journal titles of chosen specialties were determined based on the five-year impact factor from the Journal Citation Reports. A MEDLINE search for articles published from 2003 to 2007 was done using medical subject heading (MeSH) terms. EndNote and Excel were used to sort and compare the articles. FileMakerPro was used match the articles to the set of journals.

**Results:** A total of 14244 references were found in the PubMed database, 4559 of which were published in 193 journals ranked on the top 20 journal publications of chosen specialties. There was an increase in publication activity over the past 5 years with an annual growth rate of 8%. The majority of the articles were in English and only 1009 (7.1%) were in other languages with English abstracts. The greatest contribution came from the USA (31%). Besides the core journals Sleep and Sleep Medicine Review, sleep articles comprise 1.5 to 25% of the total articles in the top 50 publications with the highest number of sleep articles. In the journals with five-year impact factors of 10 or higher, sleep articles comprised only 0.3 to 2.7% of their publications. There has been an increase in the number of articles in foreign languages and multi-center studies, 11.26% and 14% yearly, respectively. Meta-analysis articles also grew: 30% annually. Randomized controlled trials grew 7.81% per year. Of the studies that indicated the source of support, the majority was from the non-government sector. Among the chosen major topics, sleep apnea, obstructive and sleep apnea syndromes were the most written about. REM sleep behavior disorder articles showed the greatest increase in the number of articles.

**Conclusion:** In spite of the increasing number of articles on sleep, they still comprise a small proportion of the publications in major journals outside of the core clinical journals.

### 055 A-TEST APPLIANCES: A GROUP OF NOCTURNAL INTRAORAL DEVICES FOR THERAPY OF BREATHING DISORDERS

M.M. Quintela. Universidade Metropolitana de Santos (UNIMES)

Sleep apnea obstructive syndrome is a chronic disease with a high rate of mortality and morbidity. The symptomatic trail encompasses snoring, which is present in most cases, excessive daytime somnolence with progressive behavioral, cardiovascular and neurological effects. As the syndrome occurs with the blockage of the upper airways during sleep, appliances that enhance nocturnal mandibular advancement can offer significant improvement, with controllable adverse effects. Thus, A-TEST appliances serve as an alternative treatment to those currently offered in Sleep Medicine, as long as it is provided with consistent treatment, specialized implementation and efficient clinical tests on results. Voluntary adherence to intraoral appliances for mandibular advancement during snoring and episodes of sleep apnea obstructive syndrome is closely related to resolution effectiveness rates, comfort offered with the appliance and costs for build-up, installation and maintenance. The present work is justified and also consists of a preliminary invention patent proposal, which is based upon: a) the availability of all necessary technical resources to minimize adverse effects that might lead to misuse; and, b) the need of idealizing test prototypes to predict effectiveness in less favorable cases. Thus, the detailed description of the current product relies on contemporary scientific and technical criteria, which