

UMPhST Târgu Mureş - Doctoral School

Abstract of the PhD thesis

Contributions to the study of sleep disorders in women

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Sleep disorders occur frequently in the general population, being often encountered in the contemporary world. Their spectrum is wide, comprising pathologies from simple, transient insomnia to severe, chronic sleep disorders. Problems related to quality and/or quantity of sleep also affect the daytime activities. Despite the rapid progress in recent years in understanding the mechanisms of sleep disorders, they often remain unrecognised and untreated.

Sleep disorders are underdiagnosed in women, despite the fact that they have a severe impact not only on the quality of life, but they can exacerbate/aggravate/cause certain pathologies. The main purpose of this thesis was to assess sleep related problems and sleep disorders in women. Two different situations were chosen, from two edges of the spectrum of physiological and pathological conditions, in which the study of sleep disorders may have practical relevance. In the first study the characteristics of sleep in healthy pregnant women was analysed, focusing on the role of a special gymnastics programme in managing sleep disturbances. In the second study the prevalence and clinical impact of sleep disorders, especially sleep apnea, was assessed in women hospitalised with acute heart failure.

In the first study the effect of a regular, specific, medium-term physical training programme on sleep characteristics in healthy pregnant women was investigated. Sleep disorders are a major health issue in pregnant women. Pregnancy is associated with significant changes in the structure and architecture of sleep, which can determine the appearance of sleep disorders, as insomnia, nocturnal awakenings, restless legs syndrome, snoring or obstructive apnea during sleep, associated with excessive somnolence during the day. Sleep disturbances could contribute, beyond alteration of quality of life, to poor pregnancy outcome.

132 healthy pregnant women, with gestational age between 18 and 22 weeks, were enrolled in a prospective study, being allocated into two groups. The first group consisted of 79 women (average age 29.4 years), who performed a specific gymnastics programme of 10 weeks. In the second group, 53 pregnant women (average age 27.9 years) were included and did not perform gymnastics. All subjects completed a comprehensive questionnaire at baseline and after 10 weeks concerning general data, sleep characteristics and psycho-emotional status. The changes arising within a diverse set of characteristics were followed and compared for the two groups using parametric and nonparametric statistics.

In the control group we observed significant worsening of 12 out of the 14 studied parameters during the 10 week period. In comparison, in the group with specific gymnastics we observed: (1) significantly less deterioration of psycho-emotional status (stress and anxiety levels), (2) the same general pattern of decrease in sleep quality, which is related to the progression of pregnancy, and (3) a significant attenuation of the worsening of several sleep characteristics: restless sleep, snoring, diurnal tiredness and excessive daytime sleepiness. Nocturnal and diurnal sleep quantity increased significantly in both groups.

In conclusion, the 10 weeks training programme designed for pregnant women had an overall beneficial effect on sleep characteristics; not by improving them, but attenuating their general deterioration related to the progression of pregnancy. Our data strengthen the general

recommendation regarding participation of pregnant women in specific exercise programmes, mainly for maintaining their psycho-emotional and general well-being.

The second study is a comparative investigation of sleep characteristics in man and women hospitalized with acute heart failure (HF). In this study the correlations between sleep disorders and the clinical and paraclinical characteristics of heart failure, comorbidities as well as psycho-emotional aspects were explored too.

Heart failure is a clinical syndrome, which constitutes a major public health problem. Sleep disorders often occur in HF patients, the causal relationship being bidirectional. Despite the fact that this topic is generally well studied, open questions still persist related to the impact of sleep disorders, especially of sleep apnea, on the clinical course of HF.

92 consecutive patients (29 women, 63 men) hospitalized with acute HF were included in the study. The clinical and paraclinical data of patients were collected prospectively with the aid of a complex database which referred to all general and specific characteristics of HF, sleep parameters and sleep habits. The primary somnological assessment was performed using a complex questionnaire, and the confirmation of sleep apnea was done using nocturnal polygraphic examination. After a descriptive analysis of the sleep characteristics and sleep habits, a comparative study between women and men was carried out considering both the main somnological parameters and their relationship with the most important characteristics of HF.

Concerning the qualitative and quantitative aspects of sleep in the patients with acute HF, it was found that (1) the prevalence of the clinically significant sleep apnea (apnea-hypopnea index, AHI > 15 events/h) is high, exceeding 50%, the obstructive form being dominant, (2) the sleep quality was frequently altered, especially due to the unsettled sleep and the headache during awakening, (3) the psycho-emotional status was characterized by high scores for anxiety and depression symptoms, (4) moderate and severe sleep apnea is correlated with a higher body mass index and higher systolic blood pressure values, (5) the degree of systolic dysfunction of the left ventricle is correlated with the severity of sleep apnea, (6) the increased diastolic diameter of the left ventricle is correlated with a lower quality of sleep.

Comparing the characteristics of acute HF between women and men, it was found that the diastolic diameter of the left ventricle was greater, and the ejection fraction of the left ventricle was more decreased in men. Comparing the qualitative and quantitative aspects of sleep in women and men, the results showed (1) no significant difference in the prevalence, in the dominant form and in the severity of sleep apnea, (2) significantly higher score of anxiety and of depression symptoms in women. It was also found that (3) men with moderate and severe sleep apnea suffer more often from atrial fibrillation, (4) the Epworth score reflects the severity of sleep apnea only in women.

In conclusion, hospitalized women with acute HF, show a number of particularities from somnological point of view, which must be considered both in the management of the common sleep problems and of HF, in general. Based on the results, sleep assessment of the patients with acute HF must be an integrated, mandatory part of evaluation. Identification of sleep disorders, especially of obstructive sleep apnea, would allow their proper management, and the correction of the factors associated with them, which could contribute to the improvement of prognosis and quality of life.