



**Fund “Nauka” Project № 19036 Resume – Competition-Based Session 2019:**

**“Parameters and biomarkers in sleep related respiratory disorders”**

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Obstructive sleep apnea is a clinical setting, when sleep related repetitive collapse of the upper respiratory airways; apnoic pauses and sleep fragmentation are detected. Polysomnography during sleep is the standard diagnostic tool for OSA. It is a simultaneous recording of EEG, electrooculogram, electromyogram, oro-nasal air flow and oxyhemoglobin saturation and serves to identify and classify the sleep related respiratory disorders. Except excessive day-time sleepiness and reduction of cognitive abilities, OSA affects the etiology of some cardiovascular diseases as arterial hypertension, coronary heart disease, congestive heart failure and brain artery disease. Large epidemiology studies and well-controlled trials prove that OSA increases the risk for different cardiovascular diseases, arterial hypertension, in particular.

**Patients with moderate and severe sleep related respiratory disorders have:**

1. Higher insulin levels before sleep
2. Higher levels of IL-6 after sleep
3. More eminent night time reduction of NT pro BNP

Insulin before sleep and IL-6 after sleep are independent predictors for severe obstructive sleep apnea and together they exhibit higher diagnostic value in severe OSA.

Irrespective of the rest risk factors, patients with sleep related respiratory disorders have thrice greater risk for a cerebrovascular incident, compared to those without such disorders.

The purpose of the present project is to assess in details the patient with sleep related respiratory disorders; to assess the risk for sleep related respiratory disorders in the context of several cardiologic and biochemical variables. Further to make an attempt for evaluation and prognosis of the patients with sleep related respiratory disorders on the basis of the evaluated and analyzed variables. To attempt to build up an algorithm for screening and preselection of the patients with underlying sleep related respiratory disorders. We approach this project, having the idea that sleep related respiratory disorders are a separate risk factor for initiation and severe course of the cardiovascular incidents. The screening of this disorder could become a part of an algorithm for diagnosing and treatment along with the familiar risk factors. Patients with sleep related respiratory disorders, obstructive sleep apnea in particular. Often have cardiovascular comorbidities, the link between them being reciprocal.

**The purposes are:**

1. To evaluate the cardiovascular risk profile of patients with sleep related respiratory disorders.
2. To evaluate the short-term and the long-term prognosis, the risk for fatal and non-fatal cardiovascular incidents in patients with sleep related respiratory disorders (SRRD).

**Achieved results:**

Several biomarkers are described in patients with obstructive sleep apnea (OSA), trying to find what the impact of sleep related respiratory disorders on the cardiovascular risk is. Contemporary studies show that inflammatory markers as IL-6, TNF- $\alpha$ , IL-10 and CRP may prove the potential effect OSA has on them and serve as predictors for cardiovascular risk. NT-proBNP is a prognostic marker with a clinical significance in conditions related to volume overload. Our studies showed increased levels of IL-6 and TNF- $\alpha$ . In patients with OSA, having relation to its severity as well. IL-10 is inversely related to the presence and severity of OSA. As to the NT-proBNP, its low plasma level may be a valuable marker for a successful control and optimal therapeutic regime.