Nicotine cessation and withdrawal: alterations in neuroendocrine and sleep-polysomnographic parameters as predictors of relapse.

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The aim of this project is to investigate the influence of nicotine withdrawal on neuroendocrine functions and sleep structure longitudinally in order to identify predictive factors for relapse to smoking.

Acetylcholine, dopamine (DA), serotonin, norepinephrine, glutamate, and the function of the hypothalamic-pituitary-gland-axis are not only known to be influenced by nicotine, but also play a crucial role in sleep-wake regulation. Both, smoking and nicotine withdrawal as well as nicotine replacement therapy are known to impair sleep. Sleep disturbances impair daytime well-being and elevate the risk for depression and addiction. There is evidence that the effects of nicotine and nicotine withdrawal on sleep are mediated by one of the most common sleep disorder, the periodic leg movement in sleep syndrome (PLMD), which is caused by DA dysfunction. Data from alcohol dependence indicate that PLMD is a predictive factor for relapse to drinking.

Embedded into the multicentered Case-Control-Study of the priority program, the effects of smoking cessation on urinary neuroendocrinological and immunological parameters and on sleep architecture including periodic leg movement and spectral analysis of the sleep EEG will be investigated in 80 patients before, after short-term and long-term nicotine withdrawal. Furthermore, sleep quality will be assessed in this study and in all patients of the therapy study by sleep questionnaires encompassing all relevant subjective aspects of sleep and sleep disorders. In 20 healthy nicotine-naïve subjects a nicotine challenge test will be applied to test whether effects found in the patients can be induced experimentally in this group with respect to sleep and neuroendocrine parameters.