S14-03 - DYSFUNCTIONAL REWARD PROCESSING IN ALCOHOL ADDICTION

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Alcohol dependence is one of the most fatal mental diseases amongst men in western industrialized nations and is the major risk factor for the development of more than 60 chronic illnesses. With no further intervention, relapse rates in detoxified alcoholics are high and usually exceed 85% of all detoxified patients. It has been suggested that stress and exposure to priming doses of alcohol and to alcohol-associated stimuli (cues) contribute to the relapse risk after detoxification.

In the last decades there has been substantial progress in scientific research of the neurobiological principles of alcohol-related disorders. Recent studies using multi modal imaging techniques like functional magnetic resonance imaging (fMRI) and positron emission tomography (PET) observed dysfunctions of the mesolimbic dopaminergic brain reward system (ventral striatum including the nucleus accumbens): Functional brain activation is increased during the processing of alcohol-associated cues and decreased during the confrontation with other non-alcoholic reward-indicating stimuli. This alcohol-associated "hijacking" of the reward system is associated with craving and the prospective relapse risk.

Moreover, the reward-associated learning seems to be disturbed in alcohol-dependent patients, so that addicted persons have problems to integrate informations about positive and negative consequences of their actions and to adapt their behavior accordingly. Personality traits like impulsiveness seem to be relevant in this context as well.

These findings about the different neurobiological mechanisms of addiction and relapse raise hope for new psychotherapeutic and pharmacological treatment approaches of alcohol dependence that is adapted to individual relapse mechanisms and needs.