
Chemosensory event-related potentials in alcoholism: A specific impairment for olfactory function.

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Abstract

Olfactory abilities are crucial in the development and maintenance of alcoholism, as alcohol-related odours are highly involved in craving and relapse. But while olfaction has been widely explored in other psychiatric states, little is known concerning this sensorial modality among alcoholics. Indeed, some studies (e.g. Rupp et al., 2006) suggested reduced ability to discriminate and identify odours at behavioural level in alcohol-dependence, but the brain impairments related to this olfactory deficit remain totally unknown. The present study thus explored the brain correlates of olfaction deficit in alcoholism, notably to determine whether this deficit is associated with low (i.e. olfactory bulb) or high-level (i.e. cortical areas like orbitofrontal cortex) cerebral impairments. Ten alcoholics and ten matched controls took part in psychophysical and electrophysiological olfactory testing. At behavioural level, we showed odor identification deficits in alcoholism, for orthonasal and retronasal testing. Electrophysiological data showed abnormalities (in latency and amplitude) for N1 and P2 olfactory components among alcoholics, which constitutes the first description of the cerebral correlates of olfactory impairments in alcoholism. This deficit appears associated with alterations in the brain structures responsible for the secondary, "cognitive" processing of odors. These results underline the importance of olfaction in clinical practice, as olfactory deficit are known to have a deleterious impact on nutrition and emotional-social everyday life. These results might also lead to reevaluate the studies exploring the cerebral correlates of craving by means of alcohol odors, as these studies were based on the assumption that alcohol-dependence was not associated with general olfactory abilities deficit.

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