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NEURONAL PROCESSING OF SMOKING-RELATED CUES IN TOBACCO ADDICTION

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Tobacco dependence can lead to a variety of different symptoms. One important aspect of tobacco dependence is the strong desire to consume the substance (craving). Craving is controlled by multiple cognitive, emotional and motivational processes. Previous studies have shown that craving can be increased during the visual perception of smoking-related cues. The aim of this study was to examine the influence of the nicotine status on craving-related responses.

Functional MRI (3 Tesla) was used to detect brain responses during the presentation of neutral and tobacco-associated pictures. Smokers were scanned twice, deprived of tobacco as well as non-deprived, in alternating order.

So far, the results show a significantly increased neural activity during the presentation of tobacco-related cues in smokers compared to healthy controls, especially in the secondary visual cortex as well as parts of the frontal lobe and the hippocampus. At the time of tobacco withdrawal, smokers demonstrated increased neural responses during the presentation of tobacco-related pictures, especially in emotion-related areas of the brain.

The results indicate that the visual impression of smoking-related cues can lead to a different neuronal activity in patients with tobacco addiction, especially during deprivation. We would like to suggest that the increased allocation of attention and enhanced emotional responses should be considered in therapeutic approaches.

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