Neural correlates of craving during cue exposure with response prevention (CERP) with chocolate

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Abstract

In this study, the neural correlates of food cue exposure with response prevention (CERP) were investigated. CERP is exposure of the participant to cues or contexts that predict food-intake, while intake is not allowed. Previous research showed that a brief CERP procedure increases craving (top of craving is reached after approximately 20 minutes), whereas a one-hour CERP procedure disrupts the conditioned link between the food-cue and eating behaviour, and thereby reduces craving. Therefore CERP may be an effective treatment for excessive food cue reactivity in obese people. As of yet it is unknown whether the elevation and reduction of craving due to CERP are accompanied by corresponding changes in brain reward activity. To investigate this, CERP was performed with chocolate or a control-stimulus (pencil) in an fMRI-scanner in 34 healthy-weight participants. CERP was interrupted by seven short scanning sequences measuring the brain responses to chocolate and neutral control pictures.
Preliminary analyses suggest that activation in response to chocolate pictures in several reward-related areas (e.g., amygdalae) after 20 minutes of exposure was higher in the chocolate-exposure group than in the control-group. In these areas group differences disappeared after one hour of CERP. In an area related to cognitive control (left dlPFC), activation after 20 minutes of CERP was lower in the chocolate-exposure group than in the control-group. Again, after one hour of CERP, activation was similar in the two groups. These results indicate that the changes in brain reward activity during CERP are probably linked to the changes in craving noted before.

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