Blast mild traumatic brain injury

Muelbl et al. from Milwaukee previously reported elevated oxycodone seeking after drug self-administration in rats that received repeated blast traumatic brain injury (rbTBI). Traumatic brain injury and exposure to drugs of abuse can each change structural and functional neuroimaging outcomes, but it is unknown if there are interactive effects of injury and drug exposure. To determine the effects of TBI and oxycodone exposure, they subjected rats to rbTBI and oxycodone self-administration and measured drug seeking and several neuroimaging measures. They found interactive effects of rbTBI and oxycodone on fractional anisotropy (FA) in the nucleus accumbens (NAc) and that FA in the medial prefrontal cortex (mPFC) was correlated with drug-seeking. They also found an interactive effect of injury and drug on widespread functional connectivity and regional homogeneity of the blood oxygen level-dependent (BOLD) response, and that intra-hemispheric functional connectivity in the infralimbic medial prefrontal cortex positively correlated with drug-seeking. In conclusion, rbTBI and oxycodone self-administration had interactive effects on structural and functional magnetic resonance imaging (MRI) measures, and correlational effects were found between some of these measures and drug-seeking. These data support the hypothesis that TBI and opioid exposure produce neuroadaptations that contribute to addiction liability [1)].

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