Comparative effects of topiramate and naltrexone on neural activity during anticipatory anxiety in individuals with alcohol use disorder

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Introduction: Research has demonstrated the potential utility of topiramate in reducing alcohol use and craving. Further, there is evidence that topiramate attenuates anxiety severity in patients with alcohol use disorder. The current study aimed to determine the effect of topiramate versus a commonly prescribed alcohol pharmacotherapy – naltrexone – on the BOLD response of treatment-seeking alcohol use disorder patients during an anticipatory anxiety task.

Methods: Participants were 42 patients with alcohol use disorder who were randomised to receive either topiramate (*n* = 19; titrated dose up to 200mg/day) or naltrexone (*n* = 23; 50mg/day) for 12-weeks as part of a broader randomised controlled trial. Following 6 weeks of treatment, participants underwent an fMRI protocol wherein they were administered an anticipatory anxiety task. The task presented a series of high-threat and low-threat stimuli followed by an unpleasant or pleasant image, respectively.

Results: Primary whole-brain analyses revealed no significant differences in neural activation between the topiramate and naltrexone groups. Deactivation for safe cues relative to threat cues was observed within the precuneus, inferior parietal lobule and the cingulate gyrus. In the precentral and middle frontal gyri, threat cues elicited greater activation. Exploratory analyses revealed an effect of change in anxiety from baseline to week 6, with a greater reduction associated with a reduced response to threat cues relative to safe cues in the cuneus and lingual gyrus.

Discussions and Conclusions: The current study is the first to examine and compare neural activation during anticipatory anxiety in treatment-seeking individuals on topiramate and naltrexone. These findings suggest that topiramate and naltrexone enact similar effects on anticipatory anxiety. This preliminary research contributes to our understanding of the therapeutic mechanisms of these alcohol pharmacotherapies.

Disclosure of Interest Statement:

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