

Hypothalamic-pituitary-adrenocortical response in alcohol patients during baclofen treatment and association with clinical outcome

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Introduction and Aims: Baclofen has been shown to reduce alcohol consumption in alcohol dependent patients. This preliminary study aimed to evaluate i) the effect of baclofen versus placebo on hypothalamic-pituitary-adrenocortical activity (HPA-axis), as measured by cortisol, and ii) the relationship with clinical outcomes such as alcohol consumption; and daily measures of stress and craving.

Design and Methods: Plasma cortisol levels were taken from N = 25 alcohol dependent patients at two time points, 60 (pre MRI scan: PreCortisol) and 180 minutes (post MRI scan: PostCortisol) following administration of PL, BAC 10 mg or BAC 25 mg. Participants were followed-up for the remaining 10 weeks and percentage days abstinent were measured. We used vectorized autoregressive modelling to examine the role of baclofen on a network-structure of stress and crave symptoms.

Results: Mixed models revealed a significant main effect of medication on cortisol levels ($F = 3.88$, $p = 0.037$), no significant effect of time ($F = 0.04$, $p = 0.84$) and a significant time x medication ($F = 3.54$, $p = 0.049$). Linear regression ($F = 6.98$, $p = 0.01$, $R^2=0.66$) revealed that abstinence at follow-up, weighted by gender, was predicted by blunted cortisol response ($\beta = -0.48$ $p = 0.023$), in addition to medication ($\beta = 0.73$ $p = 0.003$). Within person lag 1 relations revealed that baclofen abolished the drink-crave relationship.

Discussions and Conclusions: Our preliminary data suggest that baclofen acutely moderates HPA axis activity and that these alterations may play a role in long term treatment response.

Disclosure of Interest Statement: None