

Thursday

Investigating differential effects of oxytocin on improving empathy deficits across structural and functional subtypes of frontotemporal dementia

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State of the art

There are no approved treatments for the loss of empathy common in frontotemporal dementia (FTD) but patients show evidence of neural response to oxytocin indexed by increased fMRI BOLD signal in regions relevant to emotion processing (Oliver et al. *Neurology* 2020; 95 e2635-e2647). However, no significant group-level behavioural responses related to empathic processes were observed in that same study. We hypothesize that integrity of structures and networks involved in social cognition may predict patients' behavioural responses to oxytocin.

Methodology

Data from a previously reported crossover study were analyzed where patients underwent two sessions of an fMRI facial expression recognition task, once following oxytocin and once following a placebo. Volumes and functional connectivity in the Salience Network (SN) and Semantic Appraisal Network (SAN), social-cognitive networks vulnerable in FTD, were extracted and used in regression analyses to determine whether these factors can predict behavioural response to oxytocin.

Results

Structural analysis conducted to date reveals facial expression recognition during oxytocin treatment vs. placebo is associated with age and a trend for whole brain volume. Volume of structures involved in the SN and SAN specifically did not predict response to oxytocin.

Conclusion

Results indicate younger patients, and possibly those with larger total brain volumes, show improvement in facial expression recognition with oxytocin. While varying volumes of the SN and SAN do not contribute to predicting symptomatic response to oxytocin, connectivity within these networks may serve as a better metric for treatment response prediction and will be assessed in upcoming analyses.

Conflicts of interest

N/A