A single dose of Fluoxetine modulates emotional processing in young healthy volunteers

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Background

- Depression in adolescents is frequent and associated with high levels of morbidity and recurrence
- However treatment is complex since monoaminergic antidepressants (SSRIs), other than fluoxetine, are not recommended for adolescent depression
- Pre-clinical data suggests that SSRIs may have age dependent effects[1]
- Cognitive neuropsychological studies in adults suggest early effects of antidepressants on emotional processing which are seen before therapeutic effects emerge[2]
- The current study aimed to explore early effects of fluoxetine in young people on measures of emotional processing

Aim

- Investigate the early psychological mechanisms underlying fluoxetine action in young adults

Methods

- 39 young healthy volunteers (18-21 years) were randomised to receive a single oral dose of fluoxetine (20mg) or placebo
- 6-hours after administration, participants completed the Facial Expression Recognition Task (FERT) and the Emotion Potentiated Startle (EPS)
- The groups were matched for age, gender, verbal IQ and trait anxiety scores
- Self-report measures including mood, anxiety, energy levels and side-effects were administered pre- and post-drug/placebo
- Statistical analyses conducted: mixed repeated measures ANOVA with emotion/picture valence and group as within and between subject factors. Significant interaction effects further explored using pairwise comparisons or separate repeated measures ANOVAs.

Results

Subjective mood ratings

- There was no significant effect of acute fluoxetine on any of the subjective measures administered

Facial Expression Recognition Task (FERT)

- Participants are asked to identify different facial expressions (neutral, anger, disgust, fear, happy, sadness and surprise) presented at different intensities

  - Accuracy
    Trend for an interaction between face emotion and group
    \[F(6,222)=2.050, p=0.08\]
    driven by a decreased accuracy in the recognition of angry faces in the fluoxetine group (\(p<0.05\))

  - Reaction Times
    Significant interaction between face emotion and group
    \[F(6,222)=2.707, p=0.027\], with the fluoxetine group being slower to identify angry faces (\(p<0.05\))

Conclusions

- After fluoxetine treatment, participants were less accurate and slower to identify angry faces, showing a decreased negative bias
  - Irritability is distinctive of adolescent depression[3], however, there is a lack of studies exploring how this symptom affects emotional processing
  - A decrease in irritability and aggressive behaviour after acute or sub-chronic fluoxetine administration has been reported in both human and pre-clinical animal models[4,5]
  - This specificity in targeting anger/irritability may help explain why fluoxetine is an effective SSRI for adolescent depression

- Fluoxetine abolished the normal emotion potentiated startle effect found in the placebo group, suggesting an anxiolytic-like mechanism
  - This is not consistent with clinical reports of increased anxiety seen early in treatment with fluoxetine; however, this anxiogenic effect may be mediated by other cognitive processes or be specific to depressed and younger populations

- Future studies are needed in order to fully characterise the psychological mechanisms underlying fluoxetine action, including the dissociation between anxiolytic vs. anxiogenic effects and their specific time course of action/reversal

References


This poster does not have a conflict of interest.