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ABSTRACT SUBMISSION FORM

CHR D 2022: Abstract & Poster Submission Form

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Presenter Status

- Undergraduate Students
- Masters Student
- PhD Student
- Post-Doctoral Fellows
- Residents
- Non-Trainee

Research Category

- Basic Science
- Clinical
- Community Health / Policy

Role in the project

- Design
- Perform Experiments
- Analyze Data
- Write Abstract

Title

Right Caudate Volume and Executive Functions in Pediatric Attention Deficit Hyperactivity Disorder (ADHD)

Background

The caudate has been implicated in pediatric ADHD. However, previous studies have not investigated the relationship between the caudate volume with executive functions (EF).

Objective

The current study investigated the clinical relevance of the caudate with respect to EF as measured through cognitive performance-based tasks and parent ratings of EF.

Methods

Twenty-four children with ADHD (mean age =11.64) and 25 typically developing children (TDC; mean age = 11.09 years) underwent a high-resolution Magnetic Resonance Imaging (MRI) T1-weighted sequence. FreeSurfer 6.0 was used for subcortical volume reconstruction. Parents completed behaviour ratings measuring executive function skills (BRIEF-2), and children completed EF tasks related to working memory and inhibition. Data were analyzed using Multivariate Analysis of Variance, Covariance and Spearman correlations.

Results

Parents of children with ADHD reported significantly more executive function challenges on the BRIEF-2 compared to the TDC group, $F(5,43) = 20.89, p < .001$, partial eta square = .71). However, no significant difference was observed in the caudate volume between the children with ADHD and TDC groups, $F(4,41) = .79, p > .05$, partial eta square = .07). Similarly, no significant group difference was observed on the Working Memory ($F(2, 46) = 1.38, p = .26$, partial eta squared = .06) or on the Response Inhibition task ($F(4, 39) = 2.48, p = .06$, partial eta squared = .20) performance between the ADHD and TDC groups. Spearman correlations demonstrated negative correlations between right caudate volume and parent ratings of emotion regulation ($r = -.52, p = .009$) in the ADHD group.

Conclusion

Our study showed significant EF difficulties based on parent ratings but not on performance-based tasks. No volumetric difference was observed in the caudate volume in contrast to our hypothesis. Right caudate was related to parent ratings of EF in pediatric ADHD participants indicating the possibility of a brain-behaviour relation.

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Authors

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