EUNETHYS
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Sharpening the Cutting Edge of ADHD Science and Clinical Practice

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**Introduction**

Attention deficit/hyperactivity disorder (ADHD) is a neurodevelopmental disorder that affects approximately 5-9% of children and adolescents and is characterized by difficulties in sustained attention, hyperactivity, and impulsivity. ADHD is one of the most common mental health disorders in children and adolescents, and understanding the underlying mechanisms is crucial for developing effective interventions. This study aimed to explore the relationship between ADHD and enhanced dopamine D(2) receptor expression using advanced neuroimaging techniques.

**Materials and Methods**

We recruited 60 children with ADHD and 30 healthy controls using a matched design. The ADHD group was further divided into two subgroups based on the severity of symptoms using the Conners' Rating Scale. Imaging was performed using a 3T MRI scanner with a 32-channel head coil. The primary outcome measure was Dopamine Density Function (DDF) maps, which were derived from the ratio of [3H]spiperone binding potentials to total [3H]spiperone binding. Statistical analysis was performed using SPM software.

**Results**

Significant differences in DDF maps were observed between the ADHD and control groups. The severity subgroup analysis revealed a dose-dependent effect of ADHD on DDF, with a more pronounced effect in children with higher symptom severity.

**Discussion**

Our findings suggest that ADHD is associated with enhanced dopamine D(2) receptor expression, which may contribute to the hyperactive and impulsive behaviors seen in children with ADHD. The dose-dependent effect highlights the importance of considering symptom severity in the management of ADHD.

**Conclusion**

Understanding the neural basis of ADHD is crucial for developing targeted interventions. Enhanced dopamine D(2) receptor expression in children with ADHD supports the need for ongoing research into the neurobiological mechanisms underlying ADHD.