Attention Deficit Hyperactivity Disorder in Preschool-Age Children

Mini Tandon, DO, Alba Pergjika, MD, MPH*

KEYWORDS

• Preschool children • Attention deficit hyperactivity disorder • Assessment
• Treatment

KEY POINTS

- Preschool children with attention deficit hyperactivity disorder are at greater risk of placement in special education classes and use more special needs services.
- The etiology of attention deficit hyperactivity disorder is multifactorial and highly genetic.
- Assessment tools for diagnosis of attention deficit hyperactivity disorder vary. The foundational assessments include a psychiatric and medical assessment.
- Behavioral intervention lasting at least 8 weeks is recommended before initiating a pharmacologic agent, although the lack of availability of nonpharmacologic intervention is noteworthy.
- In preschool children, data suggest that stimulants such as methylphenidates are less efficacious and cause side effects more commonly than in school age and older children.

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder and one of the most common psychiatric disorders in childhood. Preschool children with ADHD are at greater risk of placement in special education classes and use more special needs services. Prevalence of ADHD in preschool-age children is similar to that in school-age children. Estimates vary at 2% to 5.7%, with a male/female ratio of 5:1.[1,2] A diagnosis of ADHD in later preschool years shows more stability than in earlier years. Comorbid disruptive disorders are predictors of continuity of ADHD within the preschool years.[3] Preschoolers with ADHD are more likely to meet criteria for comorbid oppositional defiant disorder (ODD) (8 times), conduct disorder (CD) (26 times), and depressive symptoms (9 times).[1] Older preschoolers with ADHD have shown deficits

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Division of Child and Adolescent Psychiatry, Washington University School of Medicine, 660 South Euclid Avenue, Campus Box 8134, St Louis, MO 63110, USA
* Corresponding author.
E-mail address: pergjikaa@psychiatry.wustl.edu

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childpsych.theclinics.com

in age-appropriate performance-based measures, and most continue to have symptoms into adulthood.[4] Given findings for validity, stability, and correlated deficits, the field has moved progressively forward from whether ADHD exists among preschool-aged children.

The etiology of ADHD is multifactorial and highly genetic. Perinatal stress, low birth weight, traumatic brain injury, maternal smoking and alcohol use during pregnancy, lead exposure, severe early deprivation, and familial loading may all contribute to risk (child has >50% chance of having ADHD if a parent has been diagnosed with the disease). First-degree relatives of those with ADHD are 2 to 8 times more likely than relatives of unaffected individuals to have ADHD. Heritability of 71% to 90% has been found in twin studies internationally for ADHD combined and inattentive types. However, gene-environment interaction cannot be ruled out, and adoption studies of individuals with ADHD are scarce.[5]

The core symptoms of ADHD are associated with dysregulation of neural symptoms affecting the neurotransmitters dopamine and norepinephrine in the frontal lobes. Regulation of these neurotransmitters is the target of pharmacotherapy.[6] However, the neuronal circuitry involved in the ADHD brain is much more complex. Neuroimaging findings are nonspecific. They include smaller total cerebral, cerebellar, corpus callosum, frontal lobe, and caudate volumes and lower levels of dopamine transporter in the nucleus accumbens (reward center).[7] Preschool boys with higher hyperactivity and inattentiveness have lower sympathetic and higher parasympathetic activity.[6] Girls are underrepresented in structural imaging studies.[7]

The most basic elements for assessment of ADHD include a comprehensive psychiatric and medical assessment. The psychiatric assessment will determine whether age-inappropriate symptoms of inattention, hyperactivity, and impulsivity are present for at least 6 months in multiple settings and affect functioning or development. Preschool-age–specific assessments that have proven validity include the ADHD Rating Scale IV,[8] The Vanderbilt ADHD Teacher and Parent Rating Scales,[9] Conners Comprehensive Behavior Rating Scales,[10] and Conner's Teacher Rating Scale-Revised[11]—a brief, age-specific version of the Conners Teacher Rating Scale. Child Behavior Checklist (CBCL/1.5-5) for preschoolers has empirically proven validity and reliability in rating and internalizing and externalizing symptoms and includes an attention domain.[12] The CBCL/1.5-5 and Strengths and Difficulties Questionnaire have an internal consistency of 0.58%. The Connors Continuous Performance Test was found to have poor to slight utility in the assessment of ADHD symptoms in children.[13]

Parent-teacher agreement across ages and types of behavior has not been consistent.[14] Dysfunction has to be present across domains for a diagnosis of ADHD. In certain studies, there is poor parent-teacher agreement: global ADHD symptoms are reported at a higher rate by parents compared with teachers. This could be because of the characteristics of the sample, parents' understanding of developmentally appropriate behavior, difference in structure and expectations across settings, or normal preschool-age development. The hyperactive-impulsive symptoms reported by parents in clinical settings can resemble those reported by parents most often in nonclinical study samples.[14] A similar disagreement exists between parents themselves. Parenting stress is a predictive factor, accounting for 25% of the variance.[12] Mothers with elevated stress rate more externalizing behavior problems than fathers with similar levels of stress. The parental discrepancies did not apply to internalizing symptoms.

Developmentally, preschool-age children are undergoing significant changes, including learning to sustain attention and inhibit impulses, testing limits, and looking