ATTENTION DEFICIT HYPERACTIVITY DISORDER

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is one of several childhood disorders brought into the public arena in recent years. ADHD is the current term for a specific developmental disorder describing specific behavioral difficulties. Children with ADHD experience an inability to sit still and pay attention. ADHD is also characterized by multiple symptoms of persistent and dysfunctional patterns of overactivity, impulsiveness, inattention, and distractibility (Murphy, Cowan & Sederer, 2001).

Table 1

Facts about Attention Deficit Hyperactivity Disorder

- ADHD affects an estimated 4.1% of youths age 9 to 17 in a six-month period.
- About 2 to 3 times more boys than girls have ADHD.
- Children with untreated ADHD have higher than normal rates of injury.
- ADHD often co-occurs with other problems, such as depressive and anxiety disorders, conduct disorder, drug abuse, or antisocial behavior.
- Symptoms of ADHD usually become evident in preschool or early elementary years.
- The disorder frequently persists into adolescence and into adulthood.
- Treatment may be required throughout life.

Source: National Institute of Mental Health, 2000.

Children with ADHD experience harmful consequences as a result of their behavior. They frequently experience peer rejection and academic and social difficulties which may have long-term effects. According to the National Institute of Mental Health (NIMH), these children may have conduct disorders, experience drug abuse, exhibit antisocial behavior, and incur injuries of all sorts. For many individuals, the impact of ADHD continues into adulthood (NIMH, 2000).

ADHD has been given numerous names since it was first documented. Some of these names include Minimal Brain Dysfunction, Hyperkinetic Reaction of Childhood, and Attention-Deficit Disorder With or Without Hyperactivity (Children and Adults with Attention Deficit Disorders [CHADD], 2001). With the *Diagnostic and Statistical Manual, 4th Edition (DSM-IV)* classification system, the disorder has been renamed Attention Deficit Hyperactivity Disorder.

The current name reflects the importance of the inattention characteristics of the disorder, as well as hyperactivity and impulsivity (CHADD).

There are three subtypes of ADHD which are recognized by professionals: predominately hyperactive-impulsive type, predominantly inattentive type, and the combined type (NIMH, 2003). Predominantly hyperactive-impulsive type of ADHD exists when the child or adolescent does not show significant inattention (NIMH). Predominantly inattentive type is based on the child's not showing signs of significant hyperactive-impulsive behavior (NIMH). Predominantly inattentive type is sometimes referred to as ADD, which is an outdated term for the disorder (NIMH). A child with combined type of ADHD displays both hyperactive-impulse and inattentive symptoms (NIMH).

Table 2

Symptoms of ADHD

Signs of Hyperactive-impulsivity
- Feeling restless, fidgeting with hands and feet, cannot sit still
- Running, climbing or restlessness when quiet behavior is appropriate
- Blurting answers before hearing the entire question
- Difficult time taking turns or waiting in line

Signs of Inattention
- Easily distracted by sights and sounds
- Does not pay attention to details and makes careless mistakes
- Rarely follows directions
- Easily loses or forgets things
- Skips from one unfinished task to another

Source: NIMH, 2003.

Etiology

ADHD is one of the best researched disorders in medicine. Studies over the past 20 years involving twins, adoptions, and molecular investigations have revealed that there is a genetic basis for the disorder (MediFocus, 2002). Recent imaging studies have documented the factual etiology of ADHD within specific areas of the brain.

Since ADHD runs in families, inheritance appears to be an important factor. Families with a child diagnosed with ADHD are more likely than those without ADHD offspring to have family members with the disorder. The heritability of ADHD averages approximately 80 percent, rivaling the heritability factor for the trait of height (Barkley, 2001). Several other developmental characteristics are associated with ADHD. Perinatal injury, malnutrition and substance exposure have also been linked to ADHD (Murphy et al., 2001).

A recent brain imaging study has pinpointed where the brains of children with ADHD are different from children who do not have the disorder (Boyles, 2003). This new research can potentially lead to better drugs, as well as behavioral interventions, for children with ADHD (Boyles). Brain imaging has the potential to allow clinicians to better utilize current therapies used for treatment (Boyles).

Although a diagnostic test for ADHD is not available, there is insurmountable evidence supporting the validity of the disorder (CHADD, 2001). A recent study determined that the process of ADHD diagnosis in the United States takes approximately one year (Reuters, Attention Disorder Diagnosis Often Delayed, 2004). Diagnosing ADHD early can help to prevent long-term effects in adulthood (Reuters).

Comorbidity

According to the NIMH (2000), ADHD is not usually an isolated disorder and comorbidities may complicate research studies. Specifically, ADHD can occur with learning disabilities (15-25 percent), language disorders (30-35 percent), conduct disorder (15-20 percent), oppositional defiant disorder (up to 40 percent), mood disorders (15-20 percent), and anxiety disorders (20-25 percent). Up to 60 percent of children with tic disorders also have ADHD.

Difficulties with memory, cognitive processing, sequencing, motor skills, social skills, modulation of emotional response, and response to discipline are commonly associated with ADHD (NIMH, 2000). Sleep disorders are also more prevalent in children who suffer from ADHD.

There may be a causal relationship between ADHD and seizures (Reuters, ADHD is a Risk Factor for Unprovoked Seizures in Children, 2004). Children diagnosed with ADHD have an increased chance (by 2.5 percent) of experiencing unprovoked seizures (Reuters).

Diagnosis

Some parents notice inattention, hyperactivity and impulsivity in their child before the child is of age to enter school, although these symptoms may go unnoticed until the child runs into problems at school (NIMH, 2003). Diagnosis of ADHD should be made by a professional with training in ADHD or in the diagnosis of mental disorders (NIMH). Those most often trained in diagnosing ADHD include child psychiatrists, psychologists, developmental/behavioral pediatricians, behavioral neurologists and, in some cases, clinical social workers (NIMH).

Before diagnosing a child with ADHD, a specialist needs to first rule out other potential reasons for the child's behavior. ADHD-like behavior may be the result of a sudden change in the child's life, undetected seizures, a middle ear infection that causes hearing problems, medical disorders which affect brain functioning, learning disability, anxiety, or depression (NIMH, 2003). In instances of disruptive behavior, it is critical that the clinician determine if the disruptive behavior is the primary diagnosis or if it is secondary to ADHD (American Academy of Child & Adolescent Psychiatry [AACAP], 1994). If ADHD is the primary cause, it must be diagnosed and treated so the secondary disruptive behavioral disorder can also be successfully addressed (AACAP).

The child will be evaluated by the professional for social adjustment and mental health through interviews of the child's teachers, parents, coaches and/or babysitters (NIMH, 2003). Tests may be given on intelligence and learning achievement to rule out a learning disability (NIMH). A correct diagnosis of ADHD often resolves confusion surrounding the child's problems and lets parents and child move forward knowing what can be done to help.

Treatment

There is no treatment available to cure this disorder but many treatments are available that effectively assist with its management. A wide variety of treatments have been used to treat ADHD. Foremost is education of the family and school staff about ADHD and its management.

Among the treatments that result in the greatest degree of improvement in the symptoms, research strongly supports the use of stimulant medications. Methylphenidate (MPH) is the first-line agent followed by d-amphetamine (Murphy et al., 2001).

Studies on the efficacy of medication and psychosocial treatments for ADHD support the effectiveness of the combination of stimulants and psychosocial treatments for ADHD. Studies also reveal the superiority of stimulants compared to psychosocial treatments (NIMH, 2000).

A Consensus Statement published by NIMH (1998) maintains that psychosocial treatment for ADHD has included a number of behavioral strategies such as contingency management (e.g., point/token reward systems, and timeout) that typically are conducted in the classroom, parent training (where the parent is taught child management skills), clinical behavior therapy (parent, teacher, or both are taught to use contingency management procedures), and cognitive-behavioral treatment (e.g., self-monitoring, verbal self-instruction, problem-solving strategies, self-reinforcement). Clinical behavior therapy, parent training, and contingency management have also produced beneficial effects. Intensive direct interventions in children with ADHD have produced improvements in key areas of functioning. However, no studies have been conducted on some of these intensive interventions or on how these interventions work with medications prescribed for ADHD.

Studies did reveal that the combination of medication and behavioral treatments usually were not much more effective than medication alone. However, combined treatment did result in more improved social skills and accordingly, parents and teachers judged this treatment more favorably. Both medications and combined treatment were superior to routine community care, which often involved the use of stimulants.

Treatment of ADHD requires behavioral, psychological, and education components. Education of the child and family regarding the nature of the disorder and the methods proven to manage the disorder is crucial in its management. Treatment must be provided over long periods to assist those with ADHD in the ongoing management of their disorder.

Pharmacological Treatment

The following is based on information from the National Institute of Health (1998). Stimulants are generally considered to be first line treatment for ADHD and are often prescribed by pediatricians, family physicians, specialized psychiatrists or child psychiatrists.

Short-term trials of stimulants have supported the effectiveness of MPH. Few differences have been found among these stimulants. However, MPH is the most studied and the most often used of the stimulants. For a variety of reasons including side effects, incomplete responses or other circumstances, other medications are often recommended in combination with or following unsuccessful trials of stimulants.

Recently the U.S. Food and Drug Administration (FDA) approved a medication for use in treating ADHD that is not a stimulant (NIMH, 2003). This medication, an atomoxetine, works on the neurotransmitter norepinephrine, as opposed to dopamine, which is what stimulants influence (NIMH). More research is needed to compare the atomoxetine to already available medications, but preliminary evidence suggests that children with ADHD on an atomoxetine exhibit significant improvement in their symptoms (NIMH).

Trials have found beneficial effects on the defining symptoms of ADHD and associated aggressiveness for as long as medication is taken. However, stimulant treatments may not regulate the entire range of behavior problems, and children under treatment may still show a higher level of behavioral problems than children without ADHD. The findings also show that there is little improvement in academic achievement or social skills.

It is critical that all involved with the use of these powerful medications be clear about what the treatment targets are, so a particular medication can be maintained if it is successful and stopped if it is not.

Unproven Treatments

There is a long history of a number of other interventions for ADHD. These include: dietary replacement, exclusion, or supplementation; various vitamin, mineral, or herbal regimens; biofeedback; perceptual stimulation; and a host of others. Some of the dietary elimination strategies showed intriguing results, suggesting the need for future research. One dietary study determined that food additives might have an impact on a child's hyperactivity level (Warner, 2004). Treatments that focus on mineral supplementation may merit further study, but current data suggest that they are only useful when true deficiency has been demonstrated. Although these treatments have generated considerable interest and there are some controlled and uncontrolled studies using various treatment strategies, the research regarding these interventions is disproportionate, ranging from no data to well-controlled trials.

Other Important Treatment Elements

It is important to realize that simple inattention or hyperactivity by itself is not sufficient for diagnosis. ADHD has been misdiagnosed in both children and adults by parents, teachers, and even by patients themselves. Misbehavior by children or teens has been inappropriately diagnosed and treated by persons looking for a simple solution to personality difficulties in hopes of avoiding psychotherapy.

While no treatment can cure ADHD, caregivers and parents must educate themselves about this disorder so they can understand it and design an effective treatment plan. It is up to the caregiver to become an informed consumer and learn to distinguish accurate information from the inaccurate. Relatives, teachers and caretakers need to understand that ADHD is neurobiological and that a child's brain works a bit differently. ADHD is not the result of too much sugar or too little discipline.

Effective treatment involves the use of a multimodal approach that includes an appropriate educational program; behavior modification; parent, child and teacher education; and sometimes

counseling and medication (CHADD, 2001). Caregivers need to advocate for their children in academic settings as well as in their home environment. Children with ADHD may be eligible for special educational services in the public schools under both the Individuals with Disabilities in Education Act (IDEA: Public Law 101-476) and Section 504 of the Rehabilitation Act of 1973 (Public Law 93-112) (Barkley, 2001). IDEA governs special education requirements and Section 504 provides for reasonable accommodations for children with disabilities (Gephart, 2002). Maximizing positive outcomes under these laws is possible with caregiver involvement.

Effective parent training teach strategies to modify behaviors and improve outcomes. Because ADHD is hereditary, many parents of children with ADHD discover, when their child is diagnosed, that they too have ADHD (CHADD, 2001). Parents with ADHD may need the same types of evaluation and treatment that they seek for their children.

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Additional Resources/Organizations

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ADHD.com
http://www.adhd.com/index.jsp

Attention Deficit Disorder Resources
http://www.addresources.org

Centers for Disease Control and Prevention (CDC)
Attention-Deficit/Hyperactivity Disorder
http://www.edc.gov/ncbddd/adhd

Children and Adults with Attention Deficit Disorders (CHADD)
8181 Professional Place, Suite 201 - Landover, MD 20785
National Call Center – 800-233-4050
http://www.chadd.org

PlanetPsych.com Online Therapist Directory/Virginia
http://www.planetpsych.com/zDirectory/virginia.htm

Virginia Resources

The Central Virginia CHADD Chapter
804-423-6332
http://www.ric-add.com/home.htm

Fairfax, CHADD of Northern Virginia
P.O. Box 2645 - Fairfax City, VA 22031
24-Hour Information Line - 703-641-5451

Parents Advocacy | ACT
142 W. York Street, Suite 710 - Norfolk, VA 23510
757-623-2228

Parents of Children with ADD and ADHD/Roanoke
6603 Sherry Road - Roanoke/Botetourt, VA 24019
Intake 540-366-2809

People with Attentional and Developmental Disabilities Association (PADDA)
813 Forrest Drive, Suite 3 - Newport News, VA 23606
757-591-9119

Tidewater CHADD
P. O. Box 62686 - Virginia Beach, VA 23466-2686
757-479-9993
http://www.tidewaterchadd.org

Suggested reading for parents recommended by CHADD

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