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Chapter 7

Clinical Phenomena of ADHD

Nitin Patel

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1. Introduction

ADHD is the most common behavior diagnosis given in a approximately 5.4 million children between 4 and 17 years of age [1]. ADHD can profoundly affect the academic achievement, well being and social interactions of children. Clinically, ADHD may be confused with other medical conditions, including seizures and anxiety but not limited to behavior or paying attention only. If a child is not hyperactive, it may take a long time before it is brought to the attention of others for treatment. The American Academy of Pediatrics (AAP) recently issued new guidelines for the diagnosis and treatment of ADHD, expanding recommendations for age ranges including both early pre-school children and adolescence.

Three types of ADHD have been identified:

1. ADHD combined type; the individual displays both inattentive and hyperactive/ impulsive symptoms.
2. ADHD, predominately inattentive type; the individual has symptoms primarily related to inattention. Individuals do not display significant hyperactivity/impulsive behaviors.
3. ADHD, predominately hyperactivity/impulsive type; symptoms are primarily related to hyperactivity and impulsivity. The individual does not display significant attention problems [2]. Symptoms are typically seen early in the child's life, often when he or she enters the school setting. In order to meet the criteria for ADD/ADHD symptoms must be more excessive than would be appropriate for individual's age and developmental level. Problematic behaviors may continue through adolescence and into adulthood. The diagnosis of ADD/ADHD is a clinical diagnosis.

The individual must meet criteria requirements listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM).

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Six or more of the following symptoms of inattention have been present for at least 6 months to the point that it is disruptive and inappropriate for the developmental level.

Often does not give close attention to details or makes careless mistakes in school work, work or other activities.

Often has trouble keeping attention on task or play activities.

Often does not seem to listen when spoken to directly.

Often does not follow instructions and fails to finish school work, chores or duties in the workplace. Often has trouble organizing activities.

Often avoids dislikes or doesn't want to do things that take a lot of mental effort for a long period of time.

Often loses things needed for tasks and activities.

Is often easily distracted.

Is often forgetful in daily activities.

Six or more of following symptoms of hyperactivity/ impulsivity have been present for at least 6 months to an extent that it is disruptive and inappropriate for the developmental level.

2. Hyperactivity

Often fidgets with hands or feet or squirms in seat.

Often gets up from seat when remaining is seat is expected.

Often runs about or climbs where it is not appropriate.

Adolescence and adults may feel very restless.

Often has trouble playing or enjoying leisure activities quietly.

Is often "On the go" or acts as if "Driven by a motor".

Often talks excessively.

3. Impulsivity

Often blurts out answers before questions have been finished.

Often has trouble waiting when it's his turn.

Often interrupts or intrudes on others [3].

There must be clear evidence of clear impairment in social, school or work function; these symptoms do not occur only during the course of a pervasive developmental disorder,

schizophrenia or other psychotic disorder; and the symptoms are not better accounted for by other mental disorder, sensory disorder (hearing or visual impairment) and those who have experienced child abuse and sexual abuse [4].

The American Academy of Pediatrics (AAP) recently stated, "a primary care provider should initiate an evaluation for ADHD for any child, 4-18 years of age who presents with academic or behavior problems and symptoms of inattention, hyperactivity or impulsivity. The AAP went further in stating that the clinician should determine that the diagnostic criteria of DSM-IV have been met including documentation from parents, teachers or others school personnel and mental health clinician involved in the child's care.

There are many different rating scales available to be completed by parent, other care givers and school personnel.

The Vanderbilt ADHD diagnostic rating scale includes DSM-IV based skills with teacher and parent report forms. It screens for co-morbid conditions. It is normed for age and sex. The Vanderbilt separates inattention and hyperactivity/impulsive behaviors. It can be used free of charge [6].

The Connors rating scale has been the most utilized method of trying to diagnose ADHD and other problem childhood behavior. It follows the DSM-IV guidelines. There are forms for teachers and parents to fill that are gender specific. There is a form for the child to fill out called "a self report" [7].

Child attention profile. This is based on inattention and over reactive items from the Achenbach Child Behavior Checklist. It is normed by sex. It separates inattention and over reactive factors. This can be used free of charge [8].

The Weschsler Individual Achievement Test, 2nd edition, this provides standardized normative value academic achievement scores across a variety of subjects for individuals between the ages of 4 and 85. The reading, numerical, and spelling subtest provide brief estimates of academic achievements [9].

Changes in the definition of the diagnosis of ADHD are being considered with the next edition of the DSM that is expected to be published in May 2013. One problem with using the current DSM-IV subtypes is they are often unstable and changing over time. For example, a child may meet the criteria for one subtype at the initial evaluation and meet the criteria for another at the follow up appointment. In order for more accuracy, one proposed revision is to specify diagnosis based on current presentation of symptoms: combined presentation predominately inattentive presentation or predominately hyperactive/impulsive presentation. In addition a fourth presentation: inattentive presentation (restrictive) may be added to be more precise in identifying individuals who display impairment only in attention not hyperactivity.

Symptoms of impulsivity are also under represented in the current DSM-IV criteria. Possible updates to the DSM-V include adding additional criteria to impulsivity.

Examples are:

tends to act without thinking, starts a task without adequate preparation or avoids listening or reading instructions.

Is often impatient, restless when waiting for others, wanting others to get to the point, speeding when driving.

Is uncomfortable doing things slowly and systematically.

Often rushes through activities or tasks.

Finds it difficult to resist temptations or opportunities, even if it means taking risks. Example: a child may play with dangerous objects; or adults may commit to a relationship after a brief acquaintance [10].

There is mounting evidence that many conditions exist with ADHD and modify the overall clinical presentation and treatment response. Co-morbid conditions should be considered simultaneously and in order to better understand and maximize therapy. These conditions may be emotional, behavioral, developmental or physical conditions. Co-morbid conditions include Oppositional Defiance Disorder (ODD), substance abuse, conduct disorder, anxiety, depression, tic disorder, Tourette's syndrome, and learning disability. Co-morbidities have their own symptoms, which may or may not overlap the symptoms of ADHD.

Oppositional Defiance Disorder (ODD). *Does the person defy you or the teacher by simply saying no or ignoring you? Does the person appear to be annoyed easily and bothered by trivial things? Does the person appear to annoy other people on purpose? Does the person appear angry, hot tempered, resentful or full of spite?*

Oppositional defiant disorder is a pattern of disobedient, hostile and defiant behavior toward authority figures. This disorder is more common in boys than girls. Children with ODD are overly stubborn, rebellious, often argue with adults and refuse to obey rules [11]. These children often blame others for their mistakes. Are in constant trouble in school. Are touchy or easily annoyed. Are spiteful and seek revenge. To fit this diagnosis, the pattern must last for at least 6 months and must be more than normal childhood misbehaviors. ODD is a less severe condition than Conduct Disorder. Frequently those who have persistent ODD later develop symptoms that qualify for diagnosis of conduct disorder [13]. Children with a diagnosis of ODD often require treatment for the ADHD as well as individual and possibly family therapy. The parents should learn how to manage the child's behavior.

Conduct Disorder. *Does the person lie a lot? Does the person get into physical fights? Does the person try of hurt people? Has the person ever stolen or damaged people's property?*

Conduct disorder is a disorder of childhood and adolescence that involves long-term (chronic) behavior problems. Conduct disorder has been associated with child abuse, drug addiction or alcoholism in the parents, genetic defects and poverty. This condition includes behaviors in which the child may lie, steal, fight, or bully others. He or she may destroy property, break into homes or play with fire. They may carry or use weapons. These children are at greater risk of using illegal substances. Children with conduct disorder are at risk of getting in trouble at school or with police [11]. The presence of negativistic, hostile

and defiant behaviors that include losing their temper, arguing with adults, refusing to comply with the rules of society, deliberately annoying people, consistent anger/resentment towards others. There is a history of physical aggression towards people or animals [16]. These children make no effort to hide their aggressive behaviors. They may have a hard time making friends. Children with conduct disorder require treatment for their ADHD as well as for their conduct disorder. The child's family needs to be closely involved. Parents can learn techniques to help manage their child's problem behavior. Many "behavior modification" school, "wilderness programs" or "boot camps" are sold to parents as solutions for conduct disorder. These programs use a form of "confrontation" which can actually be harmful. Treating the child at home with their family is more effective [18].

Anxiety. *Does the person appear to be nervous and anxious? Are there times when the person appears panicked, stricken, or frozen by anxiety? Does the person appear very shy compared to others his same age? Does the person repeat certain actions over and over like a ritual?*

The most common anxiety disorder with ADHD is social phobia. This condition is present in nearly 1/3 of patients with ADHD. Social phobia describes a chronic and persistent fear of being scrutinized in social situations. Many people with ADHD experience repetitive negative social encounters related to inattention which results in their misreading social cues. Disorganization causes them to be chronically tardy for social events. Impulsivity explains why they blurt out unedited and embarrassing comments. This causes them to be over whelmed and uncomfortable in social situations [12]. The treatment for this is to stabilize the ADHD [11]. Some children with anxiety did require the addition of an SSRI.

Depression. *Does the person appear sad, blue or down and how can you tell? Is the person irritable, cranky, and moody? Has the person been doing the activity once enjoyed? Does the person talk about suicide or about uselessness of life, has the person attempted suicide?*

Depression frequently occurs independently of ADHD. If depression is not identified and treated concurrently with the ADHD it can become treatment resistant depression. (12) Depression is the most common co-morbid condition in adolescents with ADHD [4]. Preliminary studies suggest that depression co-exists with the predominately inattentive and combined sub-types of ADHD [14, 15]. In many cases, ADHD related problems at school and with family and friends trigger depression by undermining a child's self esteem. This is called "secondary" depression, because it arises as the aftermath of another problem, including ADHD, it is important to taylor the treatment for the depression to the cause. If it is ADHD, treat the ADHD [19].

Bipolar disorders: *are there times where the person thinks he or she is able to do anything he or she wants? Does the person appear unusually energetic at times or almost high without drugs? Does the person miss a lot of sleep at night but still acts energetic the next day? Does the person appear to have thought that appear so fast that it is impossible to keep up with them?*

Bipolar disorder may occur with ADHD or may mimic its symptoms. Half of the boys and one-fourth of the girls with bipolar disorder also meet the criteria for ADHD. Children and adolescents with bipolar disorder often show strong emotional feelings, hyperactive behavior, overbearing manner, and difficulty waking up in the morning. Children and adolescents

with sever bipolar symptoms may have excessive and lengthy temper tantrums that are destructive and often based on gross distortion of objective events. For example, when a friend wants to play a different game, bipolar children may think the friend is trying to purposefully be mean. The child gets angry at such mistreatment. This may result in a temper tantrum. Other symptoms include excessive talking, increased activity, inappropriate actions and verbal responses in social situations, lack of inhibition, chronic irritability and distractibility. The prevalence is up to 20% [21, 22]. According to an Italian study, 24% of 7-18 year old clinic attendees with bipolar disease had existing ADHD [23].

The child behavior check list score better discriminates between children with ADHD, comania in context to pediatric bipolar disorders and control subjects.

The pharmacological treatment, mood stabilizers are the first line treatment for periodic bipolar disorders. However, when ADHD symptoms are present, subjects may benefit from short-term co-concomitant treatment with a stimulant or a co-medication of a non-stimulant.

The etiology of comorbid pediatric bipolar and ADHD have distinct characteristics. Neuro imaging studies suggest general changes in prefrontal areas in both disorders. However, there are a few primary differences between the two patient groups in the areas in indifference control, working memory, planning cognitive flexibility and fluency. Several authors reported that ADHD with comorbid pediatric bipolar disorder is its own distinct form of ADHD [24]

Fifty percent of the prepubescent depressed children in one sample manifest bipolar disorder within ten year of the onset of depression [25]. Another study found 20%of depressed adolescents in another sample had revealed a bipolar disorder within 1-4 years [26]. When comparing to the children with ADHD without mania, the manic children have significantly higher rates of major depression, psychosis, multiple anxiety, conduct disorder, or oppositional defiant disorder, as well as significantly greater impairment of psychosocial functioning.

As with depression, bipolar must be treated effectively with symptoms of ADHD to resolve comorbidity affecting the individual. An atypical anti-psychotic agent appears to be effective in the elimination of juvenile mania. In an open study, Risperdal was found to be effective anti-manic but did not help ADHD symptoms, among bipolar adults comorbid for ADHD, Bupropion is effective for ADHD and depression but may lower the threshold for inducing mania.

Tic disorder and Tourette's syndrome. *Does the person have movement such as eye blinking, making an odd face, shrugging or moving an arm a lot that is not intentional? Does the person make noise without meaning to such as grunting, sniffing, or saying certain words? Do these symptoms get worse when the person is under stress or anxiety and/or are these symptoms present while the person sleeping?*

Tics are complex, stereotyped movements (motor tics) or utterances (verbal tics) that are sudden, brief and purposeless. Tics are suppressible for short periods of time, with some discomfort and never incorporated into a voluntary movement. Stress exacerbates tics and they disappear during sleep.

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Tourette syndrome is any combination of verbal and motor tics. There is a strong genetic basis for Tourette syndrome and environmental factors play a role. Stimulants provoke tics in pre disposed children.

Onset is anytime from 2 to 15 years of age. The period of greatest severity is between 8 and 12 years of age and half of the children are tic free by 18 years of age. Common tics include eye blinking, grimacing, lip smacking, and shoulder shrugging. The initial verbal tics are usually throat clearing, shorting or sniffing. Symptoms wax and wane in response to stress and excitement. The decision to prescribe medication depends on whether the tics bother the child. Drug therapy is not required if the tics bother the parents but do not disturb the child's life [20].

Obsessive compulsive disorders: Obsessive –compulsive disorders are characterized by recurrent intrusive thoughts and images and repetitive behaviors that aim to reduce anxiety. Up to 30% [27] of children and adolescents with obsessive-compulsive disorders are present with ADHD symptoms. The rate of OCD among children with ADHD is 8-11% [28], but that rate is higher among children with Tourrette's disorder. Patient with comorbid ADHD and OCD were characterized by early onset of OCD symptoms. Patients with cormorbid OCD and ADHD symptoms seem to require special care and treatment because the longer those symptoms persist, the more they increase in severity. OCH can be treated with and SSRI, like Prozac, and behavior modification.

Learning disability. *Even when the person is paying attention, is learning difficult? Are there certain subjects that the person has extreme difficulty with? How does this person do in reading, writing, and mathematic? Hs the person ever been tested for a learning disability?*

Preschool children with a learning disability may have difficulty understanding certain sounds or words, or have problems expressing himself or herself in words. School age child may struggle with reading, spelling, writing, or math [11]. Poor school performance may indicate a disability in learning. Testing may be required to determine whether a discrepancy exists between the child's learning potential (intelligence quotient) and his actual academic progress (achievement test scores), indicating the presence of a learning disability [13]. If a child with ADHD also has a learning disability, neuropsychological testing can be done to help determine the best ways to help the child learn. The school can provide an Individualized education program to assist the child in learning.

Substance abuse. *Do you suspect this person smokes, uses drugs and drinks alcohol? Why do you suspect this?*

Substance abuse disorder is common in adult ADHD patients [12]. It can be seen in adolescent patients as well. These patients will demonstrate behaviors of increasing isolation from family and friends. May see the presence of drug paraphernalia. They may use alcohol or drugs to alter their mood state or to escape. There are consequences at school, in the home or authorities related to their use of alcohol or drugs [16]. Drugs may provide temporary relief from the distress caused by the anxiety, social dysfunction, stress and conflict that can result from ADHD. Parents should stay aware in child's social relationships, unexpected changes in mood, and notable declines in academic performances.

It is important to have an accurate diagnosis which involves a combination of physical examination to rule out organic causes (ear infections, elevated lead levels, seizure), behavioral observation and standard tests. Public interest in ADHD has increased along with medical debate in diagnosis and treatment. Some concerns have been emphasized over diagnosis. There is a wide variation of diagnostic criteria and treatment seen among primary care doctors. Primary care physicians should recognize ADHD as a chronic condition, therefore consider children, adolescence, and children with special health care needs. No instrument can replace clinical judgment regarding initial diagnosis and follow up of treatment assessment in children with ADHD. For treatment purposes this varies by age. The specific behavior modification in psychological counseling must be considered in addition to pharmacological treatment titrated to achieve maximum benefit with minimum side effects.

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