Recent Advances in Diagnosis and Management of Attention Deficit Hyperactivity Disorder

Essay

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Lists of Abbreviations

Abbreviation	*Meaning*
ADHD	Attention-Deficit Hyperactivity Disorder
AIT	Auditory Integration Therapy
ALT	Arabic Language test
ASHA	American Speech-Language-Hearing Association
BPD	Bipolar Disorder
CAPD	Central Auditory processing Disorder
CD	Conduct Disorder
CPAT	Computerized Attentional Program Training
DRC	Daily Report Card
DSM-III	Diagnostic and Statistical Manual of Mental Disorders (DSM-III), third edition.
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), fourth edition, Text Revision.
EPA	Eicosapentaenoic acid
FDA	Food and Drug Administration
GAD	Generalized Anxiety Disorder
ICD_10	International Statistical Classification of Diseases and Related Health Problems

MTA	Multimodal Treatment study of ADHD
ODD	Oppositional Defiant Disorder
PLMD	Periodic limb movements disorders
REM	Rapid Eye Movement
RLS	Restless leg syndrome
SDB	Sleep Disordered Breathing
tDCS	Transcranial direst current stimulation

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Introduction

Attention-Deficit Hyperactivity Disorder (ADHD) is a neurologic condition that involves problems with attention, hyperactivity and impulsivity that are developmentally inconsistent with age of the child. It is believed to be a function of developmental failure in the brain circuitry that monitors inhibition and self control. This loss of self regulation impairs other important brain functions crucial for maintaining attention. Children with ADHD are unable to inhibit their impulsive motor responses to visual and auditory inputs.

The prevalence is conservatively estimated as being from 3% to 7% of the school aged children in the United States. Boys with ADHD outnumber girls, but ratio varies significantly from 2:1 to 9:1. Gender differences are less obvious for inattentive type. Boys are more likely to be aggressive and to have other behavioral problems. ADHD children make up 30-40% of referrals to child mental health Practitioners ***(Polanczyk et al., 2007)***.

The exact etiological pathways of ADHD are unknown. Some of the current hypotheses regarding etiology of ADHD are as follows: ***genetic Factors***; one fourth to one third of biological parents of children with ADHD are affected by ADHD themselves, suggesting a significant genetic component, ***brain Damage****:* It has been speculated that some children affected by ADHD suffered subtle damage to the central nervous system and brain development during their prenatal, perinatal and postanatal periods. It may be associated with circulatory, toxic, metabolic, mechanical or physical insult to the brain during early infancy caused by infection, inflammation, and for trauma. ***Neurochemical Factors****:* The most widely studied drugs in the treatment of ADHD, the stimulants, affect both dopamine and norepinephrine, leading to neurotransmitter hypothesis that include possible dysfunction in both dopaminergic and noradrenergic systems ***(Imran, 2007).*** MRI neuroimaging studies have reported smaller anatomic areas in patients with ADHD in regions of the corpus callosum, smaller volumes and/or hypoactivation of prefrontal area, basal ganglia, and cerebellum ***(Castellanos et al., 2002).***

ADHD may be suspected in a child who demonstrates all of the core symptoms of ADHD, namely inattention, impulsivity, and hyperactivity. According to DSM-IV diagnostic criteria, symptoms should be present before 7 years of age and be more severe and/or frequent than those typically seen in children of the same age. Symptoms must be present for more than 6 months. Symptoms should be pervasive, existing in at least 2 settings, typically at home and school. Finally, significant clinical impact on the child's social, academic, or occupational functioning must be present ***(Lahey et al., 2004).***

A child's specific symptoms and their severity may vary according to the category of ADHD. Diagnostic criteria permit the identification of 3 categories of ADHD. The predominantly ***hyperactive-impulsive*** type of ADHD includes 6 or more symptoms of hyperactivity but fewer than 6 symptoms of inattention, whereas the second predominantly ***inattentive*** type of ADHD is characterized by the presence of 6 or more symptoms of inattention but

fewer than 6 symptoms of hyperactivity/impulsivity. The diagnostic criteria for the third ***combined*** type of ADHD include 6 or more symptoms of inattention and 6 or more symptoms of hyperactivity/impulsivity ***(American Academy of pediatrics, 2002).***

ADHD exists alone in only about one-third of the affected children. Several disorders may mimic or accompany attention-deficit disorder like, conduct disorder, pervasive developmental disorder, central auditory processing disorder and hearing problems, bipolar disorder (Manic Depression), anxiety disorders, and sleep disorders. Detailed interviews are mandatory to screen for these co existing condition that may, in fact, be mistaken for ADHD. Failure to treat these co-existing conditions often leads to failure in treating the ADHD ***(Spencer et al, 2007).***

Children with ADHD are more likely to have impairments in structural aspects of receptive and expressive language skills (phonology, semantics, syntax, narrative discourse, auditory verbal information processing), with 10-54% having speech problems (Stuttering).

compared to 2-25% of typical children. It was found that about 25% to 30% of ADHD children have learning disability ***(Tannock, 2006).***

The comprehensive evaluation of ADHD includes the administration of one or more standardized behavior rating scales. One of the rating scales may be a checklist of the DSM-IV-TR for ADHD symptoms. These questionnaires are based on research comparing behaviors of people with ADHD to those of people without ADHD. Scores on the rating scales are not considered diagnostic by themselves, but serve as an important source of objective information in the evaluation process. Depending on the individual and the problems being addressed, additional psychometric, psychological, or learning disabilities testing may be used as needed. These tests do not diagnose ADHD directly but can provide important information about ways in which ADHD affects the individual. The testing can also help determine the presence and effects of co-existing conditions ***(Froehlich et al., 2007).***

Recently, there may be a little debate- if any- regarding diagnosis of ADHD from the psychiatric point of view. Still from the Phoniatric point of view, differential diagnosis is not an easy task. The condition may be confused with mentally retarded children or other pervasive disorders with associated hyperactivity. Also some children with specific language impairments may have associated hypo-activity or hyperactivity. The later needs differentiation from ADHD. So in-depth knowledge of assessment and management of clinical picture is mandatory for phoniatrician to know.

Regarding assessment of ADHD from the Phoniatric point of view; it is mainly language assessment that includes parents' interview, child's interview and clinical judgment. Followed by language testing either formal or non-formal. Associated speech disorders need specific testing, and also associated learning disability proceeds in assessment protocols of learning disability.

In management; there is much debate. It is said that behavioral and psychosocial interventions can help to improve behavior and learning skills in children with ADHD, in addition to language therapy programs. It is also believed that the most effective treatment options combine

clinical, language, behavioral and psychological therapy with medication. Even medication role and choice has much controversy and discussion.

Aim of the work

The aim of this work is to highlighten the recent assessment and management of attention deficit hyperactivity disorder from both Phoniatric and Psychological point of view, in order to get sound basis in understanding this type of disorder to be able to give them the best opportunity for improvement.