ADHD (ATTENTION DEFICIT HYPERACTIVITY DISORDER) – A TROUBLING ENTITY, SOMETIMES PERPETUATING DURING ADULT LIFE

Ioana Cristina Amihăesei*, Carmen Lăcrămioara Zamfir
University of Medicine and Pharmacy”Grigore T. Popa” – Iaşi
Faculty of Medicine
Department of Morpho-Functional Sciences
*Corresponding author. E-mail: cristina.amihaesei@yahoo.com

ADHD (ATTENTION DEFICIT HYPERACTIVITY DISORDER) – A TROUBLING ENTITY, SOMETIMES PERPETUATING DURING ADULT LIFE (Abstract): Attention deficit hyperactivity disorder (ADHD) is considered a neurologic development disorder resulting in impairment of attention and inhibitory control, manifested as attention deficit, hyperactivity, impulsiveness; symptoms should develop between age six and twelve and have to persist for more than six months. Approximately 30-50 % of the diagnosed cases are manifesting the disorder during adulthood and 2.5-5 % of the adults are suffering of ADHD. Genetics are important factors in ADHD, being involved in 75 % of the cases, as well in the persistence of ADHD during adult life. Three subtypes of ADHD are described – one in which is predominating the attention deficit, one with predominant hyperactivity and impulsiveness and a third combined subtype. Diagnosis criteria in ADHD are established by the American Psychiatric Association (DSM criteria) and by World Health Organization. Differential diagnosis is mainly considering bipolar disorder and borderline personality disorder. Management of ADHD is including behavioral therapies and medication, alone or combined. Stimulant medications such as amphetamine represent the therapy of choice, being effective in 80 % of the cases. New data are underlying the need for following up of the cases during adulthood, since the risk for development of psychiatric conditions such as depression, anxiety, as well as the suicidal behavior is higher than in the general population. **Keywords:** ADHD/ATTENTION DEFICIT HYPERACTIVITY DISORDER, HYPERACTIVITY, IMPULSIVENESS.

**DEFINITION, GENERAL FEATURES**

Attention deficit hyperactivity disorder (or hyperkinetic disorder) is considered a neurologic developmental disorder in which are present problems of executive functions, like attention control and inhibitory control which are generating attention deficits, hyperactivity or inappropriate impulsiveness (related to age) (1,2).

Diagnosis is established only when symptoms are lasting for more than six months and are appearing between age six to twelve.

In 2013 World Health Organization estimated 39 million people affected by the disorder; 3-5 % of children are affected. ADHD is three times more frequent in boys
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than in girls. Around 30-50 % of people diagnosed during childhood show symptoms as adults and 2.5-5 % of the adults have the disorder (3).

The disorder was first clearly described by George Still in 1902. Others terms used for ADHD are minimal brain dysfunction or minimal brain damage (5).

ADHD is divided into three subtypes: a form with predominant attention deficit, one with predominant hyperactive-impulsive behavior and one combined (4).

MAIN ETIOLOGIC AND PATHOPHYSIOLOGIC FEATURES

Even if the cause of ADHD is not known, the disorder is believed to be the result of interactions between genetic and environmental factors (5). Twins studies demonstrated that the disorder is often inherited, genetics being involved in 75 % of the cases. Genetic factors seem to be also involved in the persistence of ADHD during adulthood. Genes involved are mainly regulating dopamine neurotransmission (DAT, DRD1, DRD3, TAAR1, MAOA, COMT and DBH) (6,7).

From the evolutionary perspective, hyperactivity should have been beneficial in situation of risk exposure, like exploring new areas, thus should have been beneficial for the community even if harmful for the individual (8).

A reduction in the volume of certain brain structures was observed in children with ADHD, as well as a proportionally important decrease in the volume of the left-sided prefrontal cortex. Posterior parietal cortex is also thinner in ADHD subjects (9).

Recent models of ADHD are demonstrating that the disease is associated with dysfunction in central neurotransmitter systems, especially those involving dopamine and norepinephrine. Dopamine and norepinephrine pathways which are projecting into the prefrontal cortex and striatum are responsible for the modulation of the executive functions (cognitive control of behavior), motivation, reward perception and motor function; these pathways play an important role in the pathophysiology of ADHD (10).

DIAGNOSIS

Diagnosis is established on person’s childhood behavior and mental development, excluding effects of drugs, medications or psychiatric conditions, which otherwise may explain the symptoms. It may be regarded as the extreme of one or more common human traits. The diagnosis is not excluded or confirmed by response to specific medications. Imaging studies of the brain are not relevant for diagnostic purposes (11).

ADHD is classified among disruptive behavior disorders, along with oppositional defiant disorder, conduct disorder and antisocial personality disorder (12).

According to the American Psychiatric Association (DSM criteria) are differentiated three subtypes of ADHD: one subtype is mostly characterized by inattentiveness (easily distracted, forgetful, daydreamer, with concentration and completing tasks difficulties). The predominant hyperactive-impulsive type is manifesting as restless, hyperactive, with difficulties in waiting and remaining seated, immature conduct; the third type is a combination of the first two subtypes, or the combined type (13).

Inattention symptoms include: being easily distracted, missing details, switching frequently from one activity to another; difficulty in maintaining focused on one
task; not seeming to listen when spoken to;
daydreaming, getting easily confused and
moving slowly, showing difficulties in
processing information as quickly and ac-
curately as others; difficulty in focusing
attention on organizing and completing a
task or learning new data; becoming bored
with a task after a few minutes (13).

Hyperactivity is characterized by fidget
and squirm, talking continuously, trouble to
sit during dinner, school or doing home-
work; the subject is all the time in motion
and has difficulties in achieving quiet ac-
tivities. These symptoms of hyperactivity
tend to fade away with age and in teens and
adults with ADHD they become an inner
restlessness (14).

Impulsivity is revealed by symptoms
such as: impatience, inappropriate com-
ments, acting with no regard for conse-
quences, difficulty in waiting (as their turns
in games) and often interrupting others
talking or activities.

Diagnosis is established in the presence
of six to nine long term symptoms of inat-
tention, hyperactivity-impulsivity or both,
lasting for at least six months (15).

Symptoms should appear at the age of
six to twelve, in more than one situation,
like for example at home and at school, and
they must cause social, educational or work
related problems (14).

Differential diagnosis must take into
consideration the bipolar disorder and bor-
derline personality disorder. Symptoms of
anxiety disorder, antisocial personality
disorder and mental retardation may some-
times overlap with ADHD or may occur at
the same time with ADHD. Diseases which
symptoms may mimic ADHD are espe-
cially hyperthyroidism, seizure disorder, lead
intoxication, sleep apnea and drug interac-
tions (16). Primary sleep troubles may
cause attention deficit, while ADHD may
alter sleep quality; sleep problems must be
treated in children with ADHD.

**THERAPEUTIC OPTIONS**

Management of ADHD is including be-
havioral therapies and medication, alone or
in combination.

Behavioral therapies are recommended
mainly in those cases with mild symptoms
and in preschool aged. They include behav-
ior therapy, cognitive behavioral therapy,
interpersonal therapy, family therapy,
school-based interventions, neuro-feedback
(12).

An important factor in reducing psycho-
logical problems (such as major depression,
school failure, criminality, drug use disor-
ders) is the friendship with persons who are
not involved in delinquent activities (17,
18).

Stimulant medications such as amphet-
amine are the therapy of choice being ef-
fective in approximately 80 % of cases.

Alternatives include bupropionum,
guanfacine, clonidine, atomoxetine. Stimu-
lant medication is also improving the aca-
demic performance (19).

Overdose of stimulants is associated
with symptoms of mania; very rare (0.1 %)
such symptoms may appear at therapeutic
doses in the first weeks of treatment with
amphetamine or methyl-phenidate. Use of
stimulants in doses above the therapeutic
range is associated with addiction and de-
dependence (18,19).

**PROGNOSIS**

Proportion of children showing criteria
for ADHD drop at half in the three years
following the diagnosis, whether if treated
or not. ADHD is persisting into adulthood
in approximately 30-50 % of cases.
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Generally, ADHD individuals are developing coping mechanism as they become mature, thus attempting to compensate their symptoms. However, higher risk for depression, anxiety and suicidal attempt is stressing the importance of surveillance and appropriate interventions in adults with ADHD (11, 16).

Controversies in what concerns ADHD are ranging from the opinion that ADHD should be viewed as situated in the normal range of behavior to viewing it as a genetic condition. Most specialists are considering it a medical condition, at least in the cases with severe symptoms (20).

CONCLUSIONS

In what concerns ADHD diagnosis, we notice that while the mild symptoms do not need to be diagnosed, most severe cases must be treated and followed-up since the disorder is interfering with social and educational activities, as well as with work in these subjects.

Recent data demonstrated that persistence of ADHD during adulthood (2.5-5 % of the adults) is increasing the risk for development of psychiatric conditions (depression, anxiety, suicidal behavior) which recommend the surveillance and adequate therapy in these cases.

REFERENCES

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**NEWS**

**TIMING OF ESOPHAGECTOMY IN MULTIMODAL THERAPY OF ESOPHAGEAL CANCER**

Neoadjuvant radiochemotherapy [n(R)CT] has become the standard of care in the multimodal therapy concept for patients with locally advanced esophageal cancer. The question is whether the length of the interval between completion of n(R)CT and surgery can affect the postoperative outcome, tumor response and long-term survival. In a study of 106 patients with adenocarcinoma and squamous cell carcinoma of the esophagus, treated between 2006 and 2013, on the basis of the median time interval to surgery, patients were divided into two groups [group A ≤ 40 days (n = 54) and group B > 40 days (n = 52)] and compared concerning demographic data, preoperative risk scores, morbidity, outcome, tumor response and long-term survival. Group A showed a trend towards a higher mortality risk as preoperatively assessed by the physiological and operative severity score for the enumeration of mortality and morbidity in esophagogastric surgery patients (O-POSSUM) (p = 0.064) and group B showed a trend towards a higher rate of complete responders (p = 0.097). So, concerning perioperative morbidity and mortality, delayed surgery after n(R)CT shows no benefit for the patient's outcome; however, the rate of complete tumor response is higher in patients with a time interval of more than 40 days, although this does not influence long-term survival or recurrence rates. (Müller A.–K. et al. Timing of esophagectomy in multimodal therapy of esophageal cancer: Impact of time interval between neoadjuvant therapy and surgery on outcome and response. Der Chirurg 09.2015, doi: 10.1007/s00104-014-2916-6. 86 : 9 : 874-880).

Roxana Gherasim