ATTENTION DEFICIT AND BEHAVIORAL DISORDERS

ALTERED ANANDAMIDE DEGRADATION IN ATTENTION DEFICIT HYPERACTIVITY DISORDER

Anandamide (AEA) metabolism was investigated in 15 drug-free boys with ADHD (aged 6.5-13 years) and 15 age- and gender-matched healthy controls, in a study at Universita Tor Vergata, Rome, Italy. AEA, an endocannabinoid, reduces the activity of the dopamine transporter. The activity of fatty acid amide hydrolyse (FAAH), which is responsible for AEA degradation, was significantly decreased in lymphocytes from peripheral blood of subjects with ADHD. This finding suggests that AEA catabolism is dysregulated in ADHD, whereas the synthesis of AEA was unaltered. Stimulation of dopamine (DA) D2 class receptors inhibits FAAH activity and increases the level of AEA in the brain. A complex interaction between DA and the AEA endocannabinoid system (ECS) is found experimentally, and ECS is implicated in other DA-related disorders such as Parkinsonism. Dysfunction of the dopamine system is proposed to explain the clinical manifestations of ADHD. (Centonze D, Bari M, Di Michele B, et al. Altered anandamide degradation in attention-deficit/hyperactivity disorder. **Neurology** April 28, 2009;72:1526-1527).(Respond and reprints: Dr Diego Centonze, Clinica Neurologica, Universita Tor Vergata, Via Montpellier 1, 00133 Rome, Italy. E-mail: centonze@uniroma2.it).

COMMENT. The endocannabinoid system plays an important role in brain development (Fride E. **J Neuroendocrinol** 2008;20(suppl 1:75-81), and anandamide (arachidonylethanolamide [AEA]) impairs memory and attention by reducing the activity of the dopamine transporter system. An anandamide transporter inhibitor, 4-OH phenyl-arachidonamide (AM404), is found to reduce the hyperactive behavior elicited by a dopamine D2 receptor agonist in rat brain (Beltramo M et al. **Jrnl Neuroscience** 2000;20:3401-3407). Molecular genetic studies support the involvement of the dopamine receptor and dopamine transporter genes in the etiology of ADHD. Environmental factors such as prenatal exposure to nicotine, premature birth, head injury, and viral infections also play a role. (Millichap JG. **Pediatrics** 2008;121:e358-e365). Relation of dopamine deficits to fetal and perinatal stresses may explain the mechanism of environmental etiologies. (Swanson JM et al. **Neuropsychol Rev** 2007;17:39-59). Preterm birth and cerebral ischemia may contribute to deficient dopaminergic neurotransmission and symptoms of ADHD. Evidence of environmental mediators in ADHD are demonstrated in twin studies, affected twins having greater exposure to risk factors compared with unaffected co-twins. (Lehn H et al. **J Am Acad Child Adolesc Psychiatry** 2007;46:83-91). Gene-environment interaction is an important mechanism in the etiology of ADHD, some genes (DAT1) affecting the individual sensitivity to environmental factors. (Thapar A et al. **Brit J Psychiatry** 2007;190:1-3).

SLEEP DURATION AND BEHAVIORAL SYMPTOMS OF ADHD

To evaluate the association of short sleep duration with behavioral symptoms of ADHD, a cross-sectional study of children born in 1998 in Helsinki, Finland, was conducted