

COMMENTARY. In a follow-up study of 47 children with ATM at Johns Hopkins, Baltimore, a febrile illness had occurred in 47% and vaccination in 28%. At the nadir of the illness, 89% were unable to walk, required assisted ventilation, or both. At a median of 3.2 years after the acute illness, 43% were unable to walk 30 ft, 68% had urinary urgency, 55% had dysesthesias, and 75% had numbness. Age at onset <3 years was associated with a worse functional outcome. [2]. A longer follow-up period and effect of rehabilitation may explain the better prognosis in the Chinese study group.

References

1. Transverse Myelitis Consortium Working Group. *Neurology*. 2002 Aug 27;59(4):499-505.
2. Pidcock FS, et al. *Neurology*. 2007 May 1;68(18):1474-80.

ATTENTION DEFICIT DISORDERS

DOPAMINERGIC MECHANISMS IN ADHD

Investigators at Addenbrooke's Hospital, University of Cambridge, UK, and centers in Germany and France examined the neural mechanisms underlying attention deficits associated with ADHD and their reversal with a single dose of methylphenidate (MPH). Sixteen adults with ADHD and 16 controls were scanned by PET and MR imaging while performing a computerized sustained attention task after oral MPH (0.5 mg/kg) and placebo, in a double-blind, cross-over design. Patients with ADHD showed significant attention deficits and reduced grey matter volume in fronto-striato-cerebellar and limbic networks. Compared to controls, ADHD patients had equivalent D2/D3 receptor availability and equivalent increases in endogenous dopamine after MPH treatment. Poor attention performers from both the ADHD and control groups had reduced left caudate dopamine activity. MPH significantly increased dopamine levels in all nigrostriatal regions, normalizing dopamine levels in the left caudate in low performers. Behaviorally, MPH improved sustained attention with increased dopamine release in the midbrain. Midbrain dopamine autoreceptor regulation is reduced in low performers, and MPH-induced increases in midbrain dopamine levels are smaller in low compared to high performers. The findings confer midbrain dopamine autoreceptors an important role in the therapeutic effects of MPH in ADHD. (del Campo N, et al. A positron emission tomography study of nigrostriatal dopaminergic mechanisms underlying attention: implications for ADHD and its treatment. **Brain** 2013 Nov;136(Pt 11):3252-70).

COMMENTARY. In a study at the Karolinska Institute of 12 adolescents with ADHD and 10 young adults as controls, attention and motor behavior were investigated with a continuous performance task and motion measurements. In the midbrain, the binding potential values for density of dopamine transporter (DAT) determined by PET were significantly lower in children with ADHD. Dopamine D2 receptor binding (D2R) in the right caudate nucleus correlated significantly with increased motor activity [1][2].

References

1. Jucaite A, et al. *Biol Psychiatry*. 2005 Feb 1;57(3):229-38.
2. Wong DF, et al. *Int Rev Psychiatry*. 2007 Oct;19(5):541-58.