

## Tchnetium-99m HMPAO brain SPECT in children with attention deficit hyperactivity disorder

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Attention deficit hyperactivity disorder (ADHD) is a developmental, neurobehavioral syndrome with an onset in childhood. The aim of this study was to investigate the existence of regional perfusion changes in ADHD by means of Tc-99m HMPAO brain SPECT. Thirteen children with a diagnosis of ADHD and 7 healthy, age-matched controls were included in this study. Hypoperfusion was observed on the right temporal cortex in 9, and on the left temporal cortex in 3 children. The distribution of the lesions showed right lateral temporal cortex involvement in 3, right medial temporal cortex in 9 and left medial temporal cortex in 8 children. Asymmetric perfusion was seen on the caudate nucleus in 4, on the thalamus in 3 and on the frontal cortex in 6 children. There was a significant difference between children with ADHD and controls in right medial temporal cortex: cerebellum and right lateral temporal cortex: cerebellum ratios. Hypoperfusion in the right medial temporal cortex was significantly and inversely correlated with Du Paul teachers' questionnaire rating scale ( $r = -0.71$ ,  $p = 0.006$ ). It has been postulated that difficulty in self regulating response to stimuli in ADHD is mediated by underfunctioning of the orbital frontal cortex and subsequent connection to the limbic system. Decreased temporal cortex perfusion may dysfunction of the limbic system or the orbito-frontal-limbic axis.

**Key words:** ADHD, technetium-99m HMPAO, brain SPECT