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New light on executive function and attention deficit hyperactivity disorder

Função executiva e transtorno do déficit de atenção/hiperatividade novos esclarecimentos

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Attention deficit hyperactivity disorder (ADHD) a prevalent worldwide disorder has been associated to anatomical and circuits changes involving mainly pre-frontal and parietal cortex, cerebellum and basal ganglia. Executive functions as working memory, inhibition capacity and mental flexibility are important functions related to those brain areas[1].

Nevertheless, studies looking for treatment effect on those functions have retrieved conflicting results. In this issue of The Arquivos de Neuropsiquiatria, Bolfert et al.[2], assess the executive functions of 23 children with ADHD, before and after 3 months of methylphenidate treatment, comparing them to 30 healthy age and gender matched control school children.

Different activation paths have been observed on functional tests in ADHD subjects compared to healthy controls[3]. Furthermore, although some functions may be improved on drug therapy, they do not occur through the same circuits as in normal subjects[4]. Different drugs as well as motivation and reinforcement improve executive functions, and, although sharing some final effects, in different specific ways, some directed to working memory, while others to inhibition or mental flexibility[5,6,7].

The catecholamine reuptake inhibitor methylphenidate seems to upregulate the left inferior frontal cortex and enhances fronto-temporo-striatal activation[7]. The study by Bolfert et al highlights the effects after 3 months methylphenidate treatment on digit span backwards and arithmetic, the Taril Making Test part B and on the Stroop Color Test, executive function tests, adding new information on this matter.

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