

Alterations in Pain Response are Partially Reversed by Methylphenidate (Ritalin) in Adults with Attention Deficit Hyperactivity Disorder (ADHD).

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Pain Pract. 2013 Oct 18. doi: 10.1111/papr.12129. [Epub ahead of print]

BACKGROUND:

Attention deficit hyperactivity disorder (ADHD) is characterized by dysregulation of sensory processing and neurobiology of dopamine. Although cumulative evidence suggests that dopamine is involved in pain processing, pain perception in ADHD subjects and the effect of dopamine agonists such as methylphenidate (MP, Ritalin) on it have rarely been studied.

AIMS:

The aims of this study were to (1) psychophysically assess sensitivity to pain in ADHD subjects as compared to controls and (2) examine the effects of MP on pain response in ADHD subjects.

METHODS:

Thirty subjects with ADHD and 30 age- and gender-matched controls participated in a preliminary trial. Pain threshold, intensity, and tolerance in response to cold pain stimulation were measured for both groups (ADHD with no treatment). In addition, the ADHD group was reassessed following a single dose of MP treatment.

RESULTS:

The ADHD subjects "without MP" in comparison with controls displayed significantly shorter cold pain threshold (2.8 ± 2.1 vs. 5.8 ± 2.5 seconds, respectively, $P < 0.001$) and cold tolerance (21.8 ± 22.3 vs. 62.8 ± 59.8 seconds, respectively $P < 0.001$). No differences in pain intensities between the groups were found. Following MP treatment, both cold threshold and tolerance in the ADHD subjects increased significantly compared to those with no treatment (3.6 ± 2.5 seconds, $P = 0.011$, and 46.4 ± 53.3 seconds, $P < 0.001$, respectively).

CONCLUSIONS:

These results suggest that adults with ADHD are more sensitive to pain compared with controls and that MP may exert antinociceptive properties in these subjects. Randomized, controlled trials are warranted to verify these findings.