

THE RESPONSE FOR ELIMINATION DISORDERS BY METHYLPHENIDATE AND ATOMOXETINE IN CHILDREN WITH ATTENTION DEFICIT-HYPERACTIVITY DISORDER

Hypothesis / aims of study

The elimination disorders such as daytime and/or nocturnal urinary incontinence, is common in children with Attention Deficit-Hyperactivity Disorder (ADHD) [1]. There are a few reports about the treatment by using anti-cholinergic drug, desmopressin and imipramine for the voiding disorder in these children [2], [3]. In generally, methylphenidate which is a dopamine reuptake inhibitor, and atomoxetine which is a selective norepinephrine reuptake inhibitor are used for the treatment for the AD/HD [4], [5]. However, there is no study for the association between the effect of medication for ADHD and the improvement of voiding disorders. It is purpose of this report to demonstrate whether methylphenidate and atomoxetine effect of voiding disorder in children with the ADHD.

Study design, materials and methods

A total of 5 children, 3 boys and 2 girls, with the ADHD and daytime and/or nocturnal urinary incontinence were enrolled in this study. The children age was from 7.42 years to 8.92 years (Mean; 8.35 years). All children were medicated with methylphenidate and/or atomoxetine without anti-cholinergic drug, desmopressin and imipramine. Children were evaluated the attention, behaviour and elimination problems before and after 3 months the medication by using the questionnaire. The questionnaire were used with the ADHD Rating Scale- IV and Dysfunctional Voiding Symptom Scale (DVSS). The data were analyzed statistically by the t-test or Wilcoxon t-test.

Results

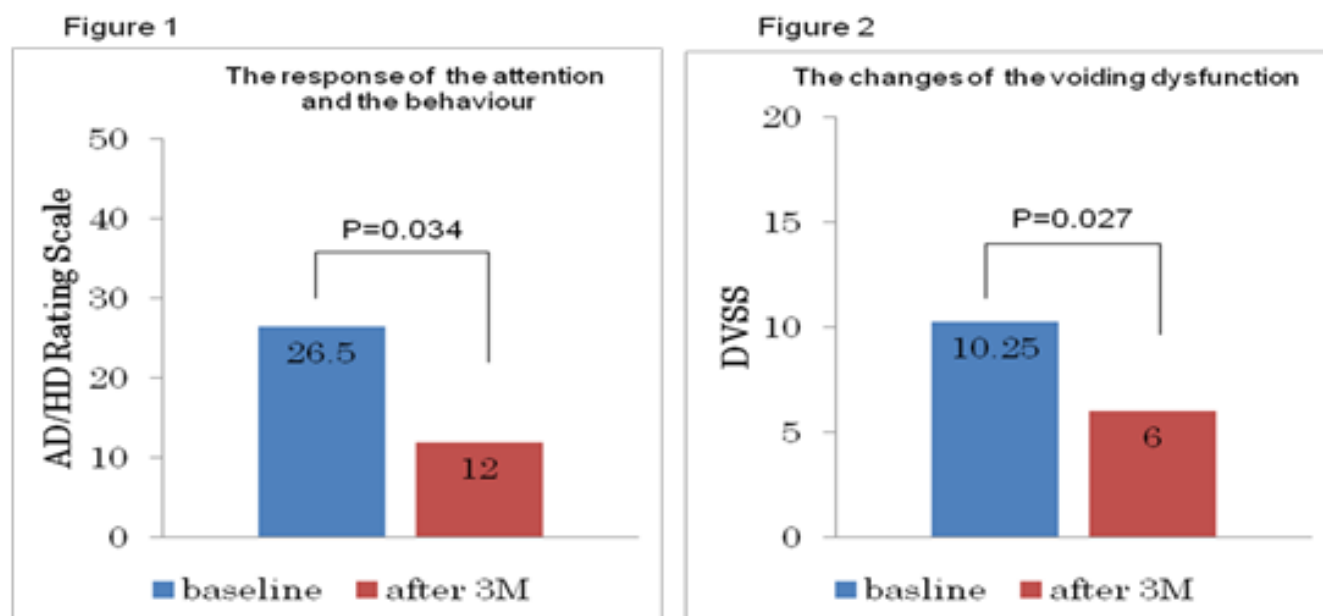
Their attention and behaviour were improved by the medication with methylphenidate and/or atomoxetine. ADHD Rating Scale was changed from 26.5 to 12, this difference was statistically significant ($p=0.034$) (Figure 1). In regard to urinary incontinence, two of 4 nocturnal incontinence children were completely improved, and the frequency of that were reduced by half of two children by the medication. Daytime urinary incontinence was similarly improved. Complete response of daytime urinary incontinence was two of 4 children, and that of two children became to 30%. DVSS was significantly changed from 10.25 to 6.0 ($p=0.027$) (Figure 2). All children had no advanced events with these medications.

Interpretation of results

Methylphenidate and atomoxetine improve not only ADHD symptoms but also voiding dysfunction.

Concluding message

It is considered that dopamine and noradrenaline play an important role in the elimination disorders of ADHD. If the anti-cholinergic drug, desmopressin and imipramine could not be effective for the urinary incontinence in child, the urinary symptoms may be caused by ADHD.



References

1. von Gontard A, Moritz AM, Thome-Granz S, Freitag C. Association of attention deficit and elimination disorders at school entry: a population based study. J Urol 2011; 186: 2027-2032.

2. Crimmins CR, Rathbun SR, Husmann DA. Management of urinary incontinence and nocturnal enuresis in attention - deficit hyperactivity disorder. J Urol. 2003;170:1347-1350.
3. Chertin B, Koulikov D, Abu-Arafeh W, Mor Y, Shenfeld OZ, Farkas A. Treatment of nocturnal enuresis in children with attention - deficit hyperactivity disorder. J Urol. 2007;178:1744-1747

Disclosures

Funding: No **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics not Req'd:** this therapy is usual ADHD medication, and informed consent was cleared. **Helsinki:** Yes **Informed Consent:** Yes