Does methylphenidate reduce testosterone levels in humans? A prospective study in children with attention-deficit/hyperactivity disorder.


Abstract

BACKGROUND:
Animal studies and case reports have suggested that methylphenidate (MPH) exerts adverse effects on gonadal hormones. This study aimed to determine whether MPH alters testosterone levels in children with attention-deficit/hyperactivity disorder (ADHD) through comparison of those with or without MPH treatment.

METHODS:
This 4-week, nonrandomized, prospective study conducted in Taiwan included 203 ADHD patients with a mean age of 8.7 years (boys: 75.8%). After the initial recruitment, 137 received daily MPH treatment (medicated group) and 66 were assessed through naturalistic observation (nonmedicated group). The saliva samples of ADHD patients were used to quantify testosterone levels at baseline and the endpoint by using the chemiluminescence immunoassay. At the 4th week, 86 patients in the medicated group and 46 patients in the nonmedicated group were eligible for statistical analyses.

RESULTS:
During the study period, salivary testosterone levels did not significantly change in the medicated group (P = 0.389) or in the nonmedicated group (P = 0.488). After correction for the potential confounding effects of age and sex, salivary testosterone levels still remained unchanged in the medicated and nonmedicated groups during the 4-week follow-up. In the medicated group, changes in salivary testosterone levels over 4 weeks were not significantly correlated with the MPH daily dose (mean daily dose: 18.1 mg).

CONCLUSIONS:
Findings suggest that short-term treatment with MPH at usual doses does not significantly alter salivary testosterone levels in ADHD patients. Future studies should clarify whether long-term MPH treatment disrupts testosterone production, as well as the function of the reproductive system.