Institutionen för laboratoriemedicin
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Quantitative Influence of Exogenous Androgens on Serum Lipid Profile and Endocrine Functions.

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ABSTRACT

Anabolic androgenic steroids (AAS) in doping have been a concern predominantly in sports. The focus has now switched to the doping in the society which is a significant problem for the public health. The abuse of AAS is associated with mental and somatic side effects and with the use of several other drugs including narcotics. This thesis focuses on the effects of AAS, particularly nandrolone and testosterone, on the serum lipid profile and endocrine functions.

We found a frequent co-abuse of AAS and narcotics among young people taken into custody for criminal activity. The two most common abused AAS were nandrolone and testosterone. We found a sustained suppression of LH and FSH for several months, sometimes 1 year. The suppression correlated significantly with the 19-norandrosterone (19-NA) metabolite of nandrolone in urine in individuals without co-abuse of narcotics. In healthy volunteers LH remained supressed up to 6 weeks after a dose of 500 mg and even suppressed below lower limit of reference range for two individuals. These results indicate that AAS have a more profound endocrine effect on the hypothalamic-pituitary-adrenal -axis than previously known. Altered blood-lipids profile was normalized within 6 months after cessation of AAS abuse. We found an early effect on the blood-lipid profile after a single dose of testosterone enanthate. Two days after testosterone injection, total cholesterol was increased and followed by a decrease in HDL and ApoA1 four and fourteen days after dose. The minimal dose for these alterations in the blood lipids, and for increased serum testosterone concentrations was 250 mg. The impact on the cholesterol homeostasis may be mediated by an increase of the HMGCR expression.
There was a marked impact of the uridine glucuronosyl transferase 2B17 (UGT2B17) polymorphism on the T/E ratio in AAS abusers and some of the testosterone abusers did not test positive due to a genetic deletion polymorphism of the UGT2B17.
Increased knowledge and understanding of side-effects induced by AAS is important in order to find measures for treatment and care of these abusers.

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