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Anabolic steroids and craniofacial growth in the rat

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ABSTRACT

Anabolic steroids are misused by adolescents as well as adults to increase muscle mass and improve appearance and athletic performance. Since these substances strongly enhance protein synthesis, it was speculated that craniofacial changes in bone size and, perhaps, skeletodental relationships might also occur. Eighty rat pups were divided into three groups: (1) sham-treated controls, (2) a low-dose group (1 mg/kg/wk nandrolone phenpropionate), and (3) a high-dose group (10 mg/kg/wk). The high-dose regime more closely mimics dosages used by abusers. Steroid therapy significantly increased all measures of the craniofacial complex (k=20)—on the order of 3–5%—except some precocious calvarial dimensions. Importantly, significant alterations also occurred in facial morphology. The low-dose group exhibited proportionate increases in most craniofacial dimensions, but the high-dose produced overt shape changes, notably a maxillomandibular, anteroposterior jaw discrepancy due to maxillary excess. In sum, this anabolic steroid significantly altered facial growth in this animal model; by extension, steroid abuse by adolescent humans may produce discernible changes in their craniofacial complexes.

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