Histological Effect of Androgenic Anabolic Steroids Dianabol in Heart and Some Blood Parameters of Male Albino Rats

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Abstract

Anabolic androgenic steroids (AAS) standup between the drugs most broadly ill-treated with the goalmouth of improving athletic ability, appearance or muscle mass. Androgenic anabolic steroid (AAS) the most widespread types of steroids in general and particularly between young people as it works to increase the body's metabolism. The current study was performed to examine effect of androgenic anabolic steroid dianabol in heart and some blood parameters for male Albino rat. In this research the rats were divide in to three groups, (4 replicates for each) . The first group control was orally receive normal saline for such period, while the second group (t2) and third (t3) treated groups orally received dianabol suspension at concentrations 30 and 50 mg/kg/day for 8 weeks respectively. The results in heart tissue (both groups) show mild hemorrhage and no singes of necrosis in the tissues. The results showed that significant increase' (P<0.05) in RBC count, platelets total, Hb, p.c.v and ratio of lymphocytes in treatments groups compared with control, while the WBCs count show significant decrease (p<0.05) in percentages of granulocytes and monocytes, furthermore.

Introduction

Anabolic-androgenic-steroid (AAS) abuse appears to be broad among specialized sportspersons and amateur sportsmen [1–3], but the actual incidence is difficult to estimation. The soundings of the National Household Survey on Drug Abuse in 1990 showed that extra than 1 million Americans are present or former AAS users [4,5].

Anabolic androgenic steroids (AASs) are definite as artificial products of the endogenous sex hormone testosterone. AASS have relatively small molecules and can passively diffuse into cells of various tissues [6].

And different AASS bind to these receptors with different sympathies, AASS exert, [7].No tissues are empty of androgen receptors. These receptors fit to the family of nuclear receptor superfamily some harmonizing anabolic effects through paths such as a psychoactive effect on the brain, glucocorticoid anoffman antagonism, spur of growth hormone (GH and insulin-like growth factor 1 (IGF-1) production. [8, 9,10 ].

In broad, ergogenic effects of these causes are caused from an increase in muscle size and strong point and reduced muscle damage, increase in protein creation, increase in lipolysis and body fat ratio, increase in bone inorganic density, increase in erythropoiesis, hemoglobin and hematocrit and increase in glycogen storing, [11] types of androgenic steroids, [12] Injectable Steroids (Testosterone Esters, Nandrolone Esters, Stanozolol Methenolone Enanthate, Boldenone Undecylenate, Trenbolone Acetate) and Orally Active Steroids (Methandrostenolone (dianabol), Oxandrolone, Stanozolol, Methyl testosterone, Mesterolone ) [13].

Materials and methods

Laboratory Animals

Twelve native rats Rattus rattus have been brought from animal household of college of sciences /university of Baghdad. These rats were kept throughout experimentation periods Ad libitum for ration and housing (14) in animal house of college of biotechnology /Al-Qasim Green University.

The average weight of such animal ranged between 240-290 gm and their ages ranged from 4-5 months.

The animals have been subjected to research laboratory conditions on bad terms in to 12 hours light and 12 hours dark and the fever is set at 28±2 c°. 
Preparation of Drug Suspension

The methandrostenolone (dianabol) was found from the pharmacy and their apparatus from company of British dispensy as pills in concentration 5 mg/kg. The tablets were softened by blender and each tablet liquefied in 10 ml of physiological normal saline, and the concentration of experimentations was done agreeing to the doses for human [15].

Dosing Protocol

The animals were distributed in to three sets, 4 replicates for each. The first group control was orally usual normal saline for such period. While the second group (t2) and third (t3) treated groups orally received dianabol delay at concentrations 30 and 50 mg/kg/day for 8 weeks one-to-one.

Histological Study

The removed examples were sited in Formalin fixative for 24 hours and properly labelled. They were removed from the preservative, blotted, cut longitudinally into two halves and each half was for a second time fixed in fresh Formalin 10% fluid for another 24 hours [16]. Tissues were dehydrated in ascending grades of alcohol, cleared in xylene-I and xylene-II, and embedded in paraffin. The infiltration with paraffin and embedding was done at 58°C. Six microns thick sections were cut on rotary microtome, floated on warm water bath at 42°C and mounted on gelatinized glass, appropriately numbered with a diamond pencil. The slides were saved in a slanting position for about partial an hour to drain excess water. Sections were dried on a hot plate at 37°C for 24 hours and then we are histopathological analysis.

Blood Samples

The blood examples were collected directly from rats by heart puncture, one day after the last dose. The small quantity of blood samples were saved in sterile tubes having anticoagulant (heparin) AFM-DISPO and put in refrigerator at 4 c in order to the measure some blood factors, while the remnants of these samples were reserved in sterile centrifuge tubes to separate the serum.

Haematological Assays

- The platelet count, WBCs count and difference were done according to the [17].
- The percentage of PCV was measured according to the [18], while the concentration of Hb was estimated conferring to the [19].

Results

The heart tissue (both groups) show mild hemorrhage and no singes of necrosis in the tissues.
Figure 2: cross section of heart tissue in treatment group 1 explain heart tissue with mild hemorrhage (Hematoxylin & Eosin, 20X)

Figure 3: Cross section of heart tissue in treatment group 2 explain heart tissue with mild hemorrhage (Hematoxylin & Eosin, 20X)

Result showed that the rats treated by dianabol has resulted a significant increase (p<0.05) in RBCs count, platelets count, concentration of Hb and percentage of P.C.V in all treated groups in comparison with control group, while there was significant decrease (p<0.05) in total WBCs count in third group (t3) than that in control rats (Table 1).

Table 1: changes in some blood parameters in rats primed orally by dianabol for 8 weeks

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Treatment</th>
<th>RBCs count (cell/mm³×10) Mean±S.E.</th>
<th>Platelets count (cell/mm³×10) Mean±S.E.</th>
<th>WBCs count (cell/mm³×10) Mean±S.E.</th>
<th>Hb concen. gm/100ml Mean±S.E.</th>
<th>p.c.v % Mean±S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>t1</td>
<td>5 ± 0.12</td>
<td>493 ± 8.6</td>
<td>11.3 ± 0.6</td>
<td>14.2 ± 0.2</td>
<td>30.2 ± 1.3</td>
</tr>
<tr>
<td>30 mg/kg (t2)</td>
<td></td>
<td>6.1 ± 0.21*</td>
<td>786 ± 7.9*</td>
<td>9.6 ± 0.4</td>
<td>15.2 ± 0.3*</td>
<td>40.5 ± 0.6*</td>
</tr>
<tr>
<td>50 mg/kg (t3)</td>
<td></td>
<td>7.63 ± 0.25*</td>
<td>747 ± 52*</td>
<td>7.9 ± 0.4*</td>
<td>15.6 ± 0.1*</td>
<td>41.7 ± 0.3*</td>
</tr>
</tbody>
</table>

Discussion

The present study indicates administration of AAS viewing necrosis of myocardial muscle and breach with severe hemorrhage attended with many thrombosis of blood vessels also record incapacity of extract to moderate toxicity of AAS on heart due to high dose of extract may acerbate the disorder so that slid section showed presence of necrosis of myocardial muscle. The defect of extract on heart may be due to reserve of the enzyme 11-b-hydroxysteroid dehydrogenase, resulting in a mineral corticoid effect that
potentiate Na+ and H2O retention moreover Ventricular arrhythmias due to severe hypokalemia [20]. Or This changes due to the heart own a low 5-a-reductase activity and apply a stronger response to material [21] The results of the present study exposed a significant increase in the mean of concentration of hemoglobin (Hb) and RBCs count, and this can be accredited to the effect of androgenic anabolic steroide (AAS) which increased the meditation of erythropoietin hormone which inspire bone marrow to increase production of RBCs[22], also that the increase in amount of red blood cells will increase the percentage of packed cell volume (P.C.V) [23]. The studies showed increase in the average of platelets count when diversion nobbling by athletes [24]. The results demonstrated there was a significant increases (p<0.05) in percentage of lymphocytes, the likely explanation of this marks, the dianabol well known to induce provocative responses, which lead to increases in lymphocytes ratios [25].

**Conclusion**

The dianabol effect on the heart causes necrosis in tissues, increase in RBCs total, and concentration of Hb &P.V.C. finally showed decrease in total of WBCs.

**References**


end-stage renal disease. Am J Kidney Dis; 17: 29-33


