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RENAL HARMFUL EFFECTS OF ANABOLIC STEROIDS ABUSE IN NON-PROFESSIONAL BODYBUILDERS

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INTRODUCTION AND AIMS

Several published studies enhanced the deleterious renal effects of anabolic steroids abuse for increasing muscle mass in athletes.

We report a retrospective analysis of renal dysfunctions in persons who practiced frequent and intense physical activities and who consumed anabolic steroids.

METHODS

Between 2009 and 2014, 56 patients (males; 16 to 39 yrs) practicing heavy effort as amateur bodybuilders and consuming anabolic steroids referred to nephrologist for abnormal renal tests. Family history of renal diseases was found in only 2 patients. 23 had declared concomitant use of protein supplements and 8 concomitant use of testosterone supplements. Duration of steroids use was 2.4 years (limits 3.2 months - 4.2 yrs). Mean BMI was 35.2. The type of renal disease and treatment were collected from the patients hospital records.

RESULTS

At the moment of referral, 25 patients had no symptoms and were discovered accidentally by routine laboratory tests, 5 presented for peripheral oedema, 21 accused oliguria and diffuse myalgia; 5 patients were admitted in other clinics and were later referred to nephrologist: 2 with hypertensive urgency, 2 with gynecomastia and mastitis, 1 for massive pulmonary thromboembolism. Cessation of anabolic steroid use and physical effort was recommended. Treatment was applied as needed, depending on the findings and patients were followed for 3 months after referral.

The following diagnosis were established: rhabdomyolysis accompanied or not with dehydration was found and corrected in 19 cases with subsequent normalization of creatinine values. At 3 months control, patients presented with normal creatinine values. Increased creatinine secondary to elevated total body muscle mass with normal renal function was found in 12 cases. Mild proteinuria (range 230 - 560mg/day) was found in 17 cases, accompanied in 4 cases with microhematuria, and slightly increased creatinine; stopping all supplements and intense physical activities, were followed by normalization of creatinine values and urinary abnormalities at the 3 months. In 8 cases, severe proteinuria (mean 6.4g/day; range 1.6 - 18.4g/day) was found, accompanied in 2 cases with microhematuria and in 4 cases with hypertension, all with increased serum creatinine. After 3 months of stopping any supplements and training, there was a reversal of serum creatinine and urine abnormalities in only 2 cases. Due to persistence of above abnormalities a renal biopsy was performed in 6 patients: FSGS and extensive interstitial fibrosis was revealed in 5 cases and minimal lesion glomerulopathy in 1 case. Statistic analysis of patients with proteinuria showed positive correlation between serum and urinary abnormalities and duration of anabolic steroids abuse. All subjects with heavy proteinuria (> 8g/day) and FSGS declared, additionally to anabolic steroids use, more than 2 years of protein and testosterone supplements intake. No association between the type of anabolic steroid used or the intensity and duration in time of the physical training and renal abnormalities was found.

CONCLUSIONS

Proteinuria, hypertension, glomerulosclerosis are possible renal harmful effects of anabolic steroids abuse, especially in combination with protein or testosterone supplements. Further studies are needed to establish if anabolic steroids have a direct renal toxicity or renal abnormalities are a consequence of the severe and prolonged glomerular hyperfiltration secondary to increased protein intake and to the hypertrophied muscle mass.

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