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Hidden Danger of Irrational Abusing Illegal Androgenic-anabolic Steroids in Recreational Athletes Age Under 35 in Bosnia & Herzegovina

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Abstract

Introduction: Androgenic-anabolic steroids are rarely used by sportsmen who want to improve physical performance in competition sport. Despite that they are well aware of the side effects of anabolic steroids, many young athletes in Bosnia and Herzegovina without competition motivation come in temptation, trying to achieve better muscle proportion and physical performance unknowing consequence of side effects and what is hiding behind. Risk factors such as increasing of lipid levels and arterial hypertension are major factors which have important role in the Pathogenesis of atherosclerosis and are responsible for occurrence of cardiovascular disease even causing a sudden death in young athletes. **Objective**: The aim of the study was to estimate the frequency of misusing of androgenic anabolic steroid drugs in young recreational sportsmen without competition motivation. This study will try to estimate vascular and lipid status, analyzing the side effects of steroids in young recreational athletes under the age of 35, in Bosnia and Herzegovina. **Methods**: The study included 70 individuals in period of 2010 till 2015 on recreational exercising program; 35 individuals misusing androgenic anabolic steroids during the period of 5 years were compared with 35 individuals which do not use androgenic anabolic steroids. Non-invasive methods were used in all individual (clinical examination and vascular ultrasound examination of vein system). The routine of training units in both groups was approximately two hours 4-6 times per week. **Results:** Final analysis has reveal that in androgenic anabolic steroids group in 18 individuals or 55.7% arterial hypertension with hyperlipidemia was more represented, compared with the group without using anabolic steroids, represented by 2 individuals or 5.7% and it was statistically considered significant by using p value less than 0.05. (p<0.05). Statistically dominant population using anabolic steroids drugs are males (100%) or 35 individuals; we did not find females using anabolic steroids and that is why our research was limited to male population. **Conclusion:** Recreational male sportsmen are dominant androgenic anabolic steroids misusers , trying to achieve better muscle proportion and physical performance, they neglect the anabolic steroids side effects which have devastating consequence on vascular system. Benefits of misusing drugs in recreational exercising program in young sportsmen are mostly connected with development of arterial hypertension and hyperlipidemia and the variety of serious health disorders, progressing the pathogenesis of cardiovascular disease.
Key words: androgenic anabolic steroids, recreational sportsmen, arterial hypertension, hyperlipidemia cardiovascular disease.

1. INTRODUCTION

Misuse of androgenic anabolic steroids as an alternative, sometimes the only way, way for reaching better physical performances and development of skeletal muscle system, beside benefit of success, causes cardiovascular deceases (1,2). Synthetic derivatives of testosterone, well-known as androgenic anabolic steroids became very popular in the circles of young professional sportsmen, as well as some of recreational sportsmen under the age of 35, in Bosnia & Herzegovina, causing dramatic cardiovascular system damages. Besides diabetes mellitus, which is a strong risk factor for developing of cardiovascular deceases, key risk factors are also arterial hypertension with hyperlipidemia (3,4). Many researches proved arterial hypertension present in young recreational sportsmen without clinical symptomatology, stage I: mild hypertension 140-159/90-99 mm Hg and stage II: medium hypertension 160-179/100-109 mmHg. Kuipers and authors found increasing of blood pressure from 74 to 86 mm Hg, after ten weeks of androgenic anabolic steroids use. Certain stud-

Analysis of androgenic-anabolic steroids drug sorts of in asymptomatic recreational sportsmen under 35 years		
Continuously use of androgenic-anabolic steroids drugs during 5 years research (intramuscular and oral application)	N	%
Dianabol (Methandrostenolone) 15-50 mg/day oral application	4	11.4
Sustanon 250 (4 different testosterone compounds) (intramuscular application) 30 mg testosterone propionate 60 mg testosterone phenylpropionate 60 mg testosterone isocaproate 100 mg testosterone decanoate	10	28.6
(Boldenone Undecylenate) 400-600mgs (intramuscular application)	9	25.7
Testosterone propionate 50-200mg (intramuscular application)	9	25.7
(Stanozolol) Winstrol (oral) tablets) 15-25 mg and Winstrol Depot 25-50mg (intramuscular application)	3	8.6
total	35	100.0

Table 2. Analysis of androgenic-anabolic steroids sorts of in asymptomatic recreational sportsmen under 35 years on continuously use of androgenic-anabolic steroids during 5 year research

ies also confirmed increasing of systolic pressure (10-12 mm Hg), during a period of one year (5). Scientific-professional literature also mentioned increase of systolic and diastolic blood pressure in some young recreational sportsmen, although recently finished scientific study by Hartgens et al. did not registered systolic and/or diastolic blood pressure elevation; that is why additional research are necessary to confirm this fact (6 , 7). Elevation of total cholesterol level, with reduced HDL (high density lipoprotein) and increased LDL (low density lipoprotein) is predictor for accelerative pathogenesis of arteriosclerosis and occurrence of clinical description of cardiovascular decease (8,9,10). Singh et al. conducted long-lasting study of effects of supplementation of androgenic anabolic steroids; testosterone cypionate on the first place, and proved that continuous intramuscular applications of 600 mg weekly, reduced HDL level in serum, while short-term applications, to 2 months, did not reduced HDL significantly for causing any cardiovascular risk. After ceasing of testosterone cypionate application, as well as other anabolic steroids, period between 4-12 weeks is necessary for the level of HDL to reach normal value, with modified nutrition included (9,10,11).

2. PATIENTS AND METHODS

Research covers retrospective-prospective study from January 2010 till January 2015; 70 asymptomatic recreational sportsmen under 35 years are included in recreational fitness without competition motives without any presence of congenital and non-congenital diseases and without no lipid blood panel abnormalities. Also the choice in free eating behaviors and traditional foods option with low nutritional value are allowed in study group. Non-invasive methods were used in all individual (clinical examination and vascular ultrasound examination of vein system). The routine of training units (anaerobic exercise) in both groups was approximately two hours 4-6 times per week. Lipid and vascular status were compared in two groups: (group A), 35 subjects Profile, which used androgenic anabolic steroids during last 5 years and (group B) 35 subjects, which never used androgenic anabolic steroids. Results are processed by standard statistical programs (Excel 2013) and presented in tables and charts; p values less than 0.05 (p<0.05) used as measure of statistical significance.

3. RESULTS

In the group A, 35 subjects under the age of 35, all of them were males; 100% had statistical significant data p<0.05. In the group B consisted of 18 males (51.4 %) and 17 females (48.6 %/) and we had results without statistically significant difference between males and females (p>0.05). Conclusion is that misuse of androgenic anabolic steroids in Bosnia and Herzegovina is dominantly represented by male population group. During further analyses we evaluated the androgenic anabolic steroids, available on illegal market and listed 5 most popular among sportsmen under the age of 35 without statistically significant difference among applying of preparation (p>0.05). (Boldenone Undecylenate) and testosterone propionate dosage were used by approximately the same number of subjects 9 (25.7 %); Sustanon used 10 of them (28.6 %) (p>0,05); Winstrol is less popular, only 3 subject used it (8,6 %) we do not know whether it is influence of a price or something else. After 5 years of monitoring the subjects, we analyze lipid and vascular status in group A and group B. Using a statistical analyze, we confirmed combination of arterial hypertension with hyperlipidemia in 18 subjects (55.7 %) in group A, compared with 2 subjects (5.7 %) in group B (p<0.05). Obesity was registered in 1 subject (2.9 %/) in group A and 6 subjects (17.1 %) in group B, without statistically significant difference between the groups (p>0.05). Arterial hypertension: 2 subjects (10 %) group A and 1 subject (2.9 %) group B, but without significant difference between the groups (p>0.05). Lipid status analyses–hyperlipidemia, increased value of LDL <1.03 mmol/L, reduced value of HDL >4.53 mmol/L, as well as increase of total cholesterol > 5.5 mmol/L: 7 subjects (19.4%) in group A and 6 subjects (17.1 %) in group B, but without significant statistical difference between the groups (p>0.05). Damages in form of dilating of surface venous system occurred as well as varicose disease of the system of vein great saphenous vein and small saphenous vein. Damages of surface venous system in form of dilatating of small saphenous vein were not registered, while dilating of surface system of great saphenous vein were registered in 11 subjects (29.4 %) in group B and 6 subjects (12.9 %) in group A, but without significant difference between the groups (p>0.05). First degree of failure of surface venous system was registered in 7 subjects (20%) in group B; second degree of failure was equal pres-

ent in both groups. In the group A ,subjects using androgenic anabolic steroids, males were represented only. The reason was that we had not found any females in Bosnia & Herzegovina who used androgenic anabolic steroids. The subjects chosen for the research were recreational sportsmen under the age of 35, without competition motives, without any evident presence of congenital or non-congenital decease, as well as no signs of lipid blood panel abnormality.

4. DISCUSSION

After 5 years of monitoring, we analyze lipid and vascular status in 2 groups of recreational sportsmen under the age of 35; one group, 35 subjects (group A), using androgenic anabolic steroids and second (group B), 35 subjects who did not use androgenic anabolic steroids. We found strong damages of cardiovascular system in subjects without competition motivation, who practiced weightlifting. These dangerous side effects were result of training conception, as well as wrong nutrition habits. It causes serious damages of surface venous system (phase II/III) and key development of arteriosclerosis (3) of surface venous system were registered in form of dilating and development of varicose decease of surface venous system great saphenous vein and small saphenous vein. Among all the androgenic anabolic steroids, present on Bosnian illegal market, Dianabol (methandrostelone) and Winstrol (Stanozozol) are less present; we have no further information if they are less available or more expensive, compared with the other available preparations. Additional research would be necessary to check this data. Development of I and II degree of hypertension, combined with a wrong diet, speed up arteriosclerosis process, and with present anaerobic exercise conception of training, has no significant influence on a healthy organism, as well as recreational sportsmen which did not use illegal anabolic steroids (6).

5. CONCLUSION

Results of this research proved that subjects , who used androgenic anabolic steroids in their regular fitness program, without competition motives, during a 5 years period, had statistically significantly elevated systole and diastole values of blood pressure (I and II stage of arterial hypertension), combined with elevated levels of lipids in their blood. The group of subjects which did not use androgenic anabolic steroids, had no such a symptoms. That is why subjects from the group A, users of illegal androgenic anabolic steroids/ belong to population with risk for development of cardiovascular system deceases. Healthy benefits of this training system, we were not able to elaborate or statistically confirm. Analysis of this research confirmed speeding up of intensity of a arteriosclerosis pathogenesis process, which hides a potential patient with coronal or vascular revascularization, behind a picture of healthy, young and strong athlete.

Results of clinical examination ,vascular ultrasound examination and (lipid blood panel) after 5 years of research

		recreational fitness sportsmen, which used androgenic anabolic steroids		total
		No (group A)	Yes (group B)	
Obesitas	N	6	1	7
	%	17.1	2.9	10.0
Hyperlipidemia	N	6	7	10
	%	17.1	19.4	14.3
Arterial Hypertension (Blood Pressure, mm Hg) Stage 1 mild hypertension 140-159/90-99 mm Hg Stage II: medium hypertension 160-179/100-109 mm and Hyperlipidemia	N	2	18	18
	%	5.7	55.7	25.7
Arterial Hypertension (Blood Pressure, mm Hg) Stage 1 mild hypertension 140-159/90-99 mm Hg Stage II: medium hypertension 160-179/100-109 mm	N	1	2	1
	%	2.9	10	1.4
Great saphenous vein dilatation	N	11	6	19
	%	29.4	12.9	27.1
Small saphenous vein dilatation	N	0	0	2
	%	0	0	2.9
Telangectasia or reticular veins (varicose disease stage I)	N	7	1	1
	%	20	2.9	1.4
Varicose veins with no symptoms (varicose disease stage II)	N	2	2	12
	%	5.	10.3	17.1
Total	N	35	35	70
	%	100.0	100.0	100.0

Table 3 Results of clinical examination ,vascular ultrasound examination and (lipid blood panel) after 5 years of research in asymptomatic recreational sportsmen under 35 years without competition motives without any presence of congenital and non-congenital diseases and without lipid blood panel abnormalities.

CONFLICTS OF INTEREST: NONE DECLARED.

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