

The Risk of Hormone Anabolic Steroids and Oral Contraceptives Consumption in the Young

Manuela Stoicescu*

Assistant Professor, University of Oradea, Romania

Abstract

Introduction: The consumption of hormone anabolic steroids and oral contraceptives is a growing phenomenon difficult to quantify and accurately control due to partial recognition or hiding consumption and lack of knowledge of youth on this issue on the side effects as hypertension plays an important role with youth.

Materials and methods: The study was conducted in ambulatory specialty in Clinical Hospital Oradea City, Bihor County, Internal Cabinet. It is a prospective longitudinal study conducted over a period of approximately three years. In this study a number of 321 young patients aged 18-35 years have been included who were diagnosed with hypertension: BP>140/90 mmHg confirmed in at least three repeated measurements in one week to exclude "white coat phenomenon", which is very common especially with young women, or have a severe amount of BP \geq 170/110 mmHg, at the first determination.

Results and discussions: The consumption of oral contraceptives was 2.80% and that of anabolic steroids was present at 1.55% in young hypertensive in the study.

Conclusions: The percentage of young hypertensive after consumption of anabolic steroids and ACO hormones (oral contraceptives), with young women can be completely canceled by avoiding consumption of information and youth programs on the subject, they run the risk of consuming them.

Keywords: Oral contraceptives; Anabolic steroids; Hypertension; Young

Introduction

Oral contraceptives based on a mixture of estrogen-gestagen in varying proportions, whose use is growing, raised among other numerous side effects and onset the trigger of hypertension in women from a young age.

The incidence of hypertension in young women consuming oral contraceptives is undefined. It is currently stated, however, that about 5% of women who use oral contraceptives, usually show mild and less severe form (even malignant) of hypertension. Hypertension occurs after months, years of drug consumption rarely few weeks, but the hypertension is reversible after discontinuation of drug, blood pressure returns to normal within 1-2 months [1].

The pathogenic mechanism involves, as a major element, the intervention of the renin-angiotensin-aldosterone system, the two components contained in the contraceptive pill.

The estrogens stimulate the production of angiotensinogen, which increases the plasma rennin activity and the angiotensin II synthesis leading to a moderate hyperaldosteronism.

The synthetic progestational agents (gestagenic) have a mineralocorticoid effect, contributing to sodium retention.

Another issue is the risks of administration of anabolic steroid hormones to young men to improve sporting activities. Young people who have resorted to doping with androgen developed hypertension due to the harmful effects of anabolic steroids [2]. A warning should be made on these practices becoming more and more widespread and advice in implementing anti-doping.

Since androgens discovery (Nobel Prize in Chemistry-1939), testosterone and synthetic derivatives have caused controversy, being perceived as "hormone of youth, vigor, going as far as to predict mass consumption to improve physical performance. More than 50 years

after the widespread euphoria, have realized both the physiological effects of androgens (testosterone and dihydrotestosterone active derivatives, and dihydroandrostendione androstendione) puberty development and anabolic effects in organs with low activity of 5- α reductase (muscle, bone, cardio-vascular, kidney) where it stimulates protein synthesis, ATP synthesis, hyperplasia and hypertrophy of muscle fibers and erythropoiesis [3]. Abuse is used without a medical indication of androgens derived from illicit sources and manages the massive doses.

Objectives

The study objectives were to identify the causes of hypertension in young adults, the age category 18-35 years, especially in this age segment that hypertension was less studied and very important case is curable by solving

Material and Methods

The study was conducted in ambulatory specialty in Clinical Hospital Oradea City, Bihor County, and Internal Cabinet. The study was conducted in the period between October 1, 2006-July 31, 2009. It is a prospective longitudinal study conducted over a period of approximately three years.

***Corresponding author:** Manuela Stoicescu, Consultant Internal Medicine, Assistant Professor, University of Oradea, Faculty of Medicine and Pharmacy, Medical Disciplines Department, Romania, Tel: 072-301-9951; E-mail: manuela_stoicescu@yahoo.com

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In this study a total of 321 young patients aged 18-35 years were included who were diagnosed with hypertension: BP>140/90 mmHg confirmed by at least three repeated measurements within a week or have a severe BP value \geq 170/110 mmHg, since the first determination of blood pressure.

The survey was done after the diagnosis of hypertension and staging according to OMS classification. All the patients were fully investigated clinical and para clinical. They agreed to take their trial after they were explained the ethical, scientific and confidentiality criteria.

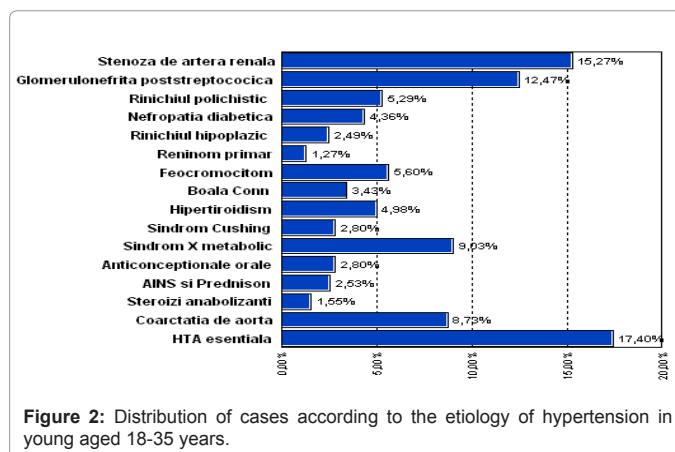
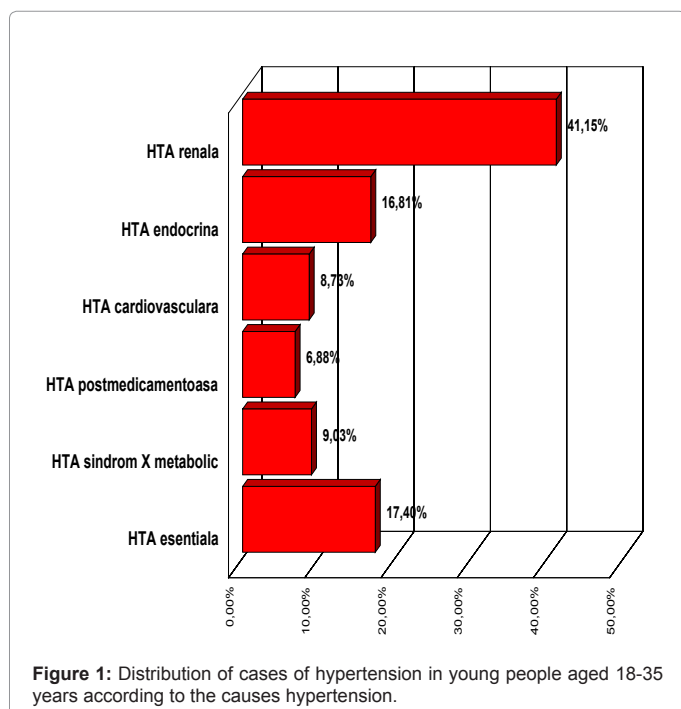
Statistical analysis was done with the help of Epi Info, version 6.0, a program of the CDC (Center of Disease Control and Prevention) in Atlanta, suited for processing of medical statistics. They calculated average parameters, frequency range, standard deviation, tests of statistical significance by Student method (t test) and χ^2 .

Results

Regarding the causes of hypertension in younger study group, kidney disease had the highest prevalence (41.15%), followed by endocrine (16.81%), cardiovascular (8.73%), after drug ingestion (6.88%), metabolic syndrome X (9.03%) and essential hypertension 17.40% (p<0.001) (Figure 1).

ACO and anabolic steroids consumption is included in endocrine hypertension. Distribution of cases of hypertension in the major conditions that gave rise to the etiology of hypertension in young people is illustrated in the chart below: (Figure 2).

It can be noticed on this graphic the variety of illnesses that were the basis for the etiology of hypertension in youth, in which use of oral contraceptives was 2.80% and that of anabolic steroids was present at 1.55% in young hypertensive in this research. This percentage may seem small at first glance, insignificant compared with other diseases, but could be completely avoided by properly informing young people of the risks they by consuming the drug and making them stop.



Discussions

In the cases studied I found a number of eight young women with exaggerated hypertension due to the consumption of oral contraceptives being 2.8% (p<0.01). Heyden et al. [1] conducted research young women who consumed ACO for two years without other risk factors were found to have elevated systolic and / or diastolic values of blood pressure. These 5% of studies show that oral contraceptive use is a risk factor for the development of hypertension in young women, even without other risk factors, indicating the danger to which they expose and their lack of information on the subject. Long-term use of oral contraceptives and particularly those containing high amounts of estrogen most frequently causes hypertension.

The incidence of hypertension was increased in women who drank so oral contraceptives containing increased estrogen if they were combined with other risk factors for hypertension (such as hypertensive heredity, obesity, smoking, alcohol, coffee consumption increased salt) [4]. The incidence of hypertension was lower in those who used contraceptives containing lower estrogen or progestin preparations. Estrogen-induced hypertension was generally mild or moderate, but also severe.

I found in the studied group that in approximately 50% of cases stopping the use of oral contraceptive determined the BP normalization in approximately six months, but the other half of the cases developed hypertension.

To prevent hypertension in women using oral contraceptives should be recommended products containing low doses of estrogen (20-30 micrograms), avoiding obesity, smoking and alcohol consumption, any previous test (for 3 to 6 months) of individual tolerability to contraception.

Hickson et al.[2] made ENIGMA study. Participants were drawn from the ENIGMA study, which examines the natural history of blood pressure in young adults. A detailed medical history and lifestyle questionnaire, including OCP details were taken. Blood pressure was measured according to the British Hypertension Society guidelines. Aortic Pulse Wave Velocity (aPWV) was measured together with Augmentation Index (AIx). Stroke Volume (SV) and Cardiac Output (CO) were also assessed.

The Oral Contraceptive Pill (OCP) [2] is widely prescribed throughout the world. Although it is associated with a small but significant increase in blood pressure, the influence of the OCP on large artery stiffness and wave reflection is unclear. The aim of this

study was to determine the relationship between use of the OCP and aortic stiffness and wave reflections in a young, healthy cohort of women.

The results of the study [2] were: women taking the OCP (n=225) had a higher SBP and pulse pressure compared with nonusers (n=660; 112 ± 12 vs. 110 ± 11 and 43 ± 8 vs. 42 ± 8 mmHg, respectively, $P < 0.05$ for both). CO and SV were also higher (6.6 ± 1.5 vs. 6.3 ± 1.5 l/min, $P < 0.01$ and 81 ± 16 vs. 78 ± 19 ml, $P < 0.05$) as was a PWV (5.5 ± 0.7 vs. 5.4 ± 0.7 m/s, $P < 0.05$). However, there was no difference in DBP (68 ± 9 vs. 69 ± 9 mmHg), mean arterial pressure (81 ± 10 vs. 81 ± 10 mmHg) or AIx (2 ± 12 vs. $3 \pm 13\%$) between the groups. In conclusion, use of the OCP is associated with elevated pulse pressure and SV and a small increase in aPWV in young women. The longer term implications of these effects require further investigation. Comparative with my study the results were that a low percent of women's developing high blood pressure with a low significant statistic incidence.

The group of young hypertensive patients we studied had a total of five cases of young athletes for performance-bodybuilding that had hypertension after use of anabolic steroids to improve sports performance, representing 1, 55% ($p < 0.001$).

They were found quite by chance after routine measurement of BP values during medical examination for driving the car. They recognized that they were athletes-practicing bodybuilding, and also recognized the use of anabolic steroids they use more than five years to improve sports performance and physical image, although they were asymptomatic.

GT Bryan [3] on a study on a group of young athlete's performance, studied for a period of two years, who consumed anabolic steroids, found that those who resorted to doping with androgen hormone developed hypertension in 15% of cases.

Compared with these data the incidence of hypertension to the youth group studied was much smaller, but it should be considered that the study was performed on young patients of various categories and there was not selected a group of young performance athletes [5].

Sader et al. [6] made a study were examined arterial and cardiac structure and function in bodybuilders using Androgenic Anabolic Steroids (AAS), compared to non-steroid-using bodybuilder controls. Adverse cardiovascular events have been reported in bodybuilders taking anabolic steroids. The cardiovascular effects of AAS, however, have not been investigated in detail. They recruited 20 male bodybuilders (aged 35 ± 3 years), 10 actively using AAS and 10 who denied ever using steroids. Serum lipid and hormone levels, carotid Intima-Media Thickness (IMT), arterial reactivity, and Left Ventricular (LV) dimensions were measured. Vessel diameter was measured by ultrasound at rest, during reactive hyperemia (an endothelium-dependent response, leading to flow-mediated dilation, FMD), and after sublingual nitroglycerin (GTN, an endothelium-independent dilator). Arterial reactivity was also measured in 10 age-matched non-bodybuilding sedentary controls. Results of AAS was associated with significant decreases in high density lipoprotein cholesterol, sex hormone binding globulin, testosterone and gonadotrophin levels, and significant increases in LV mass and self-reported physical strength ($p < 0.05$). Carotid IMT (0.60 ± 0.04 mm vs. 0.63 ± 0.07 mm), arterial FMD ($4.7 \pm 1.4\%$ vs. $4.1 \pm 0.7\%$) and GTN responses ($11.0 \pm 1.9\%$ vs. $14.4 \pm 1.7\%$) were similar in both bodybuilding groups ($p > 0.2$). The GTN responses were significantly lower and carotid IMT significantly higher in both bodybuilding groups, however, compared with the non-bodybuilding sedentary

controls ($p = 0.01$). In conclusion high-level bodybuilding is associated with impaired vascular reactivity and increased arterial thickening, the use of AAS per se is not associated with significant abnormalities of arterial structure or function.

Comparative with my study they follow more parameters than me and the results about incidence of high blood pressure are lower comparative with my incidence.

Conclusions

1. The consumption of oral contraceptives was 2.80% and that of anabolic steroids was present at 1.55% in young hypertensive in the study

2. The women that show propensity to mineralocorticoid and sodium excess may show an increase in their blood pressure. Therefore it interferes both as volume factor (aldosterone) and the vasoconstriction factor (angiotensin II).

3. The clinical image resembles the essential hypertension blood pressure with light, medium, rarely severe values. The laboratory data revealed an increase in renin and aldosterone plasma, the potassium is normal.

4. High blood pressure by oral contraceptives is a reversible condition with good prognosis, but there is sometimes a risk of complications in severe forms ignored: stroke, myocardial infarct. Stopping drug use leads to the normalization of blood pressure in a proportion greater than 80% of cases (in other cases, we should think about another form of hypertension), in a few months. Sometimes by oral contraceptive use is only revealed an essential hypertension.

5. In cases of severe hypertension that does not return to normal within months after stopping oral contraceptives, there will be no return to use birth control pills, with the possibility of recurrence of hypertension.

6. In regard to anabolic steroids, the abuse represents the use without a medical indication of androgens derived from illicit sources and administered in massive doses. Although the World Anti-Doping Agency's list of banned substances includes androgens, these are used in sport (cycling, bodybuilding, weightlifting, rowing, boxing, swimming), being a source of controversy.

7. The ingestion of anabolic steroids leads to multiple risks of cardiovascular, metabolic, osteoarthicular and not least psychological affections.

8. The methods of early detection of hormonal anabolic consumption require careful interviewing young people from risk groups on lifestyle, weight fluctuations, emotional balance, and physical examination can reveal muscle hypertrophy, high blood pressure and included in routine testing liver samples and evaluation of lipid metabolism.

9. It is noticed the increase of the number of young people that resort to such "add" hormone because of peer pressure for a picture "adequate", considered a marker of masculinity, the actual prevalence of the phenomenon is difficult to judge, due to undeclared consumption and presentation to the doctor only upon the occurrence of side effects including hypertension, which in this case is a secondary steroid-induced hypertension.

10. It is obviously required the rigorous application of legislation on doping substances and access to such information campaigns are needed on the risks of young people taking anabolic androgen.

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