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Oxandrolone Case Study

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Abstract

In 2015 a 21-year-old athlete was excluded from all sport events for 6 months, when it was discovered that he had used oxandrolone. What is interesting is that he was told by a "friend" that this was a "testosterone booster" that will boost up his natural testosterone. It is very serious when young people, like this one, believe what they are told by non-professionals.

Introduction

The drug oxandrolone was introduced to the market in 1964 under the trade name Anavar. It was developed by Dr. Raphael Pappo and Dr. Christopher J. Jung, two years earlier, when they worked at Searle (now Pfizer) [1]. They found out that oxandrolone has a mild steroid effect, that is well tolerated by adults, women and even children. It is possible to use this compound to facilitate wound healing after infections, postoperative or in children that have had second or third degree burning. It could also be used to treat immature young adults [2]. The anabolic effects of oxandrolone have placed it on the World Anti-Doping Agency (WADA) doping list. If a sample contains this compound, the respective athlete may face 4 year exclusion from participation in sport events [3]. Oxandrolone has been widely misused and the Icelandic athlete mentioned here above was discarded from sport events for 6 months, partly because he admitted using the compound immediately and was fully cooperative [4]. At the Olympics in London 2012 and in Sochi 2014, the doping authorities discovered that it had been used together with methenolone and trenbolone and administered to Russian athletes under the supervision of Russian authorities, resulting in that numerous athletes from Russia were excluded. Many champions lost their trophies and were excluded from participating in sport events for the rest of their lives [5]. Oxandrolone is known by many names such as Anavar, Oxandrin, Lonavar and Lipidex [6]. In Iceland that drug is not available, so if it is found, it has been bought illegally.

Case Presentation

An Icelandic athlete (21-year-old) was called in to provide sample for a doping test in 2015. The urine samples were sent to Sweden for analysis, showing oxandrolone degradation products, from group S1 on the WADA list over illegal drugs. The T/E ratio was found to be 8.68, but shall not exceed 4.00.

When the results from the analysis were presented to the athlete, he was not surprised. He admitted that he had used a drug called "testosterone booster" to naturally increase the amount of testosterone. He was, however, surprised that anabolic steroids were also found in the sample because he did not recall using anything else than this "booster", called DAA that he got from a friend. He also said that he was using it to improve wound healing after an accident, claiming that this compound is widely used by athletes in Iceland.

Clinical Use

Oxandrolone binds to intracellular androgen receptors, where it becomes transported into the nucleus, binding to DNA and augment proliferation. This process stimulate regeneration of protein synthesis [7,8]. There is an increase in the synthesis of proteins, exceeding the degradation, resulting in increased serum protein values [8,9]. Its protein binding is about 94% to 97% and it may be detected up to 3 weeks in urea after single use [10]. Additionally, it increases the number of receptors in muscle cells that may improve muscle growth [11]. Wounds in children that have been severely burned become improved when oxandrolone is used and chronic use of the drug has been shown to improve growth and bone density in children. Osteoporosis is seen in children, caused by their burn wounds, have been shown to be reduced and their growth pattern become normalized [12]. In adult healthy males (66-67 years of age) the drug improves muscle growth and strength in only 6 weeks [13]. In young girls with Turner syndrome, this drug improved their growth and height

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[14]. Dose usage is between 2.5 and 20 mg daily, depending on sex and age [15]. When misused, dosage up to 100 mg daily has been seen. Drugs like oxandrolone affects serum cholesterol by lowering HDL and increase LDL, triglycerides and insulin resistance. This may affect the cardiovascular system and it increases the risk of stroke, hypertension and ischemia [2,16,17]. Oxandrolone has also been shown to inhibit testosterone production, having numerous serious long term effects [18]. Normal clinical dose is able to reduce serum testosterone 45%. Chronic use and higher dosage has even more effects. One of the outcome is that the production of semen become almost zero and the quality of the sperm become significantly reduced [2,18]. Additionally, sexual desire is reduced and it may stimulate loss of hair, enlargement of breasts in men or man boobs. In women their voice becomes deeper [19]. Pregnant women using oxandrolone are in high risk of causing malformation in their fetus. The drug also affects cancer patients, especially breast cancer in women and prostate in male by stimulating the tumor growth [15,19].

Conclusion

The case described here above show that many athletes believe what friends are telling them. They are willing to risk their athletic carrier for short term goal without checking the compound they are using. Not even on Google! Here he believes that the "testosterone booster" will increase his testosterone naturally, so it will not be detected, when the truth is that oxandrolone inhibit the natural production of testosterone when used in clinically relevant doses. It is really sad to experience how young athletes are dawned into circles where "miracle stories" are told that give hopes and expectations to the athlete, but they are false. As described here above, the pharmacology of oxandrolone improves protein synthesis, wound healing and muscular growth, which is why it is banned by WADA. Taking an unknown "booster" without knowing what it contains is irresponsible.

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