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Essay

Anabolic steroids and physician oversight; A Medical Perspective

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Anabolic steroids have long presented an interesting health care challenge to physicians. Their growing development over the 20th century and rampant usage in the 21st century paved a path to various health risks. Physicians have played a minimal role in managing the usage of these drugs and their complications. It is imperative that going forward, doctors are given the green light to medically intervene further into their patients' use of anabolic steroids.

The world of anabolic steroids and performance enhancing drugs has certainly grown quite a bit, especially since its inception in Nazi Germany in the 1930s. In fact, rumor has it the German soldiers were given anabolic steroids in order to increase their aggression on the war field. A decade later these drugs were pursued by strength athletes in the Soviet Union and Eastern Bloc [1]. Usage of these agents became rampant over the years in various sports until finally in 1976 when the international Olympic committee (IOC) dropped the ban hammer on the known anabolic steroids at the time. This created a path to creative cheating as far as the athletes were concerned. It even led to some infamous incidents such as the Ben Johnson 1988 Olympic scandal or the 2003 BALCO scandal which implicated many famous athletes. Today, anabolic steroids are illegal to possess in the United States and Canada [2] and are entirely banned in virtually every sport. Analyzing performance enhancing agents can be relatively difficult simply due to the breadth. Drugs that enhance performance really range from anabolic steroids to peptide hormones to stimulants and even beta blockers among many other classes of drugs. Use of these agents varies significantly among sports based on the athlete's specific goals. The most commonly used classes of these drugs are in fact anabolic steroids and peptide hormones (ex. growth hormone). Anabolic steroids are further divided into testosterone-based, classic synthetic hormones, veterinarian and designer steroids. Most physicians are comfortable managing testosterone-based compounds [3]; however, the usage of synthetic products can deviate outside of the scope of practice. Ultimately, this means that physicians

should be even more aware of these agents and ultimately have more control over managing the usage of these drugs.

Anabolic steroids can be classified in several ways including anabolic to androgenic ratios, oral and intramuscular intake and in the specific combinations they are used. Traditionally, these drugs have been used in cycles. The user would utilize various agents in periods of 4-12 weeks and then discontinue use only to restart two or three months later. Given that most of these drugs were not testosterone-based, most users would suffer from side effects due to the lack of testosterone. Naturally, usage of steroids suppresses testosterone production hence creating the need for exogenous usage [3]. This created the classic steroid cycles that became popular in the 2000s, when cycles included a testosterone-based compound along with several other agents. Upon finishing the cycle, users would then commence a period of post-cycle therapy where they would utilize selective estrogen receptor modulators (SERMS) along with aromatase inhibitors (AIs) and many other controversial agents to recuperate their physiology and regain homeostasis. However, in recent years there has been a drastic transition to non-stop usage (termed “blast and cruise”), in which users utilize testosterone year-round and use various other compounds in cycles instead.

Anabolic androgenic steroids (AAS) have a wide range of non-medical benefits and a narrow range of clinically significant benefits for a select set of patients. Pharmacologically they all enter the cell, bind to the androgenic receptors, alter gene expression and ultimately induce protein synthesis while minimizing catabolism. Where these drugs differ, is their relationship with the androgenic receptors [3]. From the medical perspective, they are very useful agents for people suffering from chronic wasting conditions (ex. AIDS patients) or pediatric growth failure. Non-medically, the range of benefits can vary significantly dependent on the specific agent(s). For example, certain steroids such as Halotestin [4], are known to cause very minimal muscle mass gain but induce significant strength increases. This makes them optimal for strength athletes in lower weight classes or sprinters. Other steroids may have minimal androgenic and masculinizing properties (ex. Anavar) and hence be ideal for female users [5]. Unfortunately, steroids also vary greatly in their toxicities and side effect profiles. As such, there is a need for adequate medical surveillance which is often complicated by the lack of trust that users have in their physicians. Studies have shown that despite most steroid users being educated, 58% lacked trust in their physicians and 92% felt that their physicians lacked the knowledge necessary to manage them [6]. With almost 3 million users in the United States [7], it is clearly an issue that needs addressing.

While anabolic steroids are excellent agents for inducing muscular hypertrophy, strength increases, and increasing overall performance in various sports; they do carry a very broad range of side effects. The most common side effects seen are those which are related to their androgenic properties. Female users are the biggest victims for obvious reasons as they experience deepening of the voice, clitoral growth, and increased facial hair. Male users typically tend to experience increased acne, accelerated male pattern baldness, and gynecomastia [8]. Beyond the superficial side effects there are a large variety of pathologies that can develop in both male and female patients. Hypertension and dyslipidemia tend to develop early in users. Signs of hepatic and renal toxicity are also seen, often while the compounds are being used and less so when not being used. Oral agents present the greatest risk of hepatic damage given their 17cc methylation [9]. In recent years, the rise of cardiac disease [10] and sudden death among young users has triggered media outrage. While atherosclerosis has been a long-known risk [11], the development of severe left ventricular hypertrophy and cardiomyopathy has caught the community by surprise [12]. The pathology profile extends to reproductive organ damage [13], neuropsychiatric issues and even rapid and severe kidney failure. The extent of these side effects and pathologies indirectly illustrates the severe need for physician input.

Physicians play a critical role in the preventative healthcare of their patients, and anabolic steroid users should not be an exception to that rule. When a user decides to take steroids, they have two methods of minimizing health risks: optimal drug choice and dosing in addition to medications and post cycle therapy. Choosing the right combination of steroids should be done in the context of various health factors such as personal and family medical history. Optimal dosing is another challenge as strength athletes will often subject their liver to severe toxicity [14] via extremely large doses of oral steroids. From a medicolegal standpoint, physicians would be in trouble today if they altered the steroids or dosages of their patients. Though there is certainly a preventative health argument to be made for allowing qualified physicians to manipulate dosages. Where physicians can make a difference today is in standard medical intervention. However, the medical debate is based around the optimal time of intervention. Should ACE inhibitors at a low dose be used from an early age to prevent cardiac remodeling and the inevitable hypertension that results from anabolic steroids? How about beta blockers in older users to prevent the risk of sudden cardiac death? Or statins from a younger age to fight off the expected hyperlipidemia? There are a variety of medical interventions that physicians could utilize from a preventative standpoint. Though if history shows anything, by the time doctors can intervene in anabolic steroid use they will be prescribing PCSK9 inhibitors routinely rather than statins.

Unfortunately, regardless of medical intervention or proper use, pathology can occur, and timely medical work-ups are the key to maximizing quality outcomes. All anabolic steroid usage prompts a full-scale laboratory workup of one's blood, chemistry and organ health. However, certain steroids prompt a different medical approach. For example, the commonly used compound known as stanozolol (used originally for horses), creates a high-risk of severe left ventricular hypertrophy. It would be reasonable to perform an echocardiogram on patients who have used this drug extensively. A more unique example is the development of focal segmental glomerulosclerosis [15] (commonly seen in HIV and heroin using patients) with the usage of Trenbolone, the very popular and powerful injectable steroid. Optimal physician intervention would be a timely kidney biopsy once there is any mild suspicion, particularly in the context of the drug of choice. Further examples include the varying levels of hepatic toxicity seen with most oral steroids. This should prompt very close monitoring of liver enzymes and function [14]. It is quite easy to see how ideal intervention by a physician can make a significant difference in the outcome of the patient who uses anabolic steroids.

Medical intervention into anabolic steroid use is a definite difference maker for patients and this can expand the question into potential prescription of anabolic steroids for non-medical reasons such as cosmetics. Today, doctors can prescribe a very limited number of these agents either for wasting syndromes or for male hormone replacement therapy. If a medicolegal pathway is made for greater prescribing of steroids, it creates a debate filled with positives and negatives. Steroid usage would become significantly safer and rates of abuse could drastically plummet. On the contrary, cosmetics is also a product of optimal training and nutrition which can both vary drastically depending on the user. Athletes who compete in sports which are tested for banned substances may also present an ethical challenge to their physician if they request to be prescribed these agents. Ultimately, the greatest challenge in prescribing these drugs is that most commonly used steroids are not pharmaceutically manufactured and hence there is a limited role when it comes to direct prescription.

In summary, anabolic steroids are a very commonly used class of drugs that present a broad range of health risks to patients and complicated challenges to physicians. Over the 20th century these agents have drastically developed and have created subcultures in various sports and recreational settings. They present a broad range of potential health risks in virtually every organ system and are naturally prone to abuse by the user. It is critical that physicians play a greater role in the usage of these drugs and engage in further medical intervention when it comes to their patients and anabolic steroids.

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