

Ulf Sjöberg, Elzbieta Palonek, Mats Garle

Results from Screening for Anabolic Androgenic Steroids outside Sport

Karolinska University Hospital, Department of Clinical Pharmacology, Doping Control Laboratory, C2-66, SE-141 86 Stockholm, Sweden

Abstract

Misuse of Anabolic Androgenic Steroids (AAS) is known to be a problem in sports.

Here will be presented some Swedish data of screening for AAS outside sport.

In Sweden abuse of AAS outside sport is considered to be a medical, social as well as a legal problem.

It is prohibited by law to use AAS without medical prescription since year 2000.

This antidoping law called "Dopningslagen" was taken in hope to prevent abuse of AAS in society. Since the Doping Control Laboratory in Stockholm is the only laboratory in Sweden with experience of analysis for AAS in human samples, we have been asked to perform the analysis.

The samples are divided in three categories - Drug Analysis at Workplace, health cares samples from patients and drug control of prisoners. The highest positive percentage was found between the two last groups and is much higher than those found in sport.

The most common substances found were nandrolone and testosterone.

Background

The misuse of Anabolic Androgenic Steroids (AAS) outside sports in Sweden raises concern amongst the public as well as authorities. The extent of the abuse is not known, the estimations range from a couple of thousands to one percent of the population.

The Telephone Hotline at the Clin. Pharmacology Department received 2100 phone calls last year from concerned relatives and school nurses asking about side effects resulting from the misuse of AAS by individuals.

The smuggling of AAS is a problem for the customs and police. Each year the customs take in possession large quantities of AAS both for injections and oral consumption.

To prevent the abuse of AAS the Swedish Parliament introduced a new law in 1992. This law “Dopningslagen” 1991:1969¹ makes it illegal to smuggle, possess, sell and give Anabolic Agents. The law was further sharpened in 1999, 1999:44 by making the use of AAS without medical prescription criminal. The penalty ranges from getting fines to imprisonment for a maximum of 4 years.

The law defines four categories of Anabolic Agents, Testosterone and its derivatives, Anabolic Androgenic Steroids, Growth Hormone and agents that increase Growth Hormone and the Testosterone level. The effect of this law has not been investigated.

Requirements for screening for AAS outside sports

There is a need for analyzing AAS outside sports. One of the reasons is that doctors want to know if the symptoms observed by their patients could have any connection with their previous abuse of AAS. Also, they are interested in knowing whether the patient has stopped using AAS and if the patient is clean from them.

Drug Testing at Work place in Sweden is a quite common procedure for drugs such as Cannabis and Amphetamines. Testing for Anabolic Steroids is not that common yet but we can observe some increase. Some employers for certain occupations start to ask for such analysis, including security guards, fire fighters and military. There are few tests for already employed but most tests at work are for future employees.

Since the new law has been introduced and the abuse is criminalized questions arise whether people suspected for crime and people convicted to prison have used or are still using AAS. This is especially important for prisoners, because if they used AAS during their sentence they lose permissions or will not be granted a shorter sentence. Furthermore, individuals in drug rehabilitation programs have to show that they have stopped abusing AAS.

Methodology

The Doping Control Laboratory at Karolinska University Hospital, located in Huddinge is the only laboratory in Sweden analyzing AAS in human samples. It has a long experience in this field and belongs to the Department of Clinical Pharmacology, which is already doing screening for drugs of abuse and analysis for work places.

In order to test samples outside sports, the samples were treated according to the protocol set for the sport samples. All samples were separated from the sport samples and analyzed on a separate GC-MS instrument to eliminate the risk of cross-contamination.

To declare a sample positive for nandrolone the 2003 years cut-off for females was used,

>5 ng/mL 19-norandrosterone. The reason for the high cutoff was because the gender of tested individuals were not always known.

For declaring a positive Testosterone, T/E > 6 and T/LH > 250 nmol/U were needed.

Results from 2004

During 2004 the dopinglab analyzed 5021 samples within sports and 1727 samples outside sports .

The total number of samples for drug tests at work place was 964. The numbers of samples from patients, hospital and institutions was 412. Finally, samples from prison and other sources was 351. The number of samples where we reported presence of one or more AAS is shown in Table.1 . Distribution of AAS found in 161 of the positive samples is shown in Table.2 and the number of samples positive on one or more AAS in Table.3.

Discussion

In these tables we show the number of positive samples. One explanation for the high positive rate could be that the same individual has been tested a number of times.

Another possibility to explain the high positive rate is that this is not a random population.

Patients and prisoners are only tested if abuse is suspected.

Conclusion

Abuse of AAS occurs in society both in sports and outside sports.

In 2004, the Doping Control Laboratory in Stockholm analyzed 1727 samples outside sports.

In 10% of the cases presence of AAS was found. If broken down in smaller groups, the samples with the highest frequency of positive were found amongst patients and prisoners, with around 20% positives. 35% of the samples were positive on more than one AAS steroid.

The most common drugs occurring in the samples were nandrolone and testosterone.

For the Doping Control Laboratory analyzing the samples outside sports is a challenge.

Although we have the experience to analyze this type of samples, the positive rate is so high that it implies a higher workload especially in the context of confirmations. Also, certain steps need to be taken in order to remove the risk of cross-contamination of the sport samples, further increasing the workload of the staff.

Table.1

Number of samples	Total	Negative	Positive	% Positive
Workplace Drug Testing	964	940	24	2,5
Patients	412	326	86	20,8
Prisoners and others	351	277	74	21,1
Total	1727	1543	184	10,6

Table. 2

Substance	Number of Cases
Nandrolone	126
Testosterone	54
Metandienone	22
Stanozolole	14
Methyltestosterone	9
Boldenone	7
Trenbolone	3
Oxymetholone	2
Drostanolone	2
Metenolone	1
Mesterolone	1
Total nr of AAS found	241
Total nr of Positive Samples	161

Table. 3

Nr of Substances Found in a Sample	Number of Cases
1	105
2	37
3	15
4	3
5	1
Total	161

References

1. "Lag (1991:1969) om förbud mot vissa dopningsmedel"

The law text is available in Swedish on following site :

<http://www.notisum.se/rnp/sls/lag/19911969.htm>

This site for English :

<http://www.dopingjouren.se/page.asp?page=thedopingact>