Education and debate

Lesson of the Week: Anabolic steroid abuse by body builders and male subfertility

F H Lloyd, *research registrar in obstetrics and gynaecology*,[a] **P Powell**, *consultant urologist*,[b] **A P Murdoch**, *consultant and senior lecturer in reproductive medicine* [a]

[a] Centre for Reproductive Medicine, Royal Victoria Infirmary, Newcastle upon Tyne NE1 4LP, [b] Department of Urology, Freeman Hospital, Newcastle upon Tyne NE7 7DN

Correspondence to: Dr Murdoch.

Steroid abuse by a minority of top class athletes is well recognised. Abuse by competitive body builders is thought to be common but has caused less public concern. Recreational body builders attending gymnasiums also abuse steroids[1] but the frequency and patterns of use and the associated problems are less well known.

Among other side effects androgenic steroids induce hypogonadotrophic hypogonadism with subsequent azoospermia.[2] Over the past year we have noted an increased number of men attending the infertility clinic who have been using **anabolic** steroids for body building. This has been associated with an apparent substantial increase in body building as a recreational pastime in the north east.

We are concerned about the lack of understanding of the consequences of steroid use by users and providers and the ease with which the diagnosis can be missed. The following five cases illustrate the problems.

Case reports

Case 1--A couple (husband aged 29) requested in vitro fertilisation after primary subfertility for three years. Results of two semen analyses arranged by the general practitioner in early 1994 were normal (sperm densities $80x10^9$ and $150x10^9$/l). At presentation the husband was severely oligospermic (sperm densities nil and $<100x10^6$/l). His hobby was weightlifting and he admitted to taking oral steroids for two weeks 12 months earlier. Examination showed a normal muscular male physique with normal secondary sexual characteristics. However, follicle stimulating hormone and testosterone concentrations were very low, confirming steroid use. He admitted to taking a "protein health drink" which was made up by the gymnasium before training. Three months after stopping this drink his sperm density was $100x10^9$/l.

Case 2--A couple (husband aged 35) were referred for in vitro fertilisation with donor sperm. The husband owned a gymnasium and his hobby was body building. At the age of 24, six months after mumps without testicular involvement, a semen sample had shown azoospermia with maturation arrest on testicular biopsy. They were referred to a large tertiary referral unit. Knowing he was azoospermic from an apparent other cause, the husband had started and continued to take **anabolic** steroids without informing anyone. Azoospermia was confirmed and they received unsuccessful donor insemination. He stopped steroids at the age of 31 because of fear of the general side effects at that age. Four years later routine semen assessment before in vitro fertilisation showed normal sperm densities ($90x10^9$ and $59x10^9$/l). For several years they had almost abstained from intercourse because they thought they had no chance of conceiving naturally.

Case 3--A couple (husband aged 28) attended for investigation of secondary subfertility for 12 months. Each had a child from a previous relationship. The husband was azoospermic. He admitted to body building and regular use of oral testosterone from 1990 to September 1994. In an attempt to reverse the effects of the steroid "treatment" he was given human chorionic gonadotrophin injections by the supervisors of the gymnasium that he attended. His wife was unaware of the drug abuse. Five months after stopping steroids his sperm density was $30x10^9$/l.

Case 4--A couple (husband aged 27) had primary infertility for over two years. The husband had been a body builder since the age of 18 because of bullying. He had used steroids from the age of 21 but stopped 10 months before the consultation. Semen analysis results were: January 1995, $1.9x10^9$/l (99% motile); June 1995, $11x10^9$/l (16% motile); September 1995, $14x10^9$/l (36% motile). He provided a detailed list of the oral and intramuscular drugs that he had used (needles being obtained from the needle exchange programme). These were: 1987 methandienone (Dianabol; six months); 1988 methandienone (Dianabol; four months), nandrolone (Deca-Durabovan), and intramuscular methyltestosterone (Testoviron; three to four weeks); 1990 oral mesterolone (Pro-Viron; two years) and oral stanozolol (Stromba); 1992 intramuscular methenolone (Primobolan; six months on, six months off) and oral nandrolone (Anabolin); 1993 oral methenolone (Primobolan; one year) and testosterone propionate (Testex; three months on, three months off for one year); 1994 intramuscular stanozolol (Stromba) and oral methandienone (Dianabol). He stopped the drugs in May 1994.

Case 5--A couple (husband aged 28) presented with two years of primary infertility. The husband attended a gymnasium regularly for recreation and weight training. For five months before presentation he had taken steroids given to him by friends at the gymnasium. He doubled the dose that his friends suggested. His sperm count was $5x10^9$/l with 80% motility. Pregnancy was achieved about six months after stopping steroids.

Comment

These cases illustrate several different issues relating to steroid abuse. The great secrecy surrounding abuse hides it from doctors and even close relatives. Some body builders might even be taking steroids without their knowledge. As a result clinicians should be aware of possible undisclosed abuse. The lack of awareness of the implications of steroid abuse is shown by the polypharmacy used, the carelessness of dosage, and the young age at which the problem starts.

There are no detailed epidemiological studies available in the United Kingdom about the recreational use of **anabolic** steroids, most information being anecdotal. However, there is no doubt that usage is common and that the prevalence has risen in the past 10-20 years. Perry et al, alerted by an apparent increase in steroid users attending a needle exchange programme, estimated that 38.8% of gymnasium attenders used these drugs.[1] Identifying the true prevalence is fraught with problems which relate to the secrecy surrounding use and the illicit means by which the drugs are obtained. Our patients estimated that between 100 and 300 men regularly attended each gymnasium and that between a quarter and three quarters were taking steroids.

Adverse effects of **anabolic** steroids are recognised but have mostly been studied using therapeutic doses. The doses used by body builders may be up to 40 times higher than therapeutic doses. Furthermore, the multiple preparations used makes studying the adverse effects of individual drugs almost impossible. The adverse effects on male fertility described above are well known[3] and are being developed for contraceptive use. It should also be remembered that other adverse effects include alteration in lipid concentrations, liver disease, jaundice, hepatic

tumours, gynaecomastia, mood changes, reduced libido, dependence withdrawal effects, and prostatic carcinoma.[4 5] Use among young teenagers (our patients reported boys of 15 being given steroids) can have permanent effects on growth. Awareness of the increasing abuse of these drugs is thus important to all clinicians.

Data from the development of androgenic steroids for male contraception indicate that reversal of effects can take up to 12 months after stopping the drugs.[2] Case reports indicate that problems may persist for up to three years.[6 7] There is no evidence that human chorionic gonadotrophin would have any protective effect, and men abusing steroids must be warned of a potential long term adverse effect.

We questioned our patients about the advice given to them about side effects. Written information was obtained from body building magazines and "underground steroid booklets." The gymnasiums gave no or very limited information. All patients reported that they were unaware of the severe side effects of steroids and would never use them again.

Our main concern is that young men are taking **anabolic** steroids for recreational use without knowing the potentially serious consequences. Furthermore, doctors must be made aware of the potential abuse of steroids by male patients, as this information may not be volunteered. These men are usually easily recognised by their physique and often have small testicles. Accurate history taking in these men is difficult but direct questions should be asked.

Funding: None.

Conflict of interest: None.

1. Perry HM, Wright D, Littlepage BNC. Dying to be big: a review of **anabolic** steroid use. *Br J Sports Med* 1992;26:259-61. [Abstract/Free Full Text]

2. Schurymeyer T, Knuth UA, Belkien E, Nieschlag E. Reversible azoospermia induced by the **anabolic** steroid 19-nortestosterone. Lancet 1984;i:417-20.

3. Knuth UA, Maniera H, Nieschlag E. **Anabolic** steroids and semen parameters in body builders. *Fertil Steril* 1989;52:1041-7. [Medline][Find It]

4. Lukas SE. Current perspectives in **anabolic** androgenic steroid abuse. *Trends Pharmacol Sci* 1993;14:61-8. [Medline][Find It]

5. Roberts JT, Essenhigh DM. Adenocarcinoma of prostate in 40 year old body builder. Lancet 1986;ii:742.

6. Turek PJ, Williams RH, Gilbaugh JH, Lipshultz LI. The reversibility of **anabolic** steroid-induced azoospermia. *J Urol* 1995;153:1628-30. [Medline][Find It]

7. Jarow JP, Lipshultz LI. **Anabolic** steroid-induced hypogonadotrophic hypogonadism. *Am J Sports Med* 1990;18:429-31. [Free Full Text]

(Accepted 10 May 1996)

Relevant Article

Use of anabolic steroids has been reported by 9% of men attending gymnasiums

Pirkko Korkia

BMJ 1996 313: 1009. [Extract] [Full Text]

This article has been cited by other articles:

- Evans, N. A. (2004). Current Concepts in **Anabolic**-Androgenic Steroids. *Am J Sports Med* 32: 534-542 [Abstract] [Full text]
- Korkia, P. (1996). Use of **anabolic** steroids has been reported by 9% of men attending gymnasiums. *BMJ* 313: 1009a-1009 [Full