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Lesson of the Week

Anabolic steroid abuse by body builders and male subfertility

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Abuse of sex steroids by recreational body builders may be an unrecognised cause of infertility

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 steroids¹ 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 80×10^9 and $150 \times 10^9/l$). At presentation the husband was severely oligospermic (sperm densities nil and $<100 \times 10^6/l$). 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 $100 \times 10^9/l$.

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 (90×10^9 and $59 \times 10^9/l$). 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 $30 \times 10^9/l$.

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, $1.9 \times 10^9/l$ (99% motile); June 1995, $11 \times 10^9/l$ (16% motile); September 1995, $14 \times 10^9/l$ (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-Durabolan), 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

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BMJ 1996;313:100-1

How many young athletes know the potentially serious consequences of using illicit anabolic steroids?

count was $5 \times 10^9/l$ 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 known³ 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.

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(Accepted 10 May 1996)

Caring for Older People

What an old age psychiatrist does

J Wattis

This is the first in a series of 14 articles edited by Eileen Burns, Neil Penn, and Graham Mulley

Mental illness is common in old age and is also often associated with physical illness and social problems, whether these be general deprivation or traumatic life events. Its detection demands vigilance and its diagnosis and management demand teamwork. This article considers three major disorders, but other problems such as drug and alcohol dependence and schizophrenia do occur, though they are mercifully rare compared with depression, delirium, and dementia.

Old age psychiatry as a specialty arose from the unique needs of old people with psychiatric disorder and the special knowledge and skills needed to deal with these needs. It differs from general psychiatry not only because of the greatly increased prevalence of dementia in older people but also because the presentation and management of other disorders is different. The pattern of work is also different. Work in interdisciplinary community mental health teams and in partnership with general practitioners, social services, and hospital doctors is a necessary response to the complicated mixture of social, psychological, and medical needs in old people with psychiatric disorder. About three quarters

of the referrals to old age psychiatrists come from general practitioners and about a quarter are liaison referrals from hospital departments.

Although old age psychiatry began as a hospital specialty, many old age psychiatrists today are based in the community and give equal emphasis to their community and hospital work. They aim to provide services that are sensitive to the needs of caregivers and patients and also support general practitioners, social services, and other hospital departments. Their work includes the direct assessment and management of disease and the provision of education and information to others working with older adults, aiming to influence the practice of others, as the prevalence of mental illness is far too high for them to deal with it all directly. Three diagnostic groups are responsible for most of the workload: depression, delirium, and dementia.

Depression

Though depression is neither more nor less common in older than younger adults, when it occurs it is more

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BMJ 1996;313:101-4