CASE REPORT

Iatrogenic dependence of anabolic-androgenic steroid in an Indian non-athletic woman

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SUMMARY

Anabolic-androgenic steroids (AAS) are increasingly being used by athletes and youngsters to become masculine and to loose body fat. Long-term consumption of AAS causes multiple physical and psychological morbidities. Research has also concluded that AAS have addictive potential and AAS abuse is commonly found with other substance abuse. Abuse of AAS is rare in eastern countries. Abuse among women is even rarer. Here is a case report of an Indian woman, who was prescribed nandrolone decanoate injections by an unqualified medical practitioner to treat multiple non-specific somatic pains and reported weakness, leading to dependence for nandrolonedecanoate. This case report supports the research finding of abuse potential of AAS, raises concern about the need for spreading the awareness about AAS abuse among medical professionals, regulating medical practice by unqualified practitioners, and strict legal check against AAS availability in developing countries.

BACKGROUND

Anabolic-androgenic steroids (AAS) are commonly abused by the athletes, body builders and youth to gain a muscular appearance and to loose body fat.[1] Recent studies confirm the abuse potential of AAS, apart from potential to cause hepatic malignancies, cardiomyopathies and dyslipidemia. Psychological manifestations like hypomania, mania and aggression are also observed with high-dose usages.[2 3] According to US National Household Survey, the lifetime prevalence of AAS use is 0.9% for men and 0.1% for women.[4] A recent review concluded that about 3% of young men in western countries have used AAS at some time in their lives and that AAS use is rare among women.[5] Asian countries have lesser prevalence of AAS use due to lack of cultural emphasis on muscularity. To the best of our knowledge there are no reports of AAS abuse for non-athletic purposes in women.

CASE PRESENTATION

A 55-year-old housewife, educated up to fifth standard, from rural India, presented with the symptoms of nandrolone decanoate use for the past 10 years. She had history of frequent altercations with her family members, followed by episodes of dissociative stupor, convulsions, paraesthesia, multiple body aches and weakness. Symptoms would fluctuate over time and were related to psychosocial stressors in life. These symptoms were present since adolescence and lead to strained interpersonal relationships. The family consulted locally available doctors, mostly general practitioners or unqualified medical practitioners during exacerbations of symptoms, treatment would reduce her symptoms temporarily. An unqualified local practitioner prescribed her nandrolone decanoate injections (100 mg), intramuscular, when she reported extreme physical weakness and unspecified somatic symptoms during a consultation. The patient reported transient improvement in her physical as well as dissociative symptoms with nandrolone injections. Therefore injections were repeated for symptomatic relief on her demand. Gradually, the patient's demand for injection increased from once a month to almost once a day over a period of 2–3 years. She would report improvement in somatic symptoms and weakness subsequent to nandrolone decanoate injections. She would also report intense craving, irritability, episodes of anxiety and dissociative stupor on stopping or delaying the injections. Gradually she developed long-term adverse effects of AAS like facial hair, male pattern baldness (figure 1), increased muscularity and hoarsening of voice and skin rash over a period of 7–8 years. She stopped attending social gatherings and meeting relatives due to the stigma of these physical changes. Her household work was also impaired and the family suffered significant financial burden.

The patient also had tobacco dependence for the last 25 years. The patient's family history for psychiatric illness or substance abuse was negative. Assessment of personality on International Classification of Diseases 10th revision (ICD-10) international personality disorder examination

Figure 1 Features of irreversible hirsutism after long-term use of anabolic-androgenic steroid.

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(IPDE) revealed 'emotionally unstable personality disorder-borderline type'.

INVESTIGATIONS

Lipid profile, liver function tests, cardiac evaluation and other routine investigations were within normal limits. Viral markers for HIV, hepatitis B and C were negative.

DIFFERENTIAL DIAGNOSIS

An ICD-10 diagnosis of "mental and behavioural disorder due to use of tobacco-dependence syndrome (F17.2), with abuse of non-dependence producing substances (F 55), with mixed dissociative disorder (F44.7) with emotionally unstable personality disorder, borderline type (F60.31)" was made.

TREATMENT

The patient was hospitalised and adequate psychoeducation was provided about psychiatric disorders and AAS dependence. The patient had persistent hypertension despite 2 weeks of abstinence from AAS which was managed by tablets of amlodipine (5 mg)+hydrochlorothiazide (12.5 mg)/day. Initial agitation and insomnia was managed using quetiapine up to 75 mg/day. Later, the patient became extremely dull, withdrawn, slept for most of the time and stopped accepting food which persisted even after 2 weeks of discontinuation of quetiapine. The patient had no other mood or anxiety symptoms. Modafinil 100 mg once a day was started for symptomatic control of these symptoms as they caused significant impairment. Her craving for AAS gradually decreased and she stopped reporting craving after 5 weeks of hospitalisation. Supportive psychotherapy, training of relaxation exercises and problem solving strategies were provided to the patient for the management of her personality disorder and dissociative disorder. She was discharged after 6 weeks.

OUTCOME AND FOLLOW-UP

Modafinil was stopped after 8 weeks without any adverse consequences. The patient was followed up on at the outpatient department for 6 months after discharge. Her dissociative symptoms have stopped, episodes of irritability and fights with the family have significantly reduced. However her virilising symptoms are persistent.

DISCUSSION

To the best of our knowledge this is the first reported case of AAS abuse for a non-athletic purpose in a woman. Both animal models and human studies have shown that AAS produces dependence syndrome, at least in susceptible individuals.[6] Kanayama *et al*[7] have given three models of AAS dependence: (1) the body image mechanism, (2) the androgenic mechanism and (3) the hedonic mechanism. Our patient fits into the model of hedonic mechanism, which states that AAS on chronic administration appears to increase mesolimbic dopaminergic synthesis leading to reinforcement via mechanism similar to classical addictive drugs. The evidence of tolerance and craving reported by the patient support the above assumption. Neither 'high' nor physical withdrawal symptoms are reported by our patient. Previous studies have inferred that AAS use was most strongly associated with lifetime illicit drug use. This may be due to a general tendency for impulsive behaviour and lack of harm avoidance. The fact that our patient also had a long-term tobacco dependence is evidence for her susceptibility to substance dependence.

As outlined in table 1, there are some differences between AAS dependence and dependence on classical substances of abuse.[8] In fact, researchers argue that the diagnostic criterion for substance dependence given either by ICD-10 or Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV TR) is not applicable in a case of AAS dependence.[9] However, our patient fulfils the criteria for substance 'dependence syndrome' as per ICD-10 guidelines as she showed (1) a strong desire to take substance, (2) evidence of tolerance and (3) persisting with substance use despite clear evidence of overtly harmful consequences. As there is no diagnostic entity like AAS dependence either in ICD-10 or DSM 5, we had to limit ourselves to the diagnosis of 'abuse' as per the current classificatory system. Further researches about the epidemiological and clinical aspects of AAS dependence especially from developing countries are needed in order to establish AAS as a valid diagnostic entity, and to incorporate the same into future classificatory systems.

A recent research has shown that low and middle income countries face significant shortage of mental health professionals, leading to an inability to provide appropriate psychiatric care for a large part of the population.[10] India being a middle income country, unqualified medical practitioners attend to a large number of patients, due to this wide treatment gap. Anecdotal reports say that, at times, these practitioners prescribe injection nandrolone decanoate for patients reporting chronic physical weakness and body pain, without identifying the aetiology of the problems. Such practice put many patients at a risk of developing dependence for AAS resulting in significant physical and psychological complications due to the same. Therefore, appropriate legal measures are needed to check the inadvertent use of AAS. Strict regulatory methods to check unqualified medical practitioners in developing countries and also to check the free availability of AAS may help. At the same time, proper education of all medical professionals about the hazards of AAS, and more researches in this area to generate more scientific data is needed.

Learning points

- Anabolic-androgenic steroids (AAS) may cause dependence syndrome.
- Further systematic studies of AAS dependence are needed to establish it as a valid diagnostic entity.
- In developing countries including India, unqualified medical practitioners wrongly prescribe AAS to treat non-specific somatic symptoms, which may lead to dependence for AAS and its harmful consequences.
- Appropriate legal measures to check such AAS misuse, more research and publications on harmful consequences of AAS are needed to prevent such harmful practices in developing countries.

Contributors The case was examined, studied and written by HD and AT with the help of BT and SS.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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