CASE REPORT

Near-fatal spontaneous hepatic rupture associated with anabolic androgenic steroid use: a case report

J J Patil, B O'Donohoe, C F Loyden, D Shanahan

Anabolic androgenic steroids are commonly used at high doses by bodybuilders and athletes to enhance physique and improve performance levels. We report a case of spontaneous hepatic rupture with life-threatening haemorrhage associated with a past history of anabolic steroid use.

Anabolic androgenic steroids (AAS) are commonly used in high doses by bodybuilders and athletes to enhance physique and improve performance levels. These agents are known to produce changes in various organ systems and cause adverse effects such as gynaecomastia, hypertension, ischaemic heart disease, psychological disturbances, testicular atrophy and acne.¹ They have also been associated with prostate cancer and nephroblastoma.²⁻⁴ AAS also have a profound impact on the liver, including peliosis hepatis, cholestasis and hepatocellular adenomas.⁵ We report a case of spontaneous hepatic rupture with life-threatening haemorrhage associated with a history of anabolic steroid use.

CASE REPORT

A 43-year-old man was brought to the accident and emergency department after he collapsed at home. He had the physique of a professional bodybuilder. He reported that he had epigastric pain for 2 days before the collapse. There was no history of trauma. On examination, he was found to be markedly tender over the epigastric and left hypochondrial areas. On arrival, he had a heart rate of 124 beats/min and a blood pressure of 69/30 mm Hg. He was conscious and alert with an oxygen saturation of 100%. Investigations revealed a haemoglobin of 10.6 g/dl, an international normalised ratio of 4.2, creatinine of 148 µmol/l and bilirubin of 27 µmol/l. All other parameters were within normal limits. The patient was resuscitated in the accident and emergency department with intravenous fluids and was transferred to the high dependency unit. His medical history included Crohn's disease and a recurrent deep vein thrombosis related to a familial thrombophilia for which he took warfarin and anabolic steroids. He had stopped taking steroids 4 years previously. He had been taking AAS for 25 years, which included nandrolone decanoate, stanozolol, primabolin and most forms of testosterone. By comparison with the doses taken in the bodybuilding fraternity, his consumption was at the low end of the range of steroid usage. Before a computed axial tomography scan was performed, he had a cardiovascular collapse that required aggressive resuscitation with blood products and intravenous fluids, and he underwent an emergency laparotomy. Three litres of blood was evacuated from his abdomen. A ruptured subcapsular haematoma of the liver was identified as the source of the haemorrhage. The abdomen was packed as the haemorrhage was difficult to control, being aggravated by the raised international normalised ratio. His postoperative period was complicated by sepsis, and acute renal and cardiovascular failure requiring renal and inotropic support. Re-exploration of his abdomen at 72 h was

uneventful. He subsequently made an uncomplicated but slow recovery, being extubated at 10 days and discharged to the ward after 20 days.

DISCUSSION

The association between primary hepatic tumours and androgen therapy is well recognised. There are a number of reports of liver dysfunction associated with AAS misuse which include deranged liver function, peliosis hepatis, cholestasis, hepatocellular carcinoma, hepatic adenomas and hepatic haematomas. The clinical picture on presentation varies from an incidental finding of a hepatic tumour, abdominal pain, an abdominal mass or, in some cases, haemorrhage.

The hepatic tumours found in these patients generally tend to have a more benign course, with normal α -fetoprotein levels and spontaneous tumour regression on cessation of steroids. Socas *et al*⁶ reported two cases of androgen-induced hepatocellular adenomas detected on ultrasound studies, both of which showed tumour regression on withdrawal of steroids.

Spontaneous bleeding from rupture of hepatic tumours can be catastrophic without surgical intervention.⁷ Bagia *et al*⁸ reported a case of spontaneous haemorrhage of hepatic adenomas in a bodybuilder in whom the tumours did not regress despite abstinence from steroids for 18 months. A high index of suspicion with a low threshold for a CT is paramount for an early diagnosis. Selective embolisation of the hepatic artery in the acute stage is an effective strategy in the control of haemorrhage. Hepatic adenomas are seldom associated with mortality on their own, with one death reported because of rupture of a hepatic tumour.⁹ Treatment should also include cessation of any steroids because tumours may regress, although this may not be applicable in all patients. Our patient's presumed ruptured adenoma was aggravated by his anticoagulation therapy for familial thrombophilia.

CONCLUSION

The present case highlights one of the problems of AAS misuse and its associated life-threatening complication. In the current world scenario of increasing competitiveness and demands to perform, the trend of AAS use is likely to increase. A recent survey by a drug charity DrugScope, in the UK, found that anabolic steroids were moving into the mainstream drugs market (DrugScope, press release, 13 September 2006). Patients with the physique of bodybuilders and a history of steroid use presenting with an acute abdomen might have underlying hepatic involvement. If a patient presents in a shocked state, a ruptured hepatic adenoma should be considered. Asymptomatic individuals with a history of AAS use could also be considered for screening for hepatic adenomas.

Individuals considering the use of AAS need to be warned of the long-term risk of the development of hepatic adenomas.

Abbreviation: AAS, anabolic androgenic steroids

What is already known on this topic

- Anabolic steroids are known to have adverse effects on various organ systems, principally affecting the cardiovascular system and the liver, and not infrequently leading to disastrous consequences.
- The usage of steroids has become mainstream, as young men turn to drugs to boost self-confidence and to improve body image.

What this study adds

- Spontaneous hepatic rupture, as seen in our patient, is life threatening. Clinicians need to be aware of such a possibility and have a high index of suspicion in an apparently fit and healthy young person.
- This case report also highlights the fact that the ill effects of steroid use can manifest many years after cessation of steroids, and the public needs to be informed of this fact, which may have a positive impact.

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Figure 1 Moira O'Brien.