CASE REPORT

Melanotan-induced priapism: a hard-earned tan

Barend Albert Dreyer,[1] Tarik Amer,[1] Michael Fraser[2]

[1]Urology, Queen Elizabeth University Hospital, Glasgow, UK
[2]Urology, Glasgow Royal Infirmary, Glasgow, UK

Correspondence to
Barend Albert Dreyer,
b.dreyer@nhs.net

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SUMMARY

Melanocortin analogues, such as melanotan, are illegally used for artificial tanning. They have also been suggested as possible therapeutic agents in the treatment of erectile dysfunction. This case study presents a patient attending the accident and emergency department, in a tertiary urology centre, with acute priapism after abdominal subcutaneous injection of melanotan. The priapism was diagnosed as 'low-flow' and managed with cavernosal aspiration, irrigation and subsequent intracavernosal injection of phenylephrine. The patient avoided requiring surgical shunting but had not yet recovered erectile function at 4-week follow-up. Acute priapism is an unreported side effect of melanocortin analogue use and this case report presents a patient managed without surgical intervention. Future therapeutic application of these agents will need to take this potential life altering complication into consideration.

BACKGROUND

'Melanotan' misuse has been featured in the news several times over recent years and has been made illegal in the UK recently.[1] As well as its tanning effects it has also been studied as a potential modulator of sexual function in men and has been noted to induce erection at certain doses. It has been suggested as a possible therapeutic agent in the management of erectile dysfunction but is not formally reported to cause priapism.

Priapism is an uncommon presentation to the accident and emergency department, and in my 1 year of urology in Glasgow this is the only case that I have seen. We chose to write this case up as it presented a rare/unheard of cause of an uncommon disease and we wanted this to promote education to both patients and clinicians regarding the potential life-changing complication. Our patient said that if he had known about priapism as a potential side-effect he would never have considered using Melanotan. More widespread knowledge around this side effect may help decrease Melanotan misuse.

CASE PRESENTATION

A 41-year-old white Scottish man presented to the emergency department (ED) with approximately 22 hours of painful, unrelenting penile erection. This came on shortly after subcutaneous injection of 'melanotan' into the lower abdomen. The dosage is unknown but one 'phial' was used as directed by the seller. There was no preceding trauma, sexual stimulation or other substance misuse. The erection became painful within the first hour and was unable to be used. The patient had experienced the occasional prolonged erection after subcutaneous injection of melanotan previously but it had never been painful, and would usually return to normal after approximately 1–2 hours. Attempts had been made at home to stop the erection with ice application to the penis. There was no significant medical/surgical history of note and the patient was not on any other drugs, recreational or prescribed.

On assessment, he looked well though was clearly in pain. Observations were normal. Abdominal examination was normal and genital examination revealed an erect tender penis with healthy overlying skin. Bloods were normal with creatine kinase in the normal range.

INVESTIGATIONS

Cavernosal blood gases in text.

DIFFERENTIAL DIAGNOSIS

Low- versus high-flow priapism (also known as ischaemic vs non-ischaemic).

TREATMENT

Initial management involved application of ice to the perineum and penis. This progressed to bilateral aspiration of blood from the corpa cavernosa after a local anaesthetic penile block. Approximately 700 mL of blood was aspirated in combination with saline irrigation of the corpora before advancing to the next step in management. A blood gas performed on the initial aspirate revealed the following:

- H+123.6 nmol/L PCO_2 12.9 kPa PO_2 <0.8 kPa Base Excess-13.6 nmol/L.
- Lactate 7.9 nmol/L.
- K+6.8 nmol/L.
- Glucose <0.2 nmol/L.

This confirmed our suspected diagnosis of low-flow priapism and raised the concern of significant penile ischaemia. Intra-cavernosal phenylephrine injections were subsequently administered in increments of 200 micrograms every 5 min as recommended by the British National Formulary.[2] This was performed on a monitored bed in the ED with an ED consultant in attendance. Just before reaching the maximum dose of 1 mg, the patient's erection subsided and a subsequent blood gas revealed the following:

- H+38.8 nmol/L PCO_2 5.9 kPa PO_2 11.3 kPa Base Excess 2.8 nmol/L.
- Lactate 0.8 nmol/L.
- K+3.8 nmol/L.
- Glucose 5.2 nmol/L.

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OUTCOME AND FOLLOW-UP

The patient was subsequently admitted for observation on the urology ward to monitor for recurrence but unfortunately went on to discharge himself against medical advice. Outpatient follow-up was arranged.

Follow-up was performed 4 weeks post self-discharge and occurred via a phone consultation. The patient had approximately 2 weeks of swelling after returning home and initially no erections whatsoever. In the last week, however, he had started to have some spontaneous erections though they were short-lived and unable to be sustained for use.

On further questioning, he revealed he had purchased the 'melanotan' solution over the counter from a bodybuilding supplement store. He told us this was where he had been purchasing the solution from for several months and he usually had a very good tan response. Although he thought it probably was not legal, the patient had no idea there were any major side effects and the label did not give any information on this. Dosage was in 'number of phials' and he did not know how much each contained. He will avoid melanotan use in future and stick to sun-beds.

DISCUSSION

After comprehensively searching the literature, we have found no formal case reports of melanotan-induced priapism, though this was noted in a letter by Devlin *et al* in response to an article on melanotan-induced rhabdomyolisis.[3] In this case, a 60-year-old man presented with painful erection as well as a sympathomimetic toxidrome of mild hypertension, tachycardia and back arching accompanied by agitation and extensive sweating. This patient had attempted non-surgical management of his priapism similar to our case, though a maximum dose of 50 micrograms of intracavernosal phenylephrine was used. This failed to reduce the patient's erection and he went on to have a Winter's shunt. A further spectrum of side effects have also been reported including one male patient experiencing acute priapism after melanotan overdose.[4] These side effects are summarised in box 1.

Although this patient claimed he did not take any other drugs, concomitant substance misuse was not definitively ruled out as he self-discharged before a toxicology screen could be performed. It may be possible that he also misused other drugs from the body-building store and these may have contributed to his erectile dysfunction.

Melanocortins are known to be important for a variety of different physiological functions and the ability of melanotan II to induce an erection in males was first noted by a dermatology research group looking at its role in inducing skin pigmentation.[5] Further studies have reported the role of melanotan II in modulating both male and female sexual arousal. They also reported it as a centrally acting drug with 'minimal or no undesirable side effects'.[6] Earlier studies looking at synthetic melanocortin analogues had also shown their ability to increase spontaneous erection in men with psychogenic erectile dysfunction.[7] These studies, among many others, have suggested a clinical role for melanocortin analogues in the management of erectile dysfunction.[8] Melanotan II activates a variety of melanocortin receptors and it may be necessary for more selective synthetic analogues to be developed to allow therapeutic benefit with decreased risk of side effects.[7]

Box 1 Negative side effects of melanotan

Nausea.
Fatigue.
Facial flushing.
Agitation.
Tachycardia.
Hypertension.
Increased aggression.
Increased sweating.
Dizziness.
Spontaneous penile erection.
Priapism.

Learning points

- Melanotan may induce priapism and patients who regularly misuse it should be educated regarding this.
- Development of melanocortin analogues for erectile dysfunction should take this rare, but life changing, complication into account.
- Priapism induced by melanotan can still be managed in the conventional way.
- Surgery is not always a necessary part of treatment.

Contributors The list of authors is correct and all authors have contributed to this work as detailed below: (1) BDA - clinical management of patient, review of literature, patient follow-up, write up of case discussion, named author for correspondence and submission. (2) TA - clinical management of patient, assistance with literature review, contribution to clinical diagnosis/management section of case report. (3) MF - clinical management of patient, review and editing of case report, assistance with literature review.

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