

Refractory ischaemic priapism following the concomitant use of Viagra and Cocaine: A case report.

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This article has been accepted for publication and undergone full peer review but has not been through copyediting, typesetting, pagination and proofreading process which may lead to differences between this version and the final version. However, it is citable, and the reference citation is permanent.

Cite as, Kugblenu J, Idedeybo E, Eche E, Eltawagny M, Adesokan AM. Refractory ischaemic priapism following the concomitant use of Viagra and Cocaine: A case report. *Journal of Global Medicine*, 2024;4(1):e235. Retrieved from <https://globalmedicine.co.uk/index.php/jogm/article/view/235>

Abstract:**Introduction**

Ischaemic priapism is a urological emergency which drugs, sickle cell disease, haematological dyscrasias and neoplastic syndromes may cause. We report a case of a 48-year-old male who presented with refractory ischaemic priapism following the concomitant use of recreational Viagra and Cocaine.

Case Report

A 48-year-old man presented to the Emergency Department (ED) with painful sustained priapism for 24 hours, following Viagra and cocaine usage. Initial treatment of ejaculation and cold compresses did not help at home for 24 hours. At a presentation in the Emergency Department, there was failed penile aspiration and injection of sympathomimetic, intracavernosal adrenoceptor agonist; Phenylephrine was to little effect. Penile blood gas showed evidence of ischaemic priapism. The patient was transferred to a tertiary centre, where he underwent a penile aspiration, injection of further sympathomimetic and corpora-spongiosum shunting under general anaesthesia. Once back on the ward, he still had recurrent priapism. He was advised he will have permanent damage and will need a penile implant. He was discharged home with Co-amoxiclav and codeine, with a Urology outpatient follow-up in four weeks. Eventually, the patient underwent penile implantation, which six weeks later was complicated by penile abscess and required incision and drainage.

This case report highlights the dangers of refractory ischaemic priapism following the concomitant use of recreational Viagra and Cocaine. Concomitant drug abuse puts the patient at risk of full or partial penectomy, owing to possible failure of first-line management steps due to the propensity of cocaine to cause refractory priapism. Mechanisms of action of the drugs were described in this case report.

Submitted 3rd July 2024, Revised 16th August 2024, Accepted 4th September 2024. First published online 4th September 2024.

Keywords

Refractory ischaemic priapism, Viagra, Cocaine

A preprint of this article before peer-review was stored online at Authorea

Background

Priapism, otherwise known as persistent erection, can be categorised as ischaemic when the corpora cavernosa is markedly rigid despite little or no cavernous arterial inflow, or non-ischaemic when due to high blood flow (1,2). Ischaemic priapism accounts for over 95% of cases and is a urological emergency which can ultimately lead to penile hypoxia, hypercapnia, glucopenia and acidosis (2). Urgent intervention is required to prevent irreversible damage, such as smooth muscle necrosis, corporal fibrosis and the development of permanent erectile dysfunction (3).

Causes of Ischaemic priapism are drugs, sickle cell disease (SCD), haematological dyscrasias and neoplastic syndromes. Most cases of drug-induced priapism are due to antipsychotics, alpha-adrenergic antagonists and antiepileptics such as Lamotrigine with the concomitant use of antipsychotics (5). Phosphodiesterase Type 5 Inhibitors (PDE5Is) such as sildenafil (Viagra), vardenafil (Levitra and Staxyn), tadalafil (Cialis), and avanafil (Stendra) are also notable causes, though rare (6). Additionally, recreational drugs such as heroin, cocaine, marijuana, methadone, synthetic drugs, anabolic steroids and excessive alcohol intake are also well-known causes of priapism (6).

Case Report

A 48-year-old man self-presented to the emergency department with a 24-hour persistent painful erection at about 2200 on Monday night. He declared taking 50mg of pharmacy-bought Viagra on Sunday at 2200 and later also disclosed having used intranasal cocaine at 2300 (he denies mixing it with other substances). It should be noted that Cocaine's half-life is about 0.7-1.5 hours with the terminal elimination phase of cocaine metabolites with half-life estimates ranging from 14.6 to 52.4 hours (7), whereas Viagra's elimination half-life was reported as 3- 5 hours. (8)

His first erection occurred on the Monday morning, having self-ejaculated twice with no relief. He attempted cold compression at home. However, his painful erection persisted. He was still able to pass urine and felt well in himself otherwise.

Apart from previous sinusitis and otitis externa, he denies any significant past medical history. He is a non-smoker; he takes no regular medications. He had no prior history of priapism. He occasionally drinks alcohol and snorts cocaine recreationally.

On examination, he had a painful, rigid erection. The remainder of the examination was unremarkable. His observations were stable. He was referred to the Urology Registrar, who came to review the patient in the ED.

The patient's full blood count, CRP, clotting, liver function tests and kidney function tests were normal. The Urology Registrar advised penile cavernosal arterial blood aspiration, blood gas analysis and ultrasound ideally. Penile blood gas showed: pH 6.8, PCO₂ 13.9, PO₂ 1.7, K⁺ 8.9, Glucose <0.2, Lactate 10.9, Hb 177, HCO₃ 53 – indicating ischaemic priapism. Multi Urine dip panel tests Drug kit test (Abbott Toxicology Limited) revealed the presence of cocaine in the urine sample.

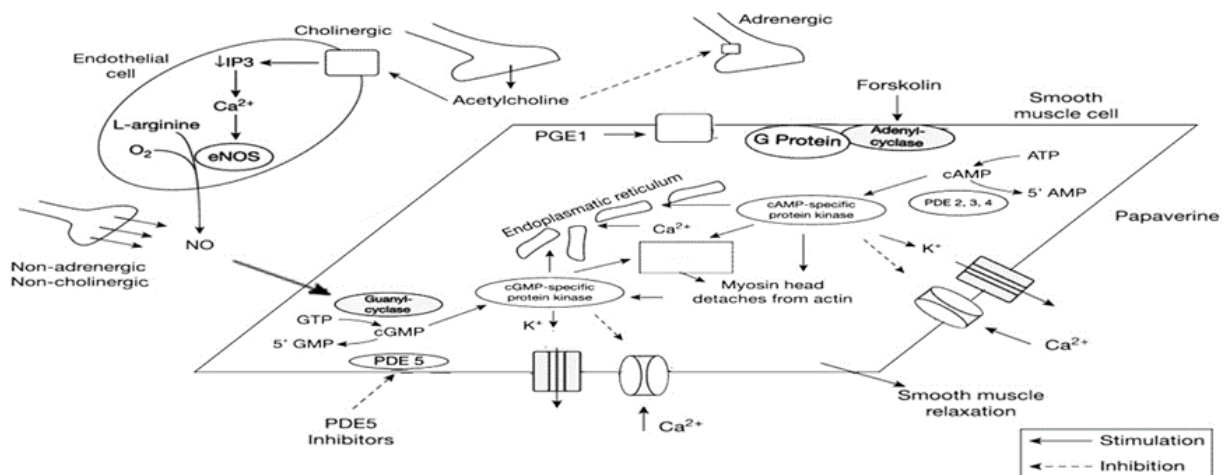
Following the penile blood gas, the Urology Registrar came to review the patient in the ED and commenced phenylephrine injection into the penis. A total of 10ml of 0.1mg/ml phenylephrine was given in divided doses with no success. Penile aspiration of 100ml of blood was attempted but failed to stop the priapism episodes. The patient was transferred to another tertiary hospital with a Urology department for continuing care. He was taken to the theatre 36 hours after the onset of symptoms, where repeat penile aspiration, injection of further Phenylephrine, and eventually corpora-spongiosis Winter shunt with 2 x 14 Gauge cannulas under General Anaesthesia (GA) was attempted in theatre. Intraoperatively, excellent detumescence was achieved. Unfortunately, despite all of the interventions attempted, he continued to have recurrent priapism and so would require a semi-rigid penile implant. He was sent home on a ten-day course of oral Co-amoxiclav and Codeine for five days. Follow-up was conducted in the Urology clinic for malleable penile prosthetics counselling. Four weeks later, he had a penile implant fitted and was discharged on a day course of oral co-amoxiclav, PRN paracetamol, Naproxen and Oramorph. 6 weeks later, he re-presented to ED with dysuria and penile abscess; this was drained via incision and drainage. He was discharged with a five-day course of oral Co-amoxiclav. Therefore, the case report is to emphasize the dangers of refractory ischaemic priapism following the concomitant use of recreational Viagra and Cocaine.

Discussion

In this case, the patient's ischaemic priapism was due to a combination of recreational Viagra (PDE5I) and Cocaine. Phosphodiesterase Type 5 Inhibitors (PDE5Is) induced priapism may involve derangements of several signalling pathways in the penis, culminating in disinhibited vasodilatation of the cavernous smooth muscle by nitric oxide synthase (NOS) and Rho-associated protein kinase (ROCK) signalling, and increased oxidative stress associated with nicotinamide adenine dinucleotide phosphate (NADPH) oxidase-mediated signalling (9). Resultant hypoxia due to persistent priapism reduces PDE5 gene expression and results in excessive adenosine and up-regulation of opiorphins. This complex pathway is

illustrated in Figure 1.3 below. This invariably impairs NO bioavailability in the penis. The longer the priapism lasts, the more excessive oxidative/nitrosative stress and decreased activity of the RhoA/Rho-kinase contractile pathway, resulting in worsening priapism.

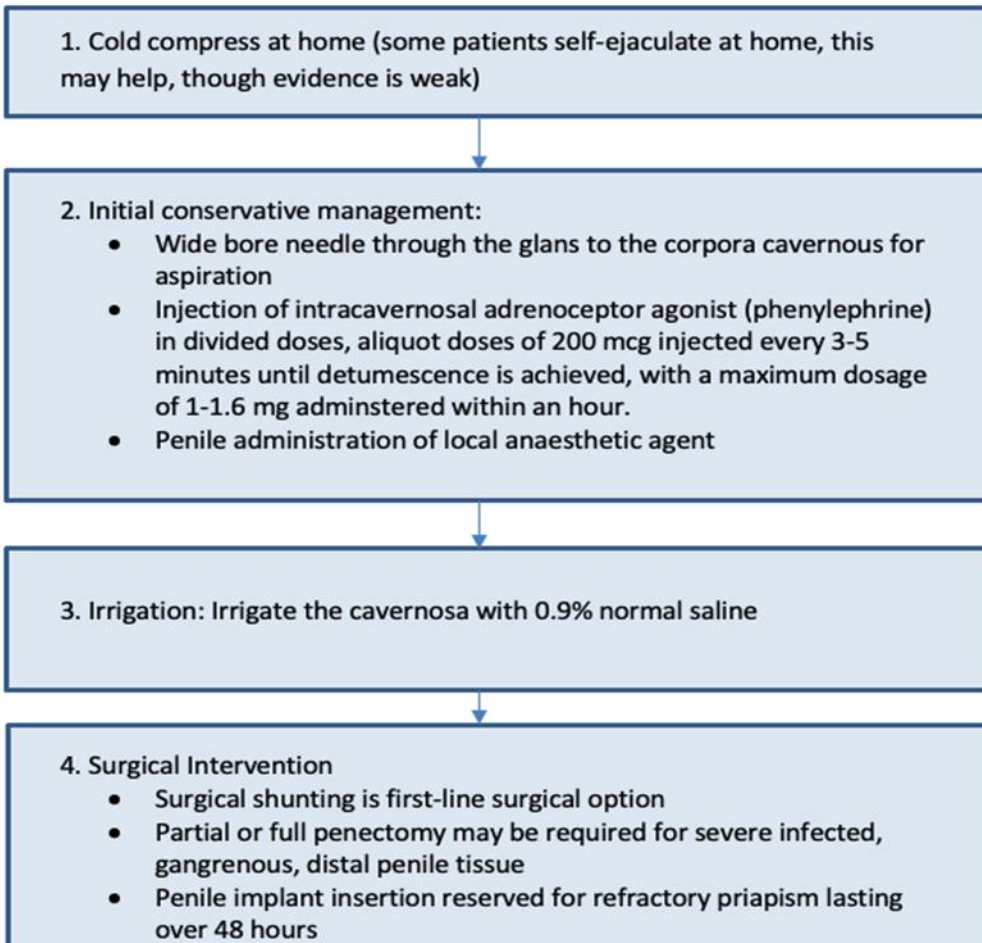
Figure 1 - Regulation of penile corpus cavernous smooth muscles (10)



In addition, Cocaine causes vasoconstriction and impairs endothelium function, reducing the chief source of nitric oxide production and subsequently decreasing intracellular calcium mobilization, preventing vasodilatation. Invariable chronic cocaine use has a contributory effect in precipitating priapism, and it can cause refractory priapism, making treatment quite challenging, as it was experienced in this case.

Regardless of the aetiology, refractory priapism requires immediate treatment. The stepwise management of priapism has been described in Figure 2 below:

Figure 2 – Stepwise Management of Priapism (1,11,12,13,14,15)



When priapism persists at home, the initial measures include exercise, ejaculation, ice packs, cold baths, and cold water enemas (1). Among these measures, cold water enemas successfully induce detumescence in six out of ten cases(11). Typically, when patients with priapism lasting more than 4 hours arrive in the ED, the initial first-line management practice is usually corporal blood aspiration to drain the stagnant blood from the corporal bodies; this is to reduce compartment-syndrome-like condition within the corpus cavernosum. Some surgeons aspirate and irrigate simultaneously with 0.9% standard saline solution (12). Pharmacological agents such as sympathomimetic drugs or α -adrenergic agonists, otherwise known as Intracavernous sympathomimetic agents like phenylephrine, epinephrine, ephedrine, epinephrine, norepinephrine and metaraminol, resolve priapism in as much as 80% of patients(13). When all the above

medical management interventions fail, the second-line intervention is to resort to surgical intervention in the form of penile shunt surgery and penile implant insertion for refractory or delayed ischaemic priapism(14,15).

Currently, there is limited research on the prevalence of ischaemic priapism and patient outcomes following concomitant usage of PDEI5s and Cocaine. However, a similar was reported by Grace Kunas et al. in 2020, which involved a 51-year-old-male suffering from 36 hours of ischaemic priapism following a combination of an 'oral phosphodiesterase inhibitor and intracorporeally injected erectile medications, together with some unspecified quantities of cocaine and alcohol' (16). In contrast to our case, this case of ischaemic priapism resolved after a corporal injection of Phenylephrine and irrigation with sterile saline, as the patient reported normal erections on day 11 of follow-up (16). Nevertheless, clinicians should be aware that both prescribed medications and recreational drugs may lead to refractory priapism.

Conclusion

In this case report, we highlight the dangers of the use of Phosphodiesterase Type 5 Inhibitors (PDE5Is) with concomitant recreational use of cocaine, making the management of priapism challenging.

Concomitant drug misuse puts the patient at risk of full or partial penectomy, owing to possible failure of first-line management steps due to the propensity of cocaine to cause refractory priapism.

Acknowledgements: The authors wish to thank the teams at the Kingsmill Hospital, Sherwood Forest Trust involved in managing this patient.

Author contributions: IE admitted the patient, KJ provided the detailed history and management from the notes for the article, EE followed up on the outcome, AAM wrote the draft and put the article together, including the pharmacology and stepwise management, EM the supervising consultant who managed the patient in the ED, AAM made critical revisions to the manuscript and contributed to writing the original draft. All authors were involved in the case, actively contributed to the writing, and reviewing of the article and reviewed the final draft.

Funding: None

Ethical approval: The patient gave explicit consent to report their clinical case.

Conflicts of interest: None

Preprint: A preprint of this article before peer-review was stored online at Authorea

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