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Unintended Consequences: A Review of Pharmacologically Induced Priapism

Dr Surajit Sasmal[1*], Dr. Anirban Bhunia[1], Dr. Pramod Kumar Sharma[1], Dr. Soumendra Nath Mondal[1]

[1]Calcutta National Medical College and Hospital, Kolkata

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***Corresponding author:** Dr Surajit Sasmal
Calcutta National Medical College and Hospital, Kolkata

Abstract | **Case series**

***Background*:** Tamsulosin in a widely used drug in urology practice in treating lower urinary tract symptoms of benign prostatic hyperplasia, distal ureteral stones, and ureteral stent-related symptoms. Ischemic priapism is a rare but serious adverse effect of tamsulosin. We report two cases of tamsulosin-induced priapism and reviewed available literature citing priapism as a complication of tamsulosin. ***Aim*:** To report the presentation and management of a case of Tamsulosin-Induced-Priapism. ***Case Presentation*:** Our patients developed priapism after taking tamsulosin for lower urinary tract symptoms, or in the emergency department as medical expulsive therapy for distal ureteral stone. They treated with corporal aspiration and phenylephrine injection and one of them needed surgical intervention. At 6 weeks follow-up visit, all the patient has maintained his potency. ***Conclusion*:** Tamsulosin is a useful medication for the management of symptoms related to BPH and distal ureteric calculi. However, its use may be associated on rare occasions by priapism hence Health-care professionals should be aware in order to advice all patients taking such medications about this rare but serious adverse effect and to seek help on time.

Keywords: *Tamsulosin, BPH, Ureteral Stone, Priapism, Ureteral Stent*.

INTRODUCTION

Among the various emergencies encountered in urological practice, priapism stands out due to its potential for significant long-term morbidity. It is clinically characterized by a prolonged, often painful penile erection persisting for over four hours in the absence of sexual stimulation and failing to subside after ejaculation. The condition is typically classified into three categories: ischemic (low-flow), non-ischemic (high-flow), and stuttering priapism. The ischemic type is the most prevalent and is marked by reduced or absent arterial inflow to the corpora cavernosa, requiring urgent intervention to prevent complications such as corporal fibrosis and subsequent erectile dysfunction [1].

Although in many ischemic cases no definitive cause is identified, associations have been found with certain haematological conditions, neurological disorders, and the use of specific pharmacological agents. Medications frequently implicated include intracavernosal vasodilators, antidepressants, antipsychotics, and recreational drugs like cocaine and alcohol. Alpha-adrenergic blockers including prazosin, terazosin, and doxazosin have also been recognized as potential culprits. Tamsulosin, a selective α1a-adrenoceptor antagonist, is extensively prescribed for benign prostatic hyperplasia (BPH) and increasingly for ureteral stone expulsion and stent-related symptoms. Despite its targeted action and relative safety, rare instances of tamsulosin-associated priapism have been documented. This case series aims to highlight such uncommon adverse events and bring attention to the need for clinician awareness and patient education regarding this rare but serious complication [2-4].

OBJECTIVE: To present a case series of tamsulosin induced ischemic priapism.

CASE PRESENTATION

Case 1

54-year-old male with no known medical history presented with LUTS; developed 36 hrs of priaprism on day 3 of tamsulosin intake. DRE-grade 2 prostatomegaly, firm, non-nodular.**

URINE R/E, CBC-normal; PSA:1.3 ng/mL. Uroflowmetry -Qmax 8.7 mL/s

ULTRASOUND KUBP- prostate measuring 60 cc, post-void residual volume (PVR) 120 cc

TREATMENT - Penile tumescence resolved after corpus cavernosum aspiration. Patient had no complications. (Before using tamsulosin IIEF-5 score: 25; after priapism 3 month IIEF-5 score: 20).

Case 2

A 29-year-old male patient complaining of left flank pain and dysuria (stent related symptom) following left URSL and DJ stenting. He started tamsulosin and developed painful erection persisting for 12 hrs **

URINE R/E, CBC-normal. PENILE ULTRASOUND showed decreased penile blood on day 2.

TREATMENT started with aspiration, irrigation, and then gave intracorporeal injections of phenylephrine

Case 3

A 24-year-old male patient presented to the emergency department complaining of left flank pain secondary to 9mm left distal ureteral stone. He was placed on tamsulosin for medical expulsive therapy by the emergency physician- developed painful erection persisting for 24 hrs on day2.**

Urine analysis and hemogram were normal,

DRE – flat prostate

PENILE ULTRASOUND showed decreased penile blood

TREATMENT - We started with aspiration, irrigation, and then gave intracorporeal injections of phenylephrine. The patient received 1000 lg of phenylephrine with no response. After failure of nonsurgical management, the patient was taken to the operating room for a penoscrotal corporeal decompression. After the procedure, the penis remained semirigid for an additional 4 days. At 6 weeks follow-up visit, all the patient has maintained his potency.

** there was no medical history of hematological disorders, or pelvic/perineal/genital trauma

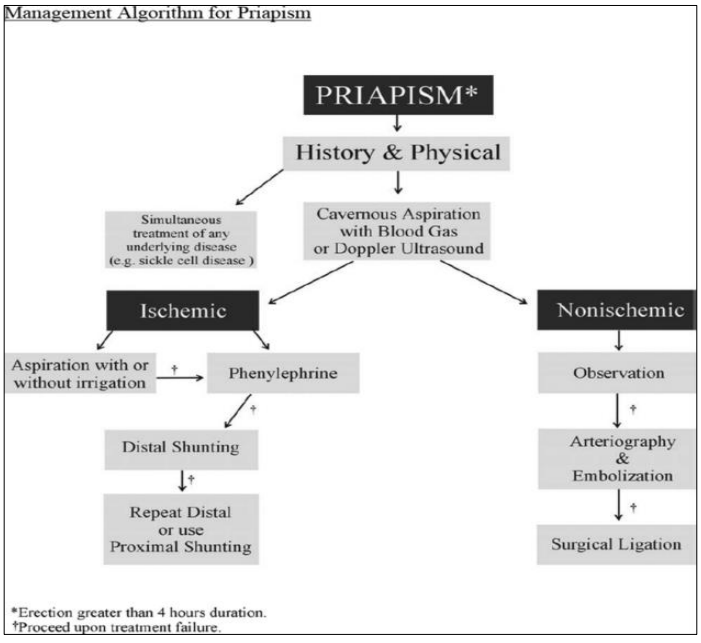

Table 1: Alpha blocker induced priapism cases

Authors	Indication	Alpha Blocker	Age	Dose	Duration of Erection	Treatment	Result
Bhalla et al.	HT	Prazosin	43	20 mg OAD, first episode after 3 months	30 h	Treatment with Ancrod (defibrinogenating agent) unsuccessful. Treated successfully with corpora drainage.	Erectile dysfunction Developed after 4 months of follow-up
	HT	Prazosin	43	18 mg OAD, three episodes after 3 months	6 h	Spontaneous resolution	Did not recur after stopping the drug
Burke and Hirst	HT	Prazosin	33	20 mg OAD, first episode after 4 months	12 h	Discontinuation of the drug	Did not recur after stopping the drug
Bullock	HT	Prazosin	55	22.5 mg OAD, after 5 days of treatment presented with priapism	12 h	Cavernosospongiosum shunt was performed. The new attack after 3 months was treated with intracavernosal injection of metamizole (1 mg). Then prazosin was stopped.	Did not recur after stopping the drug; normal erectile function continued
Siegel et al.	HT	Prazosin	25	4 mg OAD, not enough data on how long it had been used	40 h	Corporoglanular shunt was performed and medication stopped	Did not recur after treatment; normal erectile function continued
Ylitalo and Pasternack	Not reported	Prazosin	Not reported	10 mg OAD, after 4 months of use	Not reported	Not reported	Not reported
Avisrror et al.	LUTS	Doxazosin	66	8 mg OAD, after 15 days of use	19 h	Cavernosal-glandular shunt was performed	Recovered normal Sexual function
Qazi et al.	LUTS	Alfuzosin	56	10 mg OAD, three episodes after 2 weeks	72 h	Treatment with oral terbutaline, cavernosal aspiration and phenylephrine infusion was unsuccessful. Partial response with Winter's shunt	Erection function that allows penetration was achieved after 1 year of follow-up
Vaidyanathan et al.	Neurogenic bladder	Terazosin	20	2 mg OAD, 2 hours after the dose was increased from 1 mg to 2 mg	5 h	Spontaneous resolution and medication stopped	Did not recur after stopping the drug
Sadegui-Nejad and Jackson	LUTS	Terazosin	42	5 mg OAD, not enough data on how long it had been used	17.5 h	Treatment with oral pseudoephedrine was unsuccessful. Treated successfully with corpora aspiration and intracavernosal infusion phenylephrine solution.	Developed erectile dysfunction

Dodds et al.	LUTS	Tamsulosin	58	0.4 mg OAD, after 4 days of use	7 h	Treated successfully with cavernosal aspiration and irrigation with phenylephrine solution. Then prazosin was stopped.	Did not recur after stopping the drug
Pahuja et al.	LUTS	Tamsulosin	56	0.4 mg OAD, after 2 weeks of use	28 h	Winter's procedure was performed	Developed corpora fibrosis
Yagoob	HT	Prazosin	24	1 mg OAD, after 4 days of use	12 h	Winter's procedure was performed	Developed erectile dysfunction
Spagnul et al.	LUTS	Tamsulosin	32	0.4 mg OAD, after first dose of the drug	40 h	Treated successfully with cavernosal aspiration and irrigation with adrenaline solution.	Returned to normal erectile function after 10 days
Kilinc et al.	LUTS	Tamsulosin	59	0.4 mg OAD, after 2 weeks of use	48 h	Proximal corpus cavernosal-spongiosum shunt was performed	Returned to normal erectile function after 3 months
Marconi et al.	Distal ureteral stone	Tamsulosin	45	0.4 mg OAD, after second dose of the drug	5 h	Treated successfully with cavernosal injection of phenylephrine solution.	Erectile function continued
Khater et al.	LUTS	Tamsulosin	61	0.4 mg OAD, after first dose of the drug	Not reported	Treated successfully with cavernosal aspiration and irrigation with phenylephrine solution.	Returned to normal erectile function after 3 months
	Distal ureteral stone and ureteral stent related LUTS	Tamsulosin	24	0.4 mg OAD, after 3 days of use	72 h	Treatment with cavernosal aspiration and irrigation with phenylephrine solution was unsuccessful. Then penoscrotal corporeal decompression was performed.	Complete loss of potency after 6 weeks of follow-up

DISCUSSION

Alpha-adrenergic receptors exist in three subtypes: α1a, α1b, and α1d. While the α1a subtype is predominantly located in the prostate, the α1b subtype is mainly expressed in the vascular system. Older alpha-blockers such as terazosin, doxazosin, and alfuzosin are non-selective and interact with all subtypes, while newer agents like tamsulosin and silodosin exhibit more receptor-specific activity. Tamsulosin demonstrates moderate selectivity for α1a receptors, which explains its favorable profile for BPH treatment with minimal cardiovascular effects. Silodosin, by contrast, has markedly higher selectivity for the α1a subtype and is considered even less likely to cause vascular side effects. Despite this, priapism has occasionally been reported with tamsulosin, although no cases have yet been attributed to silodosin [4-6].

The mechanism underlying alpha-blocker-induced priapism is believed to involve interference with the sympathetic nervous system, which normally mediates detumescence. By inhibiting sympathetic tone, these agents may disrupt the normal resolution of an erection, leading to sustained engorgement of the corpora cavernosa. If prolonged, this state can result in hypoxia, acidosis, and eventual fibrosis of erectile tissue, culminating in irreversible erectile dysfunction.

Our series contributes to the existing body of literature by documenting three cases of priapism linked to tamsulosin use. Among them, the longest episode persisted for 48 hours, making it one of the longest reported durations in alpha-blocker-induced cases. Literature review reveals similar instances, including one reported by Khater *et al*., where a patient experienced a 72-hour episode necessitating surgical decompression and later suffered complete loss of erectile function. Another case by Kilinc *et al*., required a proximal corpus cavernosum-to-spongiosum shunt, with eventual return of normal function. In contrast, early surgical intervention and follow-up in our cases resulted in

preserved erectile function, highlighting the importance of timely management.

Interestingly, a trend emerges from the reviewed cases showing a higher incidence of priapism in younger patients receiving tamsulosin, especially when prescribed off-label for ureteral stones. This population differs from the typical elderly cohort treated for BPH, suggesting that younger individuals might be more susceptible to this adverse effect. As the practice of prescribing alpha-blockers for ureteral stone expulsion becomes more widespread, the number of reported cases in younger patients may rise.

Hence, clinicians must remain vigilant about this rare side effect, particularly in younger males. Patients should be informed of the early symptoms and advised to seek immediate medical care if an erection persists beyond four hours. Early recognition and appropriate treatment, ranging from aspiration to surgical shunting, are essential to prevent long-term complications such as erectile dysfunction.

CONCLUSION

Pharmacologically induced priapism is a condition that can lead to penile fibrosis and erectile dysfunction. By appreciating the incidence, pathophysiology, and common management strategies, physicians will be more prepared to minimize future morbidity if priapism is encountered, as prompt identification can improve patient outcomes. An understanding of these conditions will also help prevent future complications by avoiding medications that have been linked to priapism in patients that are at a higher risk for this condition.

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