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Case Report

Phenylephrine causes anuria in a patient with benign prostatic hyperplasia

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ABSTRACT

Phenylephrine is classified as an alpha-adrenergic agonist and used as a nasal decongestant. Benign prostatic hyperplasia (BPH) is a common progressive disease in males over the age of 40, leading to urethral constriction. Alpha-1A (α1A) receptor blockers such as Silodosin are commonly prescribed to manage BPH symptoms. They relax the smooth muscle around the bladder exit, in the lower urinary tract and prostate gland to facilitate the passage of urine in BPH. However, when combined with alpha-adrenergic agonists such as Phenylephrine, this mechanism may be disrupted. This case report highlights contraindication of Phenylephrine in patients with BPH. It may induce anuria in patients with BPH. We present a case report of a diabetic, hypertensive and hypothyroidism patient with BPH suffering from anuria due to administration of an over-the-counter medicine containing Phenylephrine. Caution should be taken while prescribing Phenylephrine in BPH patients on medication with alpha-1A (α1A) receptor blockers.

Keywords: Anuria, BPH, Phenylephrine, OTC medicine

INTRODUCTION

Urination is an important process to eliminate toxic substances, including drug metabolites, electrolytes, and environmental toxins, from the body. The presence of these toxins can alter the normal physiology of urine and trigger several diseases.[1] Anuria, a condition where urine production significantly decreases or stops, is a rare but serious medical concern. It is linked to several underlying causes, including ureteral blockage, shock, or significant vascular events such as bilateral renal artery occlusion and cortical necrosis.

Based on etiology, anuria is classified into traumatic anuria, crush anuria, reflex anuria, sulphanilamide anuria, etc.[2] The patient used an over-the-counter (OTC) drug (Sinarest) commonly used for the treatment of headaches, body aches, fevers, and cold symptoms such as a runny nose. It was a fixed-dose combination drug comprising paracetamol (500 mg), phenylephrine hydrochloride (10 mg), and chlorpheniramine maleate (2 mg). Paracetamol (N-(4-hydroxyphenyl) acetamide) is an antipyretic drug used for fever reduction.[3] Phenylephrine ((1R)-1-(3-hydroxy-phenyl)-2-(methylamino) ethanol hydrochloride) is an alpha-1 agonist, used for nasal congestion, and chlorpheniramine maleate (3-(4-chlorophenyl)-N, N-dimethyl-3-pyridin-2-ylpropan-1-amine) is an antihistaminic drug used for allergic symptoms.[4-6]

While the OTC drug used is widely considered safe for general use, potential drug interactions and contraindications are often overlooked, particularly in patients with pre-existing conditions such as benign prostatic hyperplasia (BPH) or those on medications that affect urinary flow. The risk of serious side effects, including anuria, may increase when the OTC drug is used alongside medications such as silodosin and dutasteride, which are commonly prescribed to manage BPH

symptoms. We report a case of anuria potentially caused by the use of OTC drug containing phenylephrine in an elderly patient.

CASE REPORT

A 62-year-old male adult weighing 85 kg reported with symptoms of anuria for last 4-5 hours at the Out Patient Department (OPD) of a tertiary care hospital. He was also suffering from cold and mild fever for last 24 hours. He was on self-medication for cold and fever and had taken two tablets of Sinarest with 6 hours gap between them. Two hours after taking the second Sinarest tablet, urination stopped. The patient was a known case of hypertension, diabetes, hypothyroidism and benign prostatic hyperplasia (BPH) since 6-8 years and was on medication with Telmisartan 40 mg, Teneligliptin 20 mg, thyroxine sodium 120 mcg and a combination of Silodosin 8 mg and Dutasteride 0.5 mg once daily. His blood pressure (130/80 mmHg), blood sugar (110 mg/dl), thyroid hormone (T3 150.2 ng/dl, T4 9.1 g/dl, TSH 4.2 mIU/l) levels were normal. The doctor advised him to stop Sinarest immediately. After about 2 hours of reporting the hospital, his urination becomes normal.

DISCUSSION

Benign prostatic hyperplasia (BPH) is a common progressive disease in males over the age of 40, leading to urethral constriction.[7] For the treatment of BPH, the patient in this case was on Silodosin and Dutasteride. Silodosin is an alpha-1A (α1A) receptor blocker, which relaxes the smooth muscle around the bladder exit and prostate gland to facilitate the passage of urine.[8] Dutasteride, a 5-alpha-reductase inhibitor, works by decreasing testosterone levels, effectively shrinking the prostate gland.[9]

The use of alpha-1A blockers like Silodosin aims to mitigate urinary retention by relaxing smooth muscles in the lower urinary tract. However, when combined with alpha-adrenergic agonists such as phenylephrine, this mechanism may be disrupted. Phenylephrine, found in the OTC drug, acts as an alpha-1 agonist, triggering smooth muscle contraction, which could have antagonized Silodosin's effect, resulting in acute urinary retention or anuria in this patient.[4,8]

Alpha-adrenoceptors are located in the renal vasculature and renal tubules. The activation of these receptors by agonists, including Phenylephrine, has been shown to cause an antinatriuretic response. In the prostate gland, adrenergic receptors regulate smooth muscle tone, and their stimulation can increase resistance in the urinary tract.[10] Phenylephrine, as a non-catecholamine alpha-adrenergic agonist, likely contributed to the constriction of smooth muscle around the bladder exit and prostate gland in this case.[4] At a dose of 10 mg, Phenylephrine may have competitively inhibited the action of Silodosin, leading to the sudden onset of anuria. The other components of the OTC drug such as paracetamol, and chlorpheniramine, are not known to affect alpha-adrenoceptors and likely had no significant role in this adverse reaction.[11]

Thus, it is reasonable to conclude that Phenylephrine was the primary agent responsible for the anuria observed in this patient. This case highlights the importance of considering potential interactions between OTC medications and prescribed treatments for chronic conditions like BPH. Health care providers should exercise caution when advising patients with BPH to take Phenylephrine-containing drugs, especially when they are already on alpha-1A blockers. Pharmacists should also provide adequate warnings about such interactions to prevent adverse effects like anuria.

CONCLUSION

Phenylephrine may induce anuria in patients with benign prostatic hyperplasia. Caution should be taken when prescribing or recommending phenylephrine-containing drugs to BPH patients already on medications like silodosin and dutasteride.

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REFERENCES

1. Schmitz DG. Toxins affecting the urinary system. Veterinary Clinics of North America: Equine Practice. 2007;23(3):677-90.
2. HolleyJL: Clinical Approach to the Diagnosis of Acute Renal Failure. Primer on Kidney Diseases. 5th ed. Philadelphia: Saunders; 2009: 277–283.
3. Jóźwiak-Bebenista M, Nowak JZ. Paracetamol: mechanism of action, applications and safety concern. Acta Pol Pharma. 2014;71(1):11-23.
4. Andrawis NS, Craft NO, Abernethy DR. Calcium antagonists block angiotensin II-mediated vasoconstriction in humans: comparison with their effect on phenylephrine-induced vasoconstriction. J Pharmacol Exp Therap. 1992;261(3):879-84.
5. Rizvi SA, Ferrer G, Khawaja UA, Sanchez-Gonzalez MA. Chlorpheniramine, an old drug with new potential clinical applications: a comprehensive review of the literature. Current Rev Clin Exp Pharmacol Form Curr Clin Pharmacol. 2024;19(2):137-45.
6. Dewani AP, Barik BB, Chipade VD, Bakal RL, Chandewar AV, Kanungo SK. RP-HPLC-DAD method for the determination of phenylepherine, paracetamol, caffeine and chlorpheniramine in bulk and marketed formulation. Arabian J Chem. 2014;7(5):811-6.
7. Chughtai B, Forde JC, Thomas DD, Laor L, Hossack T, Woo HH, et al. Benign prostatic hyperplasia. Nature reviews Disease primers. 2016;2(1):1-5.

8. Jindan L, Xiao W, Liping X. Evolving role of silodosin for the treatment of urological disorders–A narrative review. Drug Design Develop Ther. 2023;3:2861-84.
9. Wang D, Zha X, Nagase K, Akino H, Muramatsu I, Ito H, Yokoyama O. Effects of the 5α-reductase inhibitor dutasteride on rat prostate α1A-adrenergic receptor and its mediated contractility. Urol. 2015;85(3):704-9.
10. Sharma P, Yadav SK, Shah SD, Javed E, Lim JM, Pan S, et al. Diacylglycerol kinase inhibition reduces airway contraction by negative feedback regulation of GQ-signaling. Am J Respir Cell Mol Biol. 2021;65(6):658-71.
11. Kiran M, Pawaskar ML, Sheikh MS, Waghambare MP. Post-marketing surveillance study to substantiate the efficacy and safety for the combination of paracetamol, phenylephrine, chlorpheniramine maleate, sodium citrate and menthol in indian patients of common cold. IJIRMS. 2021;6(7):430-4.

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