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A Case of Acute Coronary Syndrome following Intracavernosal Phenylephrine Injection for Tamsulosin Induced Priapism

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Abstract

We present the fourth reported case of tamsulosin induced priapism in an elderly gentleman with diabetes and hypertension in whom penile blood gas analysis revealed IP. Intracavernous phenylephrine injection relieved IP. Subsequent cardiac monitoring revealed ST segment depression and positive troponins confirming a diagnosis of NSTEMI which was managed by PCI and medical therapy.

Keywords: Acute coronary syndrome, phenylephrine, priapism, tamsulosin.

1 Introduction

Tamsulosin is a selective adrenergic α1A receptor (AA1AR) antagonist most often used in the management of symptoms of benign prostatic hypertrophy (BPH) [1]. Improvement in sexual function has been described with the use of tamsulosin [2, 3]. AA1AR antagonists induced priapism is a very rare side effect, the treatment of which is the use of intracavernosal phenylephrine (a selective alpha receptor agonist). Cardiac monitoring is advised after treatment due to hemodynamic effects of phenylephrine. We present a case of acute coronary syndrome NSTEMI in a patient following phenylephrine injection for the treatment of priapism[4].

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2 Case Report

A 71 year old African-American male with past medical history of BPH, diabetes mellitus and hypertension presented to the emergency department with persistent painful penile erection for 16 hours. Ice packs and cold-water application did not relieve the erection. He was taking tamsulosin for BPH for past XX years. The patient stated that he took double dose of the tamsulosin (0.8 mg) prior to developing painful priapism. He had no history of sickle cell disease, perineal trauma, sildenafil use, previous episodes of priapism, illicit drug and/or alcohol abuse. Physical examination revealed stable vitals signs. Genitourinary examination revealed erect penis, tender to palpation and no erythema. Electrocardiogram (EKG) done at the time of presentation showed XXX. He was treated with terbutaline 10 mg orally, which did not relieve his symptoms. Intravenous hydration and pain management was initiated. Corpus cavernosum blood sampling was performed which revealed pCO2 of 214.0 mm Hg, pH 6.65 and pO2 33.6 mm Hg. Right corpus callosum was irrigation with only transient improvement in his symptoms. Phenylephrine was injected into the corpus cavernosum (300 microgram every 5mins x 4 doses), following which his symptoms subsided. Cardiac monitoring of the patient revealed tachycardia at a rate of 120 beats/min. Repeat EKG revealed tachycardia and ST segment depression in lead II and V6. Blood work up showed elevated Troponin I (Peak of 0.628 ng/mL) consistent with a NSTEMI. He was started on full dose anticoagulation. Transthoracic echocardiography revealed normal ejection fraction (65%). Cardiac catheterization was performed which revealed single vessel disease. Balloon angioplasty with stent placement was performed on the 99 % ostial lesion of the inferior branch and intermediate branch of the first obtuse marginal. A dual antiplatelet therapy with aspirin 81mg and ticagrelor 90 mg daily was initiated. He was started on statins, enalapril, nitroglycerin, insulin and metformin for management of CAD, HTN and DM respectively. Tamsulosin was restarted on day five of hospitalization at a dose of 0.4 mg daily; he was discharged on the same day after six hours after taking tamsulosin. Patient was educated on medication compliance and undesirable effect of overdoing medications.

3 Discussion

BPH affects 50% of men between the age group of 51-60 years of age and up to 90% of men above the age group[5] of 80 years[5]. Men greater than 45 years of age are at increased risk of coronary artery disease (CAD) [6]. Tamsulosin is an AA1AR antagonist, which is the preferred medication for the management of symptoms of BPH[8]. The most common side effects are headache, dizziness, hypotension and retrograde ejaculation. Priapism is a very rare side effect of AA1AR antagonists, till date only 14 cases have been reported. The mechanism of AA1AR antagonists induced priapism is less clearly understood, but is attributed to decreasing sympathetic drive in pelvic neurons at postsynaptic level resulting in a surge of parasympathetic stimulation that leads to priapism [9].

Intracavernosal blood gas analysis is required to differentiate between ischemic (IP) and non-ischemic priapism (NIP), which dictates treatment. Delayed treatment of IP may result in permanent scarring of corpus cavernosum resulting in erectile dysfunction. Once the diagnosis of IP is established therapeutic aspiration (with or without irrigation) or intracavernous injection of sympathomimetics is the recommended intervention. If IP

persists, repeated intracavernous injection of sympathomimetics should be attempted prior to opting for surgical decompression. Phenylephrine is the preferred sympathomimetic because of its safety profile. Despite its favorable safety profile, cardiac monitoring is recommended following its use due to its hemodynamic effects of hypertension, headache, reflex bradycardia, tachycardia, palpitations and cardiac arrhythmia [10, 11]. Fewer cardiovascular side effects of phenylephrine are attributed to AA1R specificity; also it does not affect epinephrine release from adrenals [9, 11]. Oral sympathomimetics like terbutaline and pseudoephedrine have no role either in the management of IP or persistent erection related to self-injection therapy for impotence [13, 14].

Our literature review revealed 14 case reports related to AA1AR antagonist induced priapism of which prazosin accounted for 6 cases, followed by tamsulosin three, terazosin two, doxazosin and alfuzosin one each. Intracorporeal phenylephrine has a highly efficacy of 100% as reported by Dittrich et al and 97.78% as reported by Muruven et al; and both studies reported 100% safety profile [12, 15].

Our report showed that clinicians should be aware of possibility of tamsulosin induced priapism and potential cardiovascular side effect of intracorporeal phenylephrine which is commonly used in its management.

4 Conflict of Interests

The authors declare that there is no conflict of interests concerning the publication of this paper.

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