Short Communication

Myocardial Infarction Following the Combined Recreational Use of Viagra® and Cannabis

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Summary

Sildenafil citrate (Viagra®, Pfizer, Inc., New York, N.Y.) is widely prescribed as a treatment for male erectile dysfunction. It is metabolized predominantly by the cytochrome P450 3A4 hepatic microsomal isoenzyme and effects can, therefore, be potentiated by such inhibitors. The vasodilatory effects of Viagra necessitate caution in its use in patients with cardiovascular disease and it is contraindicated in patients receiving nitrates. Previous literature has drawn attention to Viagra use and myocardial infarction. This paper reports the case of a young man who presented with a myocardial infarction after taking Viagra in combination with cannabis, a known inhibitor of the cytochrome P450 3A4 isoenzyme.

Key words: acute myocardial infarction, Viagra®, cannabis, cytochrome P450 3A4 isoenzyme

Introduction

Viagra® acts by inhibiting cyclic guanosine monophosphate-specific phosphodiesterase (GMP) type 5, hence increasing levels of cyclic GMP leading to smooth muscle relaxation and vasodilatation. These vasodilatory effects have added caution to its use in patients with cardiovascular disease and Viagra is contraindicated in patients receiving nitrates.

Viagra is metabolized predominantly by cytochrome P450 3A4 hepatic microsomal enzymes, and effects can, therefore, be potentiated by such inhibitors.¹ Cannabidiol is a major constituent of cannabis and is a known inhibitor of the cytochrome 3A4 isoenzyme.² Following up on the case described recently by Porter *et al.*,³ we report the case of a relatively young man with no history of ischemic heart disease and a low risk factor profile, who presented with a myocardial infarction 12 h after taking Viagra in combination with cannabis.

Case Report

A 41-year-old man was referred to the Rapid Access Chest Pain Clinic by his general practitioner. He was a non-smoker with no personal history of diabetes mellitus or hypertension and no family history of premature coronary disease. There was no past history of impotence. He was on no regular medications.

Three days prior to admission he awoke with central chest tightness, radiating down both arms, associated with autonomic upset. He admitted to smoking cannabis the previous evening and taking recreationally one tablet of Viagra approximately 12 h before the onset of pain. The pain subsequently persisted on and off, but at a reduced intensity. Examination was unremarkable with a blood pressure of 112/86 mmHg and no evidence of heart failure. Presentation electrocardiography demonstrated an evolving non-Q-wave inferior myocardial infarct (MI). Cardiac enzymes confirmed a recent MI with a creatinine kinase of 431 U/l (normal 1–25 U/l), with a significant MB fraction of 60 U/l (14%) (normal 0–6%).

The patient was admitted and treated with aspirin, beta blockade, and low-molecular-weight heparin. Total cholesterol was 5.2 mol/l, and he was started on a 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase inhibitor. He remained well and was discharged home 4 days later. He later completed the full Bruce protocol to stage III without any evidence of inducible ischemia.

In studies assessing efficacy outcomes of Viagra, only 10% of the 3,672 patients had a history of ischemic heart disease; in these cases, cardiovascular side effects were comparable with placebo.⁴ Within the U.K., as of July 1999, there

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have been 30 reports of MI on the Adverse Drug Reaction On-Line Information Tracking Database for Viagra (Medical Control Agency). These are spontaneously reported reactions; hence, each report does not necessarily imply a cause-and-effect relationship.

Previous literature has drawn attention to an association between Viagra use and MI.^{3,5,6} Postulated mechanisms include ischemia, increased shear stress, and coronary steal resulting from widespread vasodilatation. This is the first reported case indicating the potential interaction between Viagra and cannabis. Through cytochrome P450 3A4, inhibition plasma levels of Viagra increase along with its physiologic and adverse effects.

From our case we can only assume a connection between MI and the combined use of Viagra and cannabis. The major limitation is the lack of angiographic data, but this investigation was not felt to be clinically indicated because of the patient's satisfactory stress exercise test.

This case highlights the concern regarding the recreational use of Viagra and the need for greater public education. Physi-

cians should be aware of the importance of cytochrome P450 3A4 inhibition when prescribing Viagra.

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