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Case Report

Atrial fibrillation: a rare but probable adverse effect of sildenafil

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ABSTRACT

Knowledge of the cardiovascular effects of sildenafil is important for a number of reasons. The main risk factors for the erectile dysfunction (hypercholesterolemia, hypertension, diabetes, smoking) are the same as those for coronary artery disease. The reported cardiovascular side effects of sildenafil in normal healthy population are minor and mainly associated with vasodialation (i.e. headache, flushing and small decrease in systolic and diastolic blood pressure). Authors report the occurrence of atrial fibrillation after the use of sildenafil in a normal healthy individual. To the best of our knowledge, there are only few case reports in the literature showing occurrence of atrial fibrillation with use of sildenafil.

Keywords: Atrial fibrillation, Drug induced, Sildenafil

INTRODUCTION

Sildenafil is an oral agent used in the treatment of erectile dysfunction (ED). It demonstrates its action by the potent inhibition of phosphodiesterase type 5 enzyme (PDE5) in cavernous tissue, thus increasing nitric oxide (NO) and cyclic 3', 5'-guanosine monophosphate (cGMP) levels and prolonging smooth muscle relaxation.[1] Most of the side effects are minor, transient and dose dependent. In particular cases, when taken with organic nitrates, it can lead to severe hypotension. Moreover, in a few cases reports this drug has been demonstrated to induce arrhythmias in the presence of underlying cardiac pathological conditions.[2-4] Here authors report a case of a patient with structurally normal heart and normal baseline ECG in which atrial fibrillation developed a short period after the use of sildenafil citrate twice in a week.

CASE REPORT

A fourty year old male patient, without any atherosclerotic risk factors, was admitted to the emergency department complaining of palpitations and shortness of breath that had begun about an hour ago previously. He reported that his symptoms started 20 minutes after taking sildenafil (50mg), and progressively increased. He had similar episode 7 days prior that was also started 30 minutes after taking sildenafil (50mg). He said that he had used this medication for twice only and both the time developed similar episode of palpitations and shortness of

breath.There was no history of similar episodes in the past and no history of any other medication. Following a physical examination his BP: 130/84mm Hg, pulse: 190/min, irregularly irregular and other systemic examinations appeared normal. Electrocardiography (ECG) detected atrial fibrillation and rapid ventricular response (Figure 2).

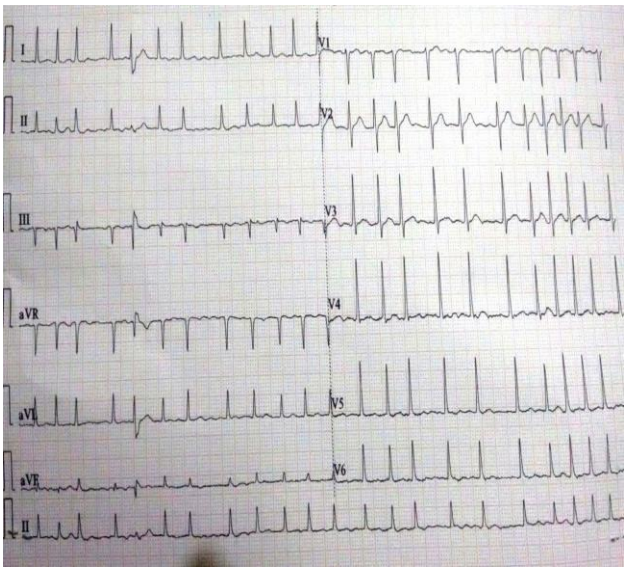

Figure 1: Electrocardiogram 7 days prior to the index admission event showing atrial fibrillation with rapid ventricular response (symptoms started after 30 minutes of sildenafil use).

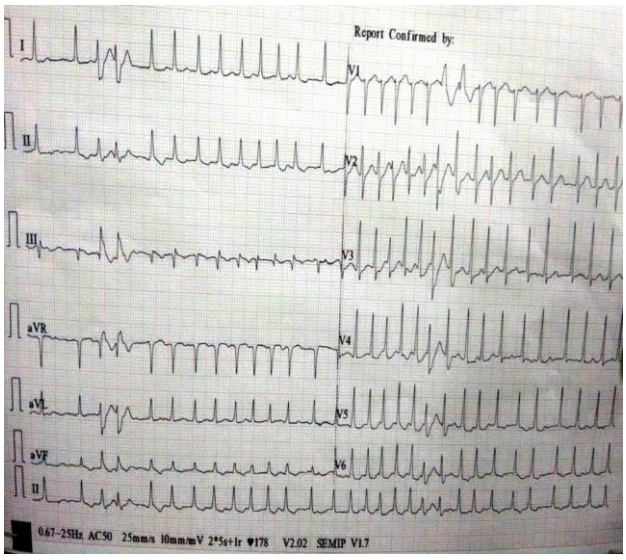

Figure 2: Electrocardiogram at the time of admission in emergency department showing atrial fibrillation with rapid ventricular response (symptoms started 20 minutes after sildenafil use).

There was no abnormality in laboratory results. Previous episode also had atrial fibrillation with rapid ventricular response on ECG (Figure 1) and subsided spontaneously within an hour but this episode was still continued after one hour and patient was very uncomfortable due to palpitations. So, authors planned for treatment using Amiodarone bolus, as sinus rhythm could not be achieved, so amiodarone infusion started. Patient reverted back to sinus rhythm after 4 hours. In transthoracic echocardiography, all wall motions and valve structures were found to be normal. The ejection fraction (EF) was 60%. The patient was followed up in the coronary intensive care unit for two days and no further episode developed than patient discharged. Patient advised for no further use of Sildenafil in future.

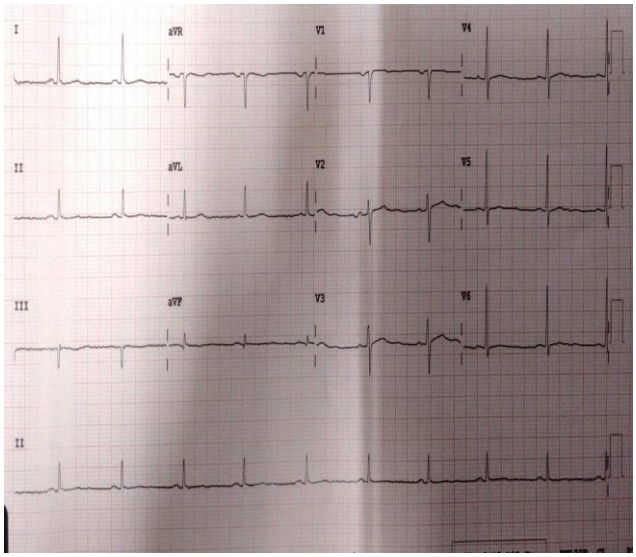

Figure 3: Electrocardiogram showing sinus rhythm after amiodarone use.

DISCUSSION

Sildenafil is a highly selective inhibitor of cGMP-specific phosphodiesterase type 5 (PDE5) and has been widely used for the treatment of erectile dysfunction.[1] Reported cardiovascular side effects in the normal healthy population are typically minor and associated with vasodilatation (ie, headache, flushing, and small decreases in systolic and diastolic blood pressures). However, although their incidence is small, serious cardiovascular events, including significant hypotension can occur.

Atrial fibrillation can be triggered by sildenafil and there are few case reports in the literature. Hayashi et al, have reported a case, where the patient developed AF with rapid ventricular response and hypotension after using sildenafil but the patient's baseline ECG showed intermittent WPW syndrome.[2] In this case report the patient was having normal baseline ECG. Another case reported by Awan et al, AF with rapid ventricular response developed in a patient with hypertrophic cardiomyopathy on two occasions within a six-week period following the ingestion of sildenafil.[4] Hahn IH et al, reported a case in which a normal healthy adult developed atrial fibrillation after sildenafil use.[5] In this case report patient was also having

structuraliy normal heart and normal Lab reports incuding thyroid status and electrolytes.

It is not clear with these patients what mechanism from sildenafil produces a predisposition to AF. The most probable explanation is that sildenafil causes arterial vasodilatation and reflex sympathetic activation secondary to drug-induced hypotension and shortening of atrial action potential duration (AAPD).[6]

In this case the Naranjo probability score for drug adverse effect was 8, so it suggests atrial fibrillation is a probable adverse effect of sildenafil.[7]

CONCLUSION

In conclusion, the use of sildenafil might cause atrial fibrillation causing palpitations and subsequently fatal cardiac arrhythmias also in structurally abnormal heart. So, every patient and patients with an underlying cardiac pathology in particular, should be pre-warned about the symptoms of arrhythmias during use of sildenafil.

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REFERENCES

1. Ghofrani HA, Osterloh IH, Grimminger F. Sildenafil: From angina to erectile dysfunction to pulmonary hypertension and beyond. Nat Rev Drug Discov. 2006;5:689-702.
2. Hayashi K, Minezaki KK, Narukawa M, Ookubo M, Mitsuhashi T, Shimada K. Atrial fibrillation and continuous hypotension induced by sildenafil in an intermittent WPW syndrome patient. Jpn Heart J. 1999;40:827-30.
3. Shah PK. Sildenafil in the treatment of erectile dysfunction. N Engl J Med. 1998;339:699.
4. Awan GM, Calderon E, Dawood G, Alpert MA. Acute, symptomatic atrial fibrillation after sildenafil citrate therapy in a patient with hypertrophic obstructive cardiomyopathy. Am J Med Sci. 2000;320:69-71.
5. Hahn IH, Hoffman RS. Aroused to atrial fibrillation? Am J Emerg Med. 2000;18:642.
6. Van der Hooft CS, Heeringa J, van Herpen G, et al. Drug-induced atrial fibrillation. J Am Coll Cardiol. 2004;44:2117-24.
7. Naranjo CA, Busto U, Sellers EM, Sandor P, Ruiz I, Roberts EA, et al. A method for estimating the probability of adverse drug reactions. Clinical Pharmacology & Therapeutics. 1981 Aug 1;30(2):239-45.

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