

# Cardiac Arrest Caused By Sildenafil Overdosage, A Case Report

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## Abstract

Sildenafil citrate (Viagra, Revatio) is a drug used to treat erectile dysfunction and pulmonary arterial hypertension. It acts by inhibiting cGMP specific phosphodiesterase type 5, an enzyme that regulates blood flow in the penis. Since becoming available in 1998, sildenafil has been the prime treatment for erectile dysfunction, rare but serious side effect found after post marketing surveillance includes severe hypotension, myocardial infarction, ventricular arrhythmias, and stroke. We report a case of sildenafil over dosage where the patient developed severe hypotension, and had a cardiac arrest twice.

## INTRODUCTION

Sildenafil makes the blood vessels become wider. This lowers blood pressure. Sildenafil mostly works in the penis and lungs. This helps the penis become erect during sexual intercourse. Sildenafil citrate involves the release of nitric oxide in the corpus cavernosum of the penis. Nitric oxide binds to receptors of enzyme guanylate cyclase, which results in increased level of cyclic guanosine monophosphate leading to smooth muscle relaxation of the intimal cushion of the helicine arteries, resulting in increased inflow of blood and an erection<sup>2</sup>.

## CASE HISTORY

A 25 year male married one day back reported to accident and emergency department of Shere-kashmir Institute of Medical Sciences (SKIMS) with history of loss of consciousness after taking sildenafil 400mg. The patient on arrival had Glossow coma scale of 7

On physical examination, heart rate 129 per minute, blood pressure 80/40 mmHg, labored breathing, respiratory rate 35 per minute, pupils normal size, reacting to light. Chest: - bilateral air entry present; Cardiovascular system:-S1 S2 heard. The patient was shifted to the critical care unit. Multi channel monitor attached. The patient was intubated under sedation and connected to ventilator, put on SIMV mode on volume controlled Ventilation with  $F_{iO_2}$  of 50%. Central line put in. The patient was initially resuscitated with colloid 1-liter. CVP was raised to 8mmHg. Dopamine 10 $\mu$ g/kg/min, later epinephrine 5 $\mu$ g/min was added, as inotropic support.

## INVESTIGATIONS

Haemogram :-18gm/dl

Total leucocyte count  $4.7 \times 10^3/\mu$ l.

Differential leucocyte count  $N_{75\%}$   $L_{19\%}$   $M_{4\%}$   $E_{2\%}$

Platelet count  $81 \times 10^3/\mu$ l

Coagulogram:- PT 14 sec,PTI 100%,APTT 49 sec,INR 1

Liver function test Bilirubin 2.94ml/dl,Albumin 4.2mg/dl,ALP 236 U,SGOT 32 U

ECG:- sinus tachycardia,J point elevation in  $v_2-v_6$ ,prominant U waves

Cardiac USG:-normal study

Chest x-ray:-normal study

Trop-T: negative

ABG on arrival: PH-7.17,  $P_{aco_2}$  53.2,  $P_{ao_2}$  62.7,  $hco_3$  19.0, Be 9.9,  $S_{ao_2}$  89.3,  $Na^+$  141.9,  $K^+$  3.59

CT scan head was normal.

On the first day, the patient had cardiac arrest and was successfully resuscitated within five minutes.

On the second day, the patient's inotropic support was tapered. The patient had another cardiac arrest and was again successfully resuscitated within 3 minutes.

On the third day, the patient was still on a ventilator SIMV mode  $F_{iO_2}$  of 50% RR 12 per minute  $vT$  500ml on dopamine support  $5\mu\text{g}/\text{kg}/\text{min}$ .

On fourth day, the patient was weaned off the ventilator and then extubated and put on face mask with oxygen flow of 7 litres/min. The patient had a Glasgow coma scale of 13. He was haemodynamically stable and was weaned off from inotropic support. Neurology consultation: the patient was confused and disoriented, diagnosis of encephalopathy secondary to hypotension and hypoxia was made.

On the ninth day, the patient was conscious with GCS 15, breathing on room air, s haemodynamically stable and was discharged from the critical care unit.

### DISCUSSION

Cardiovascular side effects of sildenafil have included flushing (vasodilation) in 10%, dizziness in 2% of patients, consistent with its known effects on the nitric oxide/cGMP path way, use of sildenafil has been shown to potentiate the hypotensive effects of nitrates, and its administration to patients who concurrently taking organic nitrates is considered contraindicated. The following Cardiovascular side effects have been associated with the use of sildenafil in less than 2% of patients: angina pectoris, AVblock, migraine, syncope, tachycardia, palpitation, hypotension, postural hypotension, myocardial ischemia, cerebral

thrombosis, cardiac arrest, heart failure, chest pain and cardiomyopathy. Post marketing studies have reported serious cardiovascular events, including myocardial infarction, sudden cardiac death, ventricular arrhythmia, severe hypertension<sup>2</sup>. Other patients in whom the use of sildenafil citrate is potentially hazardous include those with active coronary ischemia, congestive heart failure or borderline low blood volume and low blood pressure status<sup>3</sup>.

It is seen that pharmacological effects of sildenafil add to emotional arousal and physical stress of sexual activities and might precipitate acute plaque complications with super imposed coronary thrombosis. Further, although sildenafil is relatively selective inhibitor of phosphodiesterase 5, inhibition of this isoenzyme, which is present in platelets and other vesicular smooth muscle as well as weak inhibition isoenzyme present in heart, could potentially cause cardiovascular effects<sup>3</sup>.

### References

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