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# Blue Vision and Sinus Tachycardia: Sildenafil Citrate Overdose

## Mavi Renkte Görme ve Sinüs Taşikardisi: Sildenafil Sitrat Zehirlenmesi

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**ABSTRACT**

**Introduction:** Sildenafil citrate (SC) is used as a drug for the treatment of erectile dysfunction and pulmonary arterial hypertension. The most common side effects associated with overdose of this drug are skin rash, dizziness, headache, tachycardia, vertigo, and chest pain. Although it is noted that ophthalmic side effects might be associated with the use of the drug, there is no reported case of blue vision because of overdose of SC.

**Case Report:** We present the case of a 27-year-old male patient who had sinus tachycardia and blue vision, which developed because of overdose of SC taken in an attempt to commit suicide and which was followed by this clinical state for approximately for 4 h. This clinical status was spontaneously terminated without requiring any intervention. The patient ingested approximately 1500 mg of SC. After improvement in visual perception, the patient was followed-up after approximately 6 h in the observation unit of the emergency department and was discharged without any complication or sequelae.

**Conclusion:** As a result, side effects related to the ophthalmic system and vision may be encountered in patients with an overdose of SC. Unless there are underlying central or vascular conditions that do not cause color change in vision, it may spontaneously resolve.

**Keywords:** Sildenafil, drug overdoses, visual perception, suicide, emergency department (MeSH Database)

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**ÖZET**

**Giriş:** Sildenafil sitrat (SS) günümüzde erektil disfonksiyon ve pulmoner arteriyel hipertansiyon tedavisinde kullanılan bir ilaçtır. İlacın aşırı alımı ile ilgili en sık bildirilen yan etkiler; ciltte kızarıklık, baş dönmesi, baş ağrısı, taşikardi, vertigo ve göğüs ağrısıdır. İlacın kullanımına bağlı oftalmik yan etkilerin görülebileceği belirtilmekle beraber, literatürde SS aşırı alımına bağlı mavi renkte görmenin bildirildiği bir olgu yoktur.

**Olgu Sunumu:** SS'nin intihar amaçlı aşırı alımına bağlı olarak gelişen ve yaklaşık 4 saat süresince mavi renkte görme ve sinus taşikardisi kliniğiyle takip edilen ve bu durumların spontan gerilediği 27 yaşında bir erkek hastayı sunuyoruz. Bu klinik durum, herhangi bir müdahale gerektirmeksizin spontan sonlandı. Hasta intihar amacıyla yaklaşık 1500 mg SS içmişti. Görme algısındaki bu durumun düzelmesinden sonra yaklaşık 6 saat daha acil servis gözlem ünitesinde takip edilen hasta herhangi bir komplikasyon veya sekel olmaksızın taburcu edildi.

**Sonuç:** Sonuç olarak SS aşırı alımında hastalarda oftalmik sistem ve görme ile ilgili yan etkiler görülebilir. Altta yatan santral veya vasküler bir neden yoksa bu görme rengi değişiklikleri spontan gerileyebilir.

**Anahtar Kelimeler:** Sildenafil, ilaç aşırı alımı, görme algısı, intihar, acil tıp (MeSH Database)

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## Introduction

Sildenafil citrate (SC), which acts by inhibiting the phosphodiesterase type 5 enzyme ($PDE_5$), is used as a drug for the treatment of erectile dysfunction (ED) and pulmonary arterial hypertension (PAH) these days (1, 2). Literature has very limited data related to overdose of SC. In this article, we present the case of a 27-year-old male patient took 30 SC tablets of 50 mg (Viagra 50 mg/tablet, Pfizer Pharmaceuticals®) to commit suicide and who presented to our emergency room (ER) and followed-up with complaints of blue vision and sinus tachycardia. To the best of our knowledge, this is the first case reported in literature of blue vision developing as a side effect because of overdose of SC.

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## Case Report

A 27-year-old male patient was admitted to ER; he declared that he had taken 30 tablets of Viagra containing 50 mg of SC approximately 1 h ago to commit suicide. The patient denied taking any drug or substance except SC. There was no significant history of any chronic disease. The patient stated that he smoked one pack of cigarettes per day and consumed alcohol two to three times a month. The patient did not have any complaints except palpitations upon admission to ER. On physical examination, the patient's pulse was 120 beats/min and rhythmic, blood pressure was 140/90 mmHg, respiratory rate was 14 breaths/min, oxygen saturation was 98% on room air, and body temperature was 37.1°C. The patient's general condition was good; his Glasgow Coma Scale score was 15, he was conscious and cooperative, and his orientation was normal. There was no other additional pathology in his systemic examination. After the patient was monitored and an intravenous line was established in ER, approximately 3 l of normal saline solution was used for orogastric lavage, and 1 g/kg oral dose of activated charcoal was given for decontamination. His electrocardiogram revealed sinus tachycardia at a rate of 115 beats/min. Laboratory studies of blood glucose, renal and liver function tests, and electrolytes were within normal limits. A venous blood gas analysis revealed no significant metabolic acidosis. Sinus tachycardia and the patient's complaint about palpitation regressed approximately 4 h after admission to the hospital, but he began to complain about blue vision. The patient appeared to be extremely frightened and puzzled. He said that he saw everything in a sea blue color. Meanwhile, the patient's neurological and ophthalmic examinations were repeated. His bilateral light reflex was positive and visual field was normal; his eye movements were evaluated as painless and free in all directions. The patient was informed that this situation might be due to drug-related side effects. The ophthalmology department was consulted for visual field and fundoscopic examination. The ophthalmology department did not determine any pathology requiring acute intervention and suggested reconsultation if required. Approximately 6 h after admission to ER, the patient's repeated blood gas analysis and metabolic panel were within normal limits, and he was kept under observation. During the follow-up, approximately 4 h after the appearance of blue vision symptoms, his normal vision spontaneously returned. After improvement in visual perception, the patient was followed-up after approximately 6 h in the observation unit of ER and was referred to the psychiatry department for counseling. Written informed consent was obtained from the patient for publishing this case report.

## Discussion

Sildenafil citrate was the first oral agent for which a license was obtained for the treatment of ED after it was approved by the US Food and Drug Administration in 1998 (2). These days, SC is used in both ED and PAH treatment (1, 2). SC inhibits $PDE_5$ activity in the corpus cavernosum to prevent the destruction of cyclic guanosine monophosphate and increase the effect of nitric oxide to allow smooth muscle relaxation and increased blood flow in the corpus cavernosum. At the same time, the main effect in the treatment of PAH is allowing relaxation in the pulmonary vascularity and vasodilatation in the pulmonary bed (1, 2). There is no specific antidote in the treatment of the overdose of SC. The treatment of SC overdose in the emergency department consists of supportive care and complies with the general principles of treatment for poisoning. In the first reported case of death due to overdose of SC, blood SC drug level was measured, and a value as high as 6270 ng/mL was detected at post-mortem settings (3). We do not have the technical requirements to measure blood level of the drug in our patient, but he had taken a dose of the drug as high as 1500 mg. Similar to our case, a 42-year-old female patient who took a total of 2000 mg of SC developed only redness on the skin, headache, and mild tachycardia without any critical clinical condition (4). In the case of our patient, tachycardia spontaneously developed and regressed during follow-up. It was reported from the data of the National Poisoning Center of USA that 5 of 129 patients developed serious side effects or died when exposed to only SC (5). The main common side effects according to this report are skin rash, vertigo, headache, tachycardia, chest pain, and dizziness (5). Prolonged priapism and tachycardia after an overdose of approximately 300 mg of SC in the case of a 19-month-old baby boy and spontaneous intracerebral hemorrhage in another case are other reported cases related to SC overdose in literature (2, 6).

Ophthalmic side effects due to the use of SC are mentioned in the drug prospectus with a rate higher than 10%, and color changes in their vision, blurred vision, or photophobia are ranked among those side effects (1). A patient who developed rhabdomyolysis and dark color vision after the use of 250 mg of SC has been reported in literature (7). However, the precise mechanism is unknown about the exact cause of these vision color changes, similar to our case. After an overdose of SC, a middle-aged man reported loss of vision in the left eye due to non-arteritic anterior ischemic optic neuropathy and cilioretinal arterial occlusion (8). However, there is no reported case describing blue vision resulting from SC overdose.

In our case, the Naranjo adverse drug reaction causality scale score was calculated to be 6, which means that a causal relation between the drug and an adverse reaction is probable (9). It can be accepted that the limitations of this causal relation are not being able to measure SC levels and not having the chance to administer the drug to monitor if the adverse reaction occurs again (rechallenge).

## Conclusion

To conclude, side effects related the ophthalmic system and vision may be encountered in patients with an overdose of SC. Unless there are underlying central or vascular conditions that do not cause color change in vision, it may spontaneously resolve. If emergency physicians are faced with this kind of side effect of SC overdose, they must be aware that this might be a subjective complaint, and without being alarmed, should inform the patient and their relatives.

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