

Irreversible damage to color vision linked to popular erectile dysfunction drug

October 1 2018

In a first-of-its-kind study, Mount Sinai researchers have shown that color vision problems caused by retinal damage on a cellular level can result from a high dose of sildenafil citrate, the popular erectile-dysfunction medication sold under the brand name Viagra. The results demonstrate that excessive use of the drug could lead to long-term vision problems, including possible irreversible damage. The findings have been published in the fall issue of *Retinal Cases*.

"People live by the philosophy that if a little bit is good, a lot is better. This study shows how dangerous a large dose of a commonly used medication can be," said lead investigator Richard Rosen, MD, Director of Retina Services at New York Eye and Ear Infirmary of Mount Sinai (NYEE). "People who depend on colored vision for their livelihood need to realize there could be a long-lasting impact of overindulging on this drug."

Rosen and a team of investigators from NYEE based their study on a 31-year-old patient who arrived at an urgent care clinic complaining of red-tinted vision in both eyes that hadn't gone away in two days. He reported that his symptoms began shortly after taking a dose of liquid sildenafil citrate that he purchased over the internet (sildenafil citrate can cause visual disturbances with normal dosage, but symptoms typically resolve within 24 hours). The patient told doctors he had consumed much more than the recommended 50mg dose, and that symptoms began shortly after ingestion. The patient was then diagnosed with persistent retinal toxicity linked to the [high dose](#) of medication

damaging the outer retina. His tinted vision has not improved more than a year after his initial diagnosis, despite various treatments.

Mount Sinai researchers used state-of-the-art technology, including adaptive optics (AO) and optimal coherence tomography (OCT), to examine his retina for evidence of structural damage at the [cellular level](#), something that had never been done before. AO is a sophisticated technology that allows clinicians to examine microscopic structures of the eye in living patients with extreme detail in real time. OCT is an advanced imaging system that reveals the cross-sectional details of the retina layer by layer.

The high-tech imaging allowed investigators to see microscopic injury to the cones of the retina, the cells which are responsible for color vision. The damage was similar to that seen in animal models of hereditary retinal disease such as retinitis pigmentosa or cone-rod dystrophy.

"To actually see these types of structural changes was unexpected, but it explained the symptoms that the patient suffered from. While we know colored [vision](#) disturbance is a well-described side effect of this medication, we have never been able to visualize the structural effect of the drug on the [retina](#) until now," said Dr. Rosen. "Our findings should help doctors become aware of potential cellular changes in patients who might use the drug excessively, so they can better educate [patients](#) about the risks of using too much."

Provided by The Mount Sinai Hospital

Citation: Irreversible damage to color vision linked to popular erectile dysfunction drug (2018, October 1) retrieved 25 April 2024 from <https://medicalxpress.com/news/2018-10-irreversible-vision-linked-popular-erectile.html>

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