



# Ophthalmology Update

Richmond Eye Associates, P.C.

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## Ophthalmic topics of interest to the medical physician

### Ophthalmic Side Effects of Viagra

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#### Special points of interest:

- Viagra should be used with caution with certain retinal disorders.
- Nasal steroid use can increase risk for cataract.
- A relative afferent pupillary defect is an important finding in cases of visual loss.
- There is some risk to laser pointer use.

Viagra (sildenafil citrate) is a recently FDA approved oral drug indicated for the treatment of erectile dysfunction in men. There has been widespread interest in and usage of this drug since its approval, accompanied by heavy media attention. This drug is not without potential risks and side effects.

By far the most serious potential risk of Viagra use is of hypotension when taken with other nitrate medications. These include isosorbide dinitrate (example: Isordil), isosorbide mononitrate (example: Imdur), and nitroglycerin (examples: Nitrostat and Transderm-Nitro patch), among many others. These drugs are commonly used in patients with a history of heart disease, and this list is far from being complete.

Ocular side effects are not uncommon when this drug is used. Minor side effects include pupillary dilation, conjunctival injection (redness), sensitivity to light (photophobia), and dryness. More significantly, 3% of users experienced a predominantly bluish tinge to their vision

lasting up to several hours after use. This was accompanied in some cases by sensitivity to light and blurred vision.

It is not fully understood why this mild, temporary color change occurs. The American Academy of Ophthalmology has issued a news release intended to call the public's attention to visual effects already cited in research done by Pfizer and the FDA. This can be found at the Academy's web site at [http://www.eyenet.org/public/about\\_aao/press/viagra.html](http://www.eyenet.org/public/about_aao/press/viagra.html). The spokesman for the American Academy of Ophthalmology, Michael F. Marmor, MD, has noted that FDA clinical trials demonstrated some retinal dysfunction especially when higher doses of the medication were taken. A clinical study showed that electrical measures of retinal function dropped by 30% to 50% for at least five hours after a high dose of Viagra

The Academy of Ophthalmology cautions patients with retinal problems such as macular degeneration, retinitis

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### Inhaled Steroids Increase Risk of Cataract Extraction

Inhaled steroids are commonly used in the treatment of asthma, and there has been a tendency to give steroids earlier in the course of the disease, and at higher doses. Steroid use has been associated with cataract development when given orally, intravenously, and topically (eyedrops). This study examines the risk

of cataract extraction associated with the daily dose and duration of inhaled steroids.

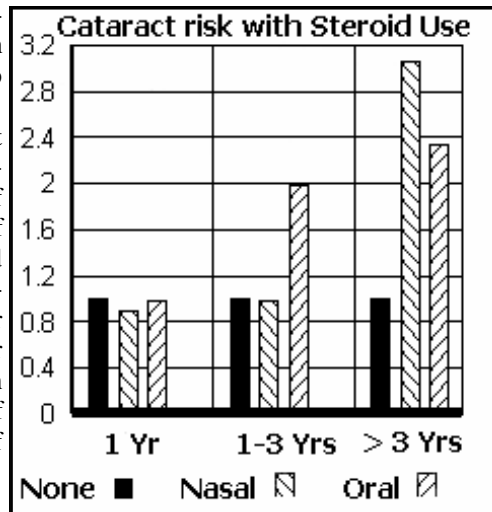
3677 patients were identified with cataract extraction between 1992 and 1994 who also had at least 5 years of prior medical records available. There was increased risk for cataract extraction

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## Inhaled Steroids, continued from page 1

with increasing age, in women, in diabetics, in patients with glaucoma, and in patients with a history of oral or eyedrop steroid use.

Low usage of inhaled steroids was not found to increase the risk of cataract extraction when the cumulative duration of usage was 1 year or less, and in cases of 1 to 3 years usage. Patients using inhaled steroids for greater than 3 years cumulative had a significantly increased risk for cataract extraction. The risk ratio for cataract extraction was 1.0 for cases with no inhaled steroid use, 0.90 for use of less than 1 year, 0.98 for 1 to 3 years of use, and 3.06 for over 3 years of use.



These results were adjusted to account for oral steroid use, and the other risk factors mentioned above. At 3 years, the nasal steroid cataract rate exceeded the oral only steroid rate.

It was also noted that especially high doses of inhaled steroids lead to a greater risk for cataract extraction after only 2 years, while low to medium doses lead to lower risk.

(From Journal of the American Medical Association, 8/12/1998; 280:539-543, Association of Inhaled Corticosteroid Use with Cataract Extraction in Elderly Patients, Garbe E., et al.)

## Clinical Pearl: The Relative Afferent Pupillary Defect is Critical in evaluation of Visual Loss or Trauma



Light in the normal right eye above leads to bilateral pupillary constriction.



Light in the abnormal left eye above leads to a relative bilateral pupillary dilation.



Normal re-constriction, above. For interactive online demonstrations of the relative pupillary defect, visit:

[www.richmondeye.com](http://www.richmondeye.com)

The Relative Afferent Pupillary Defect (RAPD), or Marcus-Gunn Pupil is an extremely significant and highly objective clinical finding in the examination of the visual system.

Even in an unconscious patient, the determination of an RAPD can be made. There are many different conditions which lead to this finding, from severe glaucoma to an optic nerve tumor. Also significantly, there are many conditions which lead to a profound loss of vision (such as a complete vitreous hemorrhage), which will not give an RAPD.

The presence of a RAPD indicates that there is a significant dysfunction of one eye or optic nerve. The “swinging flashlight test” is the best method to examine the pupillary responses for an RAPD. First, in a dimly illuminated room, examine the individual pupillary reaction to light. Then quickly switch the light from one pupil to the other and observe the response. In an eye with an

RAPD, the pupil will actually appear to dilate when the light is moved to that side, as shown on the diagram on the left (the left eye has the RAPD). When the light is switched back to the good side, both pupils will re-constrict.

There are numerous conditions which lead to an RAPD. Most of these are also associated with a loss of central or peripheral vision. Note that if both eyes have an equal loss of vision, no RAPD will be observed, since there is no “relative” difference between the eyes.

### Conditions commonly causing an

#### RAPD

- Unilateral optic neuropathies, such as optic neuritis, ischemic optic neuropathies, Giant Cell Arteritis, traumatic optic neuropathy, and radiation induced optic nerve damage
- Compressive optic neuropathies, such as from orbital tumors or thyroid related orbital disease
- Optic nerve tumor

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## Dangers of Laser Pointers

Laser pointers are commonly used today for presentations and lectures. With the knowledge that some lasers can be dangerous, people may be concerned about the use of laser pointers and the risk of the eye being exposed to the laser beam itself. There have been legal cases regarding alleged injury from ocular exposure to laser pointers, and even a case of prosecution for assault with a laser pointer.

*"If one were to stare into a laser pointer for more than 10 seconds, retinal damage (photocoagulation) could occur."*

Lasers and their manufacturers are regulated by the Federal Government, and classifies lasers by their potential hazardousness. Lasers must be labeled with appropriate warnings. The lowest class lasers (class 1) have no potential for ocular injury and do not require control measures. Class 4 lasers are dangerous industrial, military, and medical lasers (more than 500 milliwatt power).

Ophthalmic lasers used for retinal problems routinely use power settings between 100 and 500 milliwatts. Laser pointers are Class 3a devices, generating less than 5 milliwatts of power. According to the referenced article from the journal Ophthalmology, there is some risk of retinal damage if a laser pointer is shined directly into the eye for a period of time. Although the power of a laser pointer is low, if one were to stare into a laser pointer for more than 10 seconds, retinal damage (photocoagulation) could occur. For this reason, these pointers should not be used around infants or chil-

dren who might not look away from the laser. Nor should the pointer be intentionally shined into anyone's eye. It is felt that in adults, the blink response keeps potential laser exposure to less than 1/4th of a second, and thus there would be no realistic risk of immediate or delayed retinal damage from momentarily viewing a Class 3a laser. Furthermore, there should be no risk from observing the reflected image of a laser spot when appropriately used during a presentation.

Photocoagulation is essentially a retinal burn created by a laser. In ophthalmology, this is done using precise surgical techniques to treat problems including diabetic retinal disease, macular degeneration, retinal tears, and glaucoma. Generally, the part of the retina responsible for central (reading) vision is only about 1/3 of a millimeter in diameter. The diameter of the laser spots used in ophthalmology ranges from 1/20th to 1/2 of a millimeter in diameter.

The authors of this article suggest that if laser pointers used a color that is more readily perceived by the human eye (yellow-green instead of red), that the power output of the laser could be much lower. Thus an even safer Class 2 laser pointer could be used. To view an FDA warning on the use of laser pointers, go to <http://www.hhs.gov/news/press/1998pres/980105.html>. (From Ophthalmology, 8/97 Vol. 104:1213-1214, Pointers on Laser Pointers, Mainster MA, et al.)

## Relative Afferent Pupillary Defect, continued.

- Glaucoma – usually a bilateral disease. However, if one eye has very advanced disease compared to the other, an RAPD can be seen.
- Optic nerve infection or inflammation (Lyme disease, cryptococcus, sarcoid)
- Retinal detachment
- Severe unilateral macular degeneration
- Ischemic retinal disease (artery occlusion)
- Intraocular tumor or infection (such as extensive CMV retinitis)
- Severe amblyopia (lazy eye) - this indicates a lack of visual development
- “Media Opacity” - including cataract, vitreous hemorrhage, hyphema, or corneal scar (even if severe)
- Previous eye surgery, unless due to underlying ocular disease such as glaucoma or optic neuropathy
- Mild retinal problems, such as background diabetic retinopathy, mild vein occlusions, and mild macular degeneration
- Bilateral conditions, such as retinitis pigmentosa, nutritional or metabolic optic neuropathies
- Cerebral infarct
- **Efferent** pupillary problems, such as Horner’s syndrome, Adie’s pupil, Third cranial nerve palsies

### Conditions NOT causing an RAPD

- Refractive error, even in cases of extreme levels of nearsightedness or farsightedness

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**WWW.RICHMONDEYE.COM**

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- Extensive patient information, including discussion of over 80 eye conditions
- Physician section with cases and topics of interest
- Office locations, directions, insurances

**Innsbrook Office**

4600 Cox Rd  
 Suite #120  
 Markel Plaza  
 Glen Allen, VA 23060  
 270-0330

**Stony Point Office**

8700 Stony Point Pkwy.  
 Suite #140  
 330-3333

**Mechanicsville Office**

7016 Lee Park Road  
 Hanover Outpatient  
 Center  
 Mechanicsville, VA  
 23111  
 730-2250

**Southside Office**

10800 Midlothian Trnp.  
 Suite #127  
 Winchester Building  
 Richmond, VA 23235  
 897-1510

**East Henrico Office**

4364 S. Laburnum Ave.  
 Laburnum Park Shopping  
 Center  
 Richmond, VA 23231  
 236-9900

**Satellite Office**

Williamsburg, VA  
 270-0330

*Ophthalmology Update*

**Editor:**  
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**Side Effects of Viagra (continued)**

pigmentosa, and diabetic retinopathy not to exceed the recommended dose of 50 milligrams until more is known about the long-term effects of the drug on the retina. Furthermore, certain other medical problems and drugs may increase the plasma concentration of the drug, and an even lower starting dose may be recommended in these situations:

- Age over 65
- Liver disease
- Kidney disease
- Simultaneous use of erythromycin, ketoconazole, and itraconazole

Patients should consult with an ophthalmologist if there is any question about the health of their eyes prior to using Viagra.

**Risk Factors for Glaucoma**

Glaucoma is the second leading cause of blindness in the United States, and the first among African-Americans. While people of any age, race, and health status can get glaucoma, certain groups are at increased risk:

- People over 60 years of age
- African-Americans
- People with a family history of glaucoma
- People with vascular diseases such as diabetes
- People with high nearsightedness
- People with a history of eye trauma

It is recommended to have a complete eye examination to rule out glaucoma every two to three years after age 35, every one to two years after age 60, and every one to two years after age 35 if there are any special risk factors as listed above.