Visual Problems due to Pituitary Tumors

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A Patient’s Guide

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Pituitary gland
Optic nerves and chiasm
Nerves that move the eyes
What kinds of visual symptoms can be caused by a pituitary tumor?

Patients with small pituitary tumors do not typically develop visual symptoms. However, if a pituitary tumor has grown larger (usually more than 1 cm), then a patient can develop visual loss in one or both eyes. In some cases, based on which part of the visual system is affected by a growing pituitary tumor, there can be reduced peripheral vision to both sides. When these changes happen gradually, they can sometimes be difficult to notice.

Another important symptom that can occur with a pituitary tumor is double vision, where a person sees two images instead of one. This occurs because a pituitary tumor can affect the nerves that help the eyes move properly. When the eyes are not aligned correctly, the brain will see double images.

MRI scans can identify a pituitary tumor and show if it pushes the optic nerve or optic chiasm.

In some cases, pituitary tumors cause reduced peripheral vision on both sides.
Why does a pituitary tumor cause visual symptoms?

The pituitary gland sits in a space called the pituitary sella, which is just a few centimeters behind the eyes. In order to see normally, we rely on our eyes to send information through cables (called the optic nerves) that travel back to the brain. A large pituitary tumor can push these cables, affecting their ability to send visual information from the eyes. Sometimes a pituitary tumor affects the optic nerve on just one side. In other cases, it affects a structure known as the “optic chiasm,” where the optic nerves from each eye merge together. When a pituitary tumor pushes the optic chiasm, it causes visual loss in both eyes.

A pituitary tumor can cause visual symptoms because it sits near important structures in the brain that are meant for vision. These include:

- The optic nerves and optic chiasm (which bring vision from the eye to the brain)
- Nerves that make the eyes move correctly
Diagnosis

To check for visual problems, the doctor will examine:

• Visual acuity

• Color vision

• Peripheral vision (often using a computerized test)

• Eye movements

• The appearance of the retina and optic nerve (in the back of the eye)

What tests will my doctor do to check my vision?

The doctor will perform a number of tests to check if a pituitary tumor is affecting vision. The examination will assess visual acuity, color vision, peripheral vision, eye movements, and the appearance of the retina and optic nerve (by looking at the back of the eye). To check peripheral vision, an automated test is commonly used, in which the patient pushes a button every time a flash of light is seen.

Automated field testing is a helpful way to assess peripheral vision. A small blind spot is normally present in each eye.
Treatments for a pituitary tumor that is causing visual loss may include:

- Surgery
- Medications to shrink the tumor (depending on the type of tumor cells)
- In some cases, radiation treatment

Unfortunately, eyeglasses do not fix visual loss caused by a pituitary tumor.
How can double vision be treated?

Double vision that occurs with abnormal eye movements can be treated in several ways. One method is to block vision from one eye, so that the brain will no longer see two images. This can be done by wearing an eye patch or by covering one eyeglass lens with scotch tape. In some cases, if the amount of misalignment of the eyes is very small, prisms can be placed in eyeglasses to shift images and reduce double vision. Finally, if double vision has become a permanent problem (without further improvement for about 12 months), then surgery can be performed to adjust the position of the eye muscles. The goal of this surgery is to reduce double vision when looking straight ahead and down, but double vision may still be present when looking to the sides.

Double vision can occur when the normal eye movements are affected.

Treatments for double vision include:

- Blocking the vision from one eye
- Prisms in eyeglasses
- Surgery on eye muscles to correct the alignment of the eyes

Normal vision

Simulation of what a patient with double vision may see
Will my vision improve after the pituitary tumor is treated?

In many cases, loss of vision can recover considerably after surgery or medical treatments. However, the extent of recovery depends on how long the visual loss has been present and how severe it is. Unfortunately, in some cases there is permanent visual loss, despite treatments for the pituitary tumor.

How often will I need an eye exam or other tests?

The frequency of eye examinations for a patient with a pituitary tumor will depend on the size of the tumor. It will also depend on whether visual symptoms have occurred, and whether medical or surgical treatments were necessary. Depending on these factors, some patients will need to have their vision checked periodically, often about every 6 to 12 months. Some patients will also need follow-up MRI scans to check for growth of the tumor.
What should I do if I notice a change in my vision?

If you notice a change in your vision, you should tell your doctor quickly. You may need a complete eye exam to determine the extent of any visual changes that could relate to the tumor. This will help determine what treatments will be necessary.

Where can I get more information on pituitary tumors?

For more information on pituitary tumors, consider the following sources:

Brigham and Women’s Hospital Pituitary/Neuroendocrine Center
http://www.brighamandwomens.org/Departments_and_Services/neurosurgery/Our_Services/Pituitary.aspx

Pituitary Network Association
http://www.pituitary.org

National Institutes of Health

North American Neuro-Ophthalmology Society
http://www.nanosweb.org/i4a/pages/index.cfm?pageID=3284