

Optic Neuritis

WHAT IS OPTIC NEURITIS?

Optic neuritis is inflammation of the optic nerve [See figure 1]. As the photo demonstrates, the optic nerve becomes swollen and the blood vessels become distended. This inflammation can cause loss of vision because the optic nerve is responsible for carrying visual information from the eye to the brain to produce visual images. In chronic disease, the optic nerve may appear paler.



Fig. 1: Optic nerve swelling in a patient with optic neuritis.

WHAT ARE THE SYMPTOMS OF OPTIC NEURITIS?

The first symptom of optic neuritis in a child is most commonly a rapid, often profound decrease in vision (visual acuity less than 20/400). It can occur in one eye or both eyes. Many children are unaware of the loss of vision if only one eye is affected, but involvement of both eyes is more common in children. Patients may also have headaches and pain with eye movement. There may be a decrease in color perception, brightness, and/or in the field of view (side vision). Some children have other neurologic symptoms in other parts of the body, such as weakness or numbness. Many children with optic neuritis have a history of a fever, flu-like illness, or immunizations 1-2 weeks prior to the onset of the decreased vision.

WHAT CAUSES OPTIC NEURITIS?



Optic neuritis is thought to be an autoimmune disorder, in which the immune system mistakenly attacks the body's own optic nerve tissue. The attack of the immune system causes inflammation, swelling and impaired function of the optic nerve. The trigger for this immune reaction may be a viral illness, recent immunization, infection around the optic nerve, multiple sclerosis, or other neurological problems.

HOW IS OPTIC NEURITIS DIAGNOSED?

A careful history including asking about recent illness, fever, neurological symptoms, or recent immunizations is helpful. The Eye physician checks vision (which is usually markedly decreased) and evaluates optic nerve function including the pupil reactions, color vision, and peripheral vision. The Eye physician also examines the optic nerve closely for swelling and dilated blood vessels. The Eye doctor may perform additional tests in the office, such as ocular coherence tomography (OCT) which measures the amount of swelling of the nerve and adjacent eye structures, and visual field testing to determine if there has been loss of peripheral vision. Other tests performed may include an MRI, a spinal tap (lumbar puncture) and young children may require sedation in order for these tests to be performed safely. Blood tests looking for infectious causes of inflammation and tests for specific antibodies including myelin oligodendrocyte glycoprotein (MOG-Abs) and aquaporin 4 (AQP4- IgG or NMO-IgG) may lead to a more specific diagnosis with altered treatment. Determining if these antibodies are present is essential to guide optimal medical treatment.

WHAT IS THE PROGNOSIS AND TREATMENT FOR OPTIC NEURITIS?

Fortunately, most children with optic neuritis recover much of their vision. This usually occurs spontaneously, and treatment may not be necessary. Recovery usually begins within a few weeks and can continue for several months and most children recover vision to 20/20. Intravenous corticosteroids may speed the recovery of vision and they are most frequently used when loss of vision is significant. If a specific disease is thought to cause the optic neuritis, treatment is modified. Sometimes anti-inflammatory medications will need to be administered by injection or taken by mouth for many months to decrease the chance of recurrence and provide the best chance for return of vision. Unfortunately, a small percentage of children do not recover vision.

WHAT ARE THE DIFFERENCES BETWEEN OPTIC NEURITIS IN CHILDREN AND ADULTS?

Both eyes are usually affected in children, while adults usually have only one eye affected. Children with optic neuritis frequently have a history of recent illness or immunization



and adults do not. Both adults and children have an increased risk of multiple sclerosis if they develop optic neuritis, but children have much lower risk.

Gise RA, Heidary G. Update on Pediatric Optic Neuritis. Curr Neurol Neurosci

Rep. 2020 Mar 3;20(3):4

Updated 03/2022