## Non-arteritic Anterior Ischemic Optic Neuropathy

Dan-Victor Giurgiutiu, MD and Sashank Prasad, MD  
Division of Neuro-Ophthalmology  
Brigham and Women’s Hospital  
Harvard Medical School  
www.brighamandwomens.org/neuro-ophthalmology

### A Patient’s Guide

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Diagnosis</th>
<th>Treatment</th>
<th>Prognosis</th>
</tr>
</thead>
</table>

- **Symptoms**
- **Diagnosis**
- **Treatment**
- **Prognosis**
What is non-arteritic anterior ischemic optic neuropathy and what are its symptoms?

Non-arteritic ischemic optic neuropathy (NAION) refers to a stroke of the optic nerve (which is the cable that connects the eye to the brain). This condition typically causes sudden vision loss in one eye, without any pain. In many cases, the patient notices significant loss of vision in one eye immediately upon waking up in the morning. The visual loss typically remains fairly stable, without getting markedly better or worse once it has occurred.

Symptoms

Non-arteritic anterior ischemic optic neuropathy causes loss of vision because of loss of blood flow to the optic nerve.

Common symptoms include:

- Sudden loss of vision in one eye
- Often noticed upon awakening
- No associated pain

The eye examination for a patient with NAION shows swelling of the optic nerve (arrows), due to injury from reduced blood flow.
What causes NAION?

Non-arteritic ischemic optic neuropathy (NAION) is due to impaired circulation of blood to the front of the optic nerve. It is called “non-arteritic” because although there is reduced blood flow, there is not true inflammation of the blood vessels (as there is in arteritis). It is called “anterior” because the reduced blood flow and injury to the optic nerve happen at the front-most part of the nerve, where the nerve meets the eye. It is called “ischemic” because that is the word that describes injury due to reduced blood flow. Finally, it is called an “optic neuropathy” because it is an injury to the optic nerve, which disrupts the ability of eye to send information to the brain.

The exact mechanism causing reduced blood flow to the optic nerve in NAION is not proven, but it is known that this condition occurs more often when a patient has conditions such as diabetes, high blood pressure, and sleep apnea. Smoking may also elevate the risk of developing NAION. Most patients with NAION have an anatomical variation of the optic nerve, making its contents very tight and crowded. This anatomy probably contributes to the impaired circulation that causes NAION.

Although it is controversial, some researchers believe that another risk factor for NAION may be the use of blood pressure medications at nighttime, contributing to lower blood pressure during sleep. Another controversy regarding the cause of NAION concerns the use of medications for erectile dysfunction. The link to these medications is not proven, and current studies are trying to carefully address this question.
There are no treatments for NAION that are proven to be effective. It is important to treat underlying risk factors, such as high blood pressure, diabetes, and sleep apnea, to try to prevent NAION from occurring again. It is probably helpful to take aspirin daily.

Unfortunately, there are no treatments for NAION that are proven to be effective. There have been many clinical trials studying over a dozen different therapies, but none have convincingly improved the visual outcome in patients with NAION. Some studies have investigated the use of corticosteroids (prednisone) and suggested a mild improvement, but these studies did not use rigorous scientific methods, and it remains unknown if steroids are actually helpful.
Will glasses help correct the loss of vision due to NAION?

Eyeglasses do not correct the vision loss due to NAION. Eyeglasses are used to focus light in front of the eye. With NAION, the problem causing loss of vision is in the back of the eye, where the optic nerve exits to connect to the brain. If the affected eye has a separate problem of near-sightedness or far-sightedness, then glasses can be used for that reason, but they do not help the loss of vision due to an injured optic nerve.

Will NAION affect me again?

Once NAION has occurred in one eye, it is very rare for it to occur again in the same eye. On the other hand, there is approximately a 30% chance that it can occur in the other eye over one’s lifetime.

To try to reduce the risk that NAION occurs in the other eye, the doctor might suggest regular exercise, a healthy diet, and other measures to treat the risk factors of diabetes, high blood pressure, and sleep apnea. For a patient that has had NAION, it is probably reasonable to avoid taking high blood pressure medications before bedtime. It is also often recommended to take daily aspirin, although this treatment is not supported by definite evidence.

Where can I get more information on NAION?

For more information on non-arteritic anterior ischemic optic neuropathy, consider the following source:

American Academy of Ophthalmology

http://eyewiki.aao.org/Non-Arteritic_Anterior_Ischemic_Optic_Neuropathy_(NAION)

Prognosis

The visual loss due to NAION usually stays fairly stable, without significant worsening or improvement.

Eyeglasses do not help visual loss due to an optic nerve injury.

NAION only rarely occurs twice in the same eye, but there is a 30% chance that in eventually occur in the other eye.