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## **Normal-Tension Glaucoma with Sleep Apnea and Low Blood Pressure**

### *Normal-Tension Glaucoma*

Normal-tension or low-pressure glaucoma is a form of open-angle glaucoma where the patient has normal intraocular pressure (under 21 mmHg). Glaucoma is a progressive disease that damages the nerves carrying visual information to the brain. These nerves receive the light entering the eye and collectively exit the eye in a large bundle called the optic nerve. As with all other forms of glaucoma, normal-tension glaucoma destroys eyesight without any symptoms of pain. Early diagnosis and treatment is imperative.

Currently, medical studies have found that normal-tension glaucoma is associated with sleep apnea and low blood pressure.

### *Sleep Apnea*

Sleep apnea is a sleeping disorder characterized by irregular breathing patterns during sleep. Daytime symptoms of sleep apnea include excessive sleepiness and difficulty with concentration. Nighttime symptoms of sleep apnea include snoring and frequent awakenings. Patients at risk for normal-tension glaucoma must take the Epworth Test, a simple 10 question test which helps in diagnosis of the disorder.

You can take the test here:

[http://www.britishsnoring.co.uk/sleep\\_apnoea/epworth\\_sleepiness\\_scale.php](http://www.britishsnoring.co.uk/sleep_apnoea/epworth_sleepiness_scale.php)

### *The Epworth Test*

After completing the test, you will receive a score that determines if you are at risk for sleep apnea. If you are at risk, the eye doctor will refer you to a sleep apnea clinic to confirm the diagnosis.

### *Causal Link*

Presently, there are several theories regarding the link between normal-tension glaucoma and sleep apnea. One of the leading theories suggests that shallow or infrequent breathing experienced in sleep apnea causes a low perfusion in the capillary beds of the blood flow and results in insufficient delivery of oxygen to the optic nerve. Insufficient amounts of oxygen to the optic nerve cause deterioration and damage.

### *Treatment*

The use of the C-pap device during sleep has been shown to stop the effects of normal-tension glaucoma as a result of sleep apnea.

### *Low Blood Pressure*

Individuals with low blood pressure are also at risk for normal-tension glaucoma. The blood pressure may be naturally low or induced by over-medication for high blood pressure. Collaboration with the family doctor may remedy this.

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