

### **Pseudoexfoliation glaucoma: symptoms diagnosis and treatment of the condition**

Exfoliative Glaucoma (pseudoexfoliation syndrome) is the most common identifiable form of secondary open-angle glaucoma within in the white population. It is more common in females and is rarely seen below the age of 50. The exact cause is unknown. It is characterized by flakes of granular, greyish-white material similar in appearance to dandruff, which is deposited on the lens, iris and ciliary epithelium (the surface layer of cells) and carried to the trabecular meshwork by the natural flow of aqueous fluid. It is thought these flakes are composed of abnormal basement material produced by all of the epithelial cells within the anterior segment of the eye.

These deposits create a blockage within the trabecular meshwork, creating an obstruction of the Schlemm canal, narrowing of the canal and ultimately the collapse of its walls. The result is raised intraocular pressure with associated glaucoma. Exfoliation refers to the scaling off of tissues in layers, particularly dead cells from the epidermis. True exfoliation of the lens capsule is due to exposure of extreme intense heat through infrared radiation, which causes a thin membrane to peel off the anterior lens capsule. Glaucoma in this case is uncommon. Pseudoexfoliation material is found throughout the body. In the eye, it is characterized by deposits of pseudoexfoliative amyloides - a wax-like protein complex that has some starch-like qualities - believed to be produced by pigment epithelium in the iris, ciliary epithelium and the outer anterior lens epithelium.

#### **SYMPTOMS**

There are usually no symptoms until advanced glaucoma develops.

#### **DIAGNOSIS**

To determine diagnosis, the ophthalmologist may carry out the following examinations check for anterior (front) lens capsular changes using a slit-lamp check for narrowing of the anterior-chamber angle with a gonioscope measure intraocular pressure perform optical coherence tomography to measure the thickness of the macula - the tissue make-up of the nerve fibre layer - or to analyze individual layers of the retina with a non-invasive technique using light rays instead of ultrasound conduct a visual field test to assess peripheral vision Diagnosis will be confirmed by the presence of pseudoexfoliative material on the pupillary border of the iris, which will eventually come together to form a single mass shaped into a characteristic "bull's-eye" pattern.

#### **TREATMENT**

Pseudoexfoliative glaucoma will be treated in the same way as primary open-angle glaucoma, although intraocular pressure level in pseudoexfoliative glaucoma is usually higher and more

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difficult to lower. For this reason, laser surgery is often indicated earlier than with primary open-angle glaucoma. Selective laser trabeculoplasty may be particularly effective in pseudoexfoliation syndrome, however lower energy settings are required due to the increased pigmentation found in eyes with pseudoexfoliation.

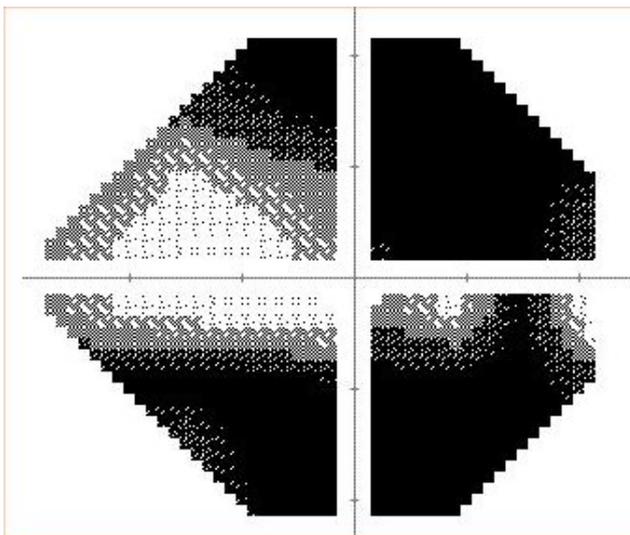
Medication to effect constriction of the pupil - miotics - can theoretically help by reducing the rubbing of the posterior iris against the pseudoexfoliative material and reducing the amount of pigment and material released into the drainage route (however pilocarpine is used very infrequently nowadays). Topical (eye drop) medication similar to those taken for primary open-angle glaucoma may be prescribed. Argon laser trabeculoplasty may be used to effect increase in drainage of aqueous fluid out of the eye. A laser beam is directed into the trabecular meshwork to form a new drainage route for fluid to leave the eye through a flap made over a small hole in sclera - the white tough outer wall of the eye.

### FOLLOW-UP

Pseudoexfoliation syndrome can occur without raised intraocular pressure and will require only periodic monitoring to check any developing glaucoma and conduct a visual field test. However, around 50% of people with raised intraocular pressure may develop glaucoma.

### OUTLOOK

The incidence of visual field loss and optic nerve damage is higher than with primary open-angle glaucoma and follow-up every 1 to 6 months may be recommended depending on the severity of the glaucoma. Pseudoexfoliation syndrome usually affects one eye, but typically the good eye will develop signs of pseudoexfoliation in 40% of cases within seven years.



Advanced field loss - example of visual field test result