

THYROID ASSOCIATED ORBITOPATHY

By Deborah Kessler Hudak, M.D.

Thyroid associated orbitopathy can occur with any thyroid disorder, regardless of the TSH level. All thyroid disorders are autoimmune (ie. the immune system produces antibodies that attack oneself), and can have associated antibodies that preferentially attack the muscles that move the eyes and the soft tissues surrounding the eyes, called the thyroid-stimulating immunoglobulins. When the attack occurs by these auto-antibodies, there is a reaction of inflammation. Inflammation involves redness, swelling, sometimes pain and increased temperature, and an influx of lymphocytes (a type of white blood cell) into the area. The inflammation of the muscles that move the eyes and the surrounding soft tissues caused congestion in the confined space of the orbital space (ie. the eye socket), and so the following things occur:

- the eye is pushed forward, a condition called proptosis or exophthalmos (commonly called "bug eyes"). This can lead to an increase in the pressure of fluid inside the eye (the intraocular pressure), which can lead to glaucoma.
- the upper eyelids move upward and the lower lids move downward (called lid retraction) and the contour of the upper lid assumes a "temporal flare" in which the highest point of the upper lid margin moves from just-towards-the-nose side of the midline to just-toward-the-temple side of the midline. The upper lid eye movement may lag behind the movement of the eyeball from upgaze to downgaze position (something called "lid lag"). The lids may then not make full contact with each other when closing the eyes, especially during sleep, allowing part of the eye to be exposed to the to the air , a condition called lagophthalmos.
- the surface area of the eye that is exposed to the air is increased relative to normal, resulting in increased dry eye
- the lacrimal gland can become fibrosed (scarred), worsening dry eye
- the mucus membranes of the lids and eyes can get inflamed, giving an "inflammatory dry eye"
- the soft tissues surrounding the eyes can get very swollen, a condition called periorbital (around the orbit/eye socket) edema (swelling)
- the eye muscles can become so swollen that they are tethered in their movements, causing restriction of movement of the eyes (a restrictive myopathy) which tends to effect, in order of preference by the thyroid-stimulating immunoglobulins, the inferior rectus muscles > lateral rectus muscles. This results in a misalignment of the eyes (since one eye is almost always affected to a greater degree than the other eye), and this leads to double vision (diplopia). If the eye muscles get extremely swollen, they may actually squeeze/ compress the optic nerve, which is the cord of nerve fibers that connects the

eyeball to the brain, so that the brain can interpret what the eye is seeing. This is called a compressive optic neuropathy, and can lead to blindness if it is not corrected soon enough. Sign of early optic neuropathy are picked up by checking for numbers hidden in color plates (the Ishihara Color Plates).

Most people with Thyroid Associated Orbitopathy need to lubricate their eyes frequently with preservative-free drops, gels, and ointments. Sometimes they need punctal plugs ("sink stopper" for the tear drainage system of the eyes), and /or Restasis. Sometimes they need steroids taken by mouth or radiation given to the area of the eyesocket behind the eye. Sometimes they need glaucoma medications. Rarely they need surgical intervention during the "active phase" of their illness. Often they need surgery once the disease is "quiet and stable" to get the lids and eyes back to the appearance they were in prior to the thyroid disease. To intervene with surgery prior to the quiet, stable phase is to risk under-correcting or over-correcting the person, and worse yet, causing the inflammation to get even worse.

Dr. Hudak will ask you to return at certain intervals, and you need to come in more frequently if you have onset or worsening of double vision, or frequent eye discomfort.

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