

Eye diseases are relatively common in patients with gluten intolerance and celiac disease. In this article, we describe commonly seen gluten-associated eye problems in the order of their relative prevalence.

**Sjogren's syndrome** with eye involvement is the most common ophthalmologic manifestation of gluten intolerance or celiac disease. Based on various databases, the prevalence of Sjogren's syndrome with eye involvement ranges from 2 to 7 percent among celiac patients.

Sjögren's syndrome is a chronic inflammatory autoimmune disease characterized by eye dryness, itching, and pain.

The diagnosis of Sjogren's syndrome with eye involvement requires several specific tests.

Typically, evaluations start with a Schirmer test, a standard assessment for measures of tear production. To perform a Schirmer test, a small strip of filter paper is placed inside the lower eyelid. The eyes are closed, and after 5 minutes, the length of moistening of the filter paper is measured. More than 10 mm of moisture is considered normal. In addition, tears are analyzed for presence of MMP-9, an enzyme which presents at high concentration in tears from Sjogren's patients but not in healthy individuals.

To complete the diagnostic work up, patients with dry eye are also tested for blood markers of Sjogren's syndrome.

The therapy for Sjogren's syndrome is complex. A gluten-free diet is definitely part of therapy. Other therapeutic options include tear substitution eye drops, anti-inflammatory eye drops, and immunosuppressive eye drops. Resistant cases require more aggressive systemic immunosuppressive therapy and sometimes even surgical interventions.

"Celiac disease and Sjogren's syndrome: A case report and review of literature." *World Journal of Clinical Cases.* Sept 26, 2020; 8(18):4151-4161. Balaban, DV., Mihai, A., et al.

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**Uveitis** is the inflammation of the uvea, the pigmented layer that lies between the inner retina and the outer fibrous layer composed of the sclera and cornea.

Symptoms include pain, floaters, and blurred vision. Clinical examination may show redness and an irregular pupil, while ophthalmic examination shows dilated blood vessels and the presence of cells in the anterior chamber.

Uveitis is an ophthalmic emergency and requires a thorough examination by an ophthalmologist. Urgent treatment is required to control the inflammation.

Treatment usually involves the use of steroids, most commonly as eye drops. While initial treatment is usually successful, complications include other ocular disorders, such as uveitic glaucoma, retinal detachment, optic nerve damage, cataracts, and in some cases, a permanent loss of vision. In the United States, uveitis accounts for about 10 to 20 percent of all cases of blindness. In patients with gluten intolerance and celiac disease, compliance with gluten-free diet significantly reduces the risk of uveitis flare up.

"Epidemiology and Risk Factors in Non-infectious Uveitis: A Systematic Review." Frontiers in Medicine (Lausanne). Sept 10, 2021. doi:10.3389/fmed.2021.695904. Joltikov, KA., Lobo-Chan, AM.

**Cataract** is a cloudy area in the lens of the eye that leads to a decrease in vision. Cataracts often develop slowly and can affect one or both eyes. Symptoms may include faded colors, blurry or double vision, halos around light, trouble with bright lights, and trouble seeing at night. This may result in trouble driving, reading, or recognizing faces. Poor vision caused by cataracts may also result in an increased risk of falling and depression. Cataracts cause half of all cases of blindness and 33 percent of visual impairment worldwide.

Celiac disease increases the risk of cataract development. There are several potential explanations for an association between celiac disease and cataract, including vitamin deficiencies, excessive oxidative stress (an imbalance between free radicals and antioxidants in your body), and autoimmune responses. Vitamin deficiencies are prevalent in both gluten intolerance and celiac disease, as a consequence of malabsorption and/or ongoing intestinal inflammation. In addition, certain amino acid deficiencies, for example, L-carnosine deficiency, can potentially predispose one to cataract development and progression.

Excessive oxidative stress is an important consideration in the development of cataract and has also been linked to celiac disease. Research suggests that gluten interrupts the antioxidant/pro-oxidant balance in the intestinal mucosa, causing a reduction in the antioxidant capacity of celiac patients both in the mucosa and in peripheral blood, leading to a disruption of tissue homeostasis and therefore causing complications in celiac disease.

Finally, it has even been suggested that cataract is an autoimmune disorder, due to the fact that inflammation may induce cataract development. It may be that the disease patterns of celiac disease and cataract share similar immunologic and autoimmune properties.

"Celiac Disease: Extraintestinal Manifestations and Associated Conditions." Journal of Clinical Gastroenterology. 2020; 54(1):8-21. Therrien, A., Kelly, CP., Silvester, JA.

Nyctalopia, also called night-blindness, is a condition making it difficult or impossible to see in relatively low light. It can be described as insufficient adaptation to darkness. The most common cause of nyctalopia in gluten-sensitive patients is vitamin A deficiency. Being a liposoluble nutrient, vitamin A is dependent on dietary lipids for transport. Dietary lipids are reduced into its simpler form for transport by the pancreatic enzyme lipase. As a result, any pancreatic impairment, common in gluten sensitive and celiac patients, can limit vitamin A absorption and transport.

"Ocular manifestations in celiac disease: an overview." International Ophthalmology. Apr 2020; 40(4):1049-1054. Fousekis, FS., Katsanos, A., et al.

**Optic neuritis** is a condition that is characterized by inflammation of the optic nerve and requires immediate medical attention. Optic neuritis has been described in association with celiac disease or gluten intolerance; however, the prevalence of this condition among gluten-sensitive patients is still poorly defined.



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Major symptoms are sudden loss of vision (partial or complete), sudden blurred or "foggy" vision, and pain on movement of the affected eye. Other early symptoms are reduced night vision, photophobia (light sensitivity), and red eyes.

Many patients with optic neuritis may lose some of their color vision in the affected eye (especially red), with colors appearing subtly washed out compared to the other eye. Patients may also experience difficulties judging movement in depth which can be particularly troublesome during driving or sports. Likewise, transient worsening of vision with increase of body temperature and glare disability are a frequent complaint.

**"Optic neuritis in a patient with celiac disease.**" *Neurol Neurochir Pol.* Nov-Dec 2017; 51(6):534-536. Baghbanian, SM., Moghadasi, AN.

**Retinal vein occlusion** (branch retinal vein occlusion, central retinal vein occlusion) are vascular occlusions (thrombus formation) of either the branch or central retinal vein resulting in potential vision changes. The most common manifestation of the retinal vein occlusion is an acute visual loss typically in one eye. Retinal vein occlusions can cause macular edema, retinal ischemia, neovascular complications such as glaucoma, vitreous hemorrhage, and retinal traction. Immediate medical attention is also a must.

"Central retinal vein occlusion revealing celiac disease: The first report of two cases from India." *Indian Journal* of Ophthalmology. Sept 2018; 66(9):1315-1317. Malhi, RK., Dhami, A., et al. GFM

As always, consult a medical professional before beginning any new protocol.



## ABOUT THE AUTHOR:

**Dr. Alexander Shikhman**, founder of the Institute for Specialized Medicine, is board certified in internal medicine and rheumatology. Dr. Shikhman also launched Gluten-Free Remedies<sup>™</sup>, a line of all natural supplements which help treat the complications that can arise from celiac disease. Find Dr. Shikhman at ifsmed.com and glutenfreeremedies.com.



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