

How does Allergies and Dry Eyes affect Keratoconus

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Keratoconus (KC), classified as a progressive disease characterized by corneal thinning and protrusion, has for long been associated with allergic factors. The most common being Atopic Disease. Atopic disease includes atopic or allergic dermatitis, allergic rhinitis, and asthma.

Exactly how deep this association is, is still difficult to establish. These allergic conditions show the most dominant risk factor for chronic habit of eye rubbing.^[1] Specifically, a vigorous knuckle eye rubbing action has been shown to accelerate the progression of Keratoconus or even cause the development of Keratoconus even though there were no genetic predisposition.

Interestingly enough there are even less dominant factors that causes this bad habit of eye rubbing and this includes compulsive behavior, mental stress or emotional tension and psychogenesis.^[2] In a survey that included 240 Keratoconus patients, it was found that 65.6% of them had a history of eye rubbing.^[3] Another study by Rabinowitz, comparing normal and Keratoconus patients even showed a prevalence of eye rubbing in as much as 83% versus normal corneal patients.^[4]



For this reason, people with this disease have to be very conscious of not rubbing their eyes. Especially parents needs to be conscious of discouraging their children from doing this if they have been diagnosed with Keratocunus.

Even if their children has normal corneas, eye rubbing should still be discouraged. This is easier said than done though. The best way of preventing this is to simply treat what is causing the itchiness in the first place. This would be to treat the Atopic disease or seasonal allergy symptoms of itchiness.

Our second challenge in Keratoconus patients is inflammation. Inflammation is our body's natural response to antigens but some of the molecules released during inflammation can have serious negative effects on the eye if it continues indefinitely.

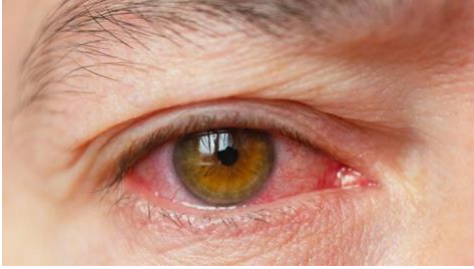
Although Keratoconus is a non-inflammatory disease a study done by Lema has found that there are inflammatory markers in the tears of Keratoconus patients that increase with the severity of the condition.^[5]

Knowing that there is a situation of inflammation present in the tears of Keratoconus patients and the fact that any contact lens on the eye induces micro-inflammation, we have to reduce any extra causes of inflammation. This includes ocular allergies already discussed but also Dry eye symptoms.

As we have seen, allergies, apart from causing eye rubbing habits, it also causes inflammation. Dry eye symptoms not treated also causes the release of inflammatory markers not favorable for the ocular surface. For Keratoconus patient specifically, the more inflammation caused the bigger the risk of rejecting any corneal transplant in the future.^[6] This means that we have to manage inflammation the best we can to give the patient a better privilege of accepting and keeping a corneal graft.

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Dry eye symptoms can include burning, scratchy, teary and red eyes that sometimes are worse on waking up or worse as the day go by depending of what part of the tear layer is affected.



Patients with Keratoconus reportedly experience greater symptoms of dry eye and greater tear instability.^[6] Knowing all of this we need to reduce the amount of extra inflammation caused by allergies and dry eye.

A careful and proper evaluation is necessary by your optometrist to determine inflammation caused by allergic conjunctivitis and dry eyes. It is important to treat the cause and manage the symptoms of the inflammation at the same time. Ignoring the symptoms can prevent the comfortable wear of your contact lenses, even if the lens fit is good.

What can you do about your allergies and dry eye symptoms?

For ocular allergies you can read my article written on ocular allergies. ([link to other article](#)). The treatment protocol for allergies is the same for every patient.

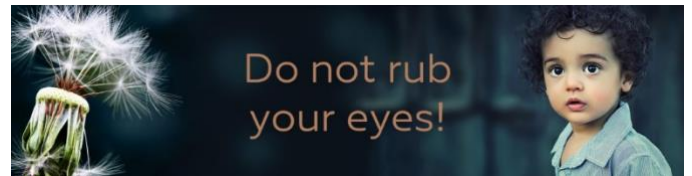
Dry eyes on the other hand may sound like a simple condition with a simple solution but it is a multifactorial disease that can be influenced by a lot of factors.

Some of these factors can include but are not limited to environmental factors, immunosuppressant systemic conditions, chronic blepharitis (lid inflammatory condition), medication, hormonal changes, nutritional deficiencies and previous trauma to the eyes.

To establish the severity of your dry eye, there is a very simple questionnaire that you can complete on our website, called the ODSI dry eye questionnaire. ([link to questionnaire](#)). If you fall in the moderate to severe category you are welcome to make an appointment, so I can assess your dry eye signs and symptoms to treat it accordingly.



For both allergies and dry eye disease (DED), over the counter and prescription eye drops can bring great relief. Artificial tears can relieve symptoms of both allergies and dry eye but is still only supplementary. There are so many drops available to help relieve allergies and dry eyes, let me guide you in the right direction that will have the biggest affect.



References:

- [1] Gordon-Shaag A, Millodot M, Shneor E, Liu YT. The genetic and environmental factors for keratoconus. *Biomed Res Int* 2015;2015:795738
- [2] Yusuf IH, Salmon JF. Iridoschisis and keratoconus in a patient with severe allergic eye disease and compulsive eye rubbing: a case report. *J*
- [3] Shneor E, Millodot M, Blumberg S, Ortenberg I, Behrman S, Gordon-Shaag A. Characteristics of 244 patients with keratoconus seen in an optometric contact lens practice. *Clin Exp Optom* 2013;96(2):219-224. *Med Case Rep* 2016;10(1):134
- [4] Rabinowitz Y. The genetics of keratoconus. *Ophthalmology Clinics of North America* 2003;16(4):607-62
- [5] Lema I, Duran JA. Inflammatory molecules in the tears of patients with Keratoconus. *Ophthalmology*. 2005;112(4):654-659. doi:10.1016/j.ophtha.2004.11.050
- [6] Coster DJ, Jessup CF, Williams K.A, Mechanisms of corneal allograft rejection and regional immunosuppression. *Eye (Lond)*.2009;23(10):1894-1897. doi:10.1038/eye.2009.17