

Survey on the Thyroid Gland Dysfunction Prevalence among Keratoconic Patients

Protocol study

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Introduction:

Hormonal imbalances may be associated with KC as it affects the corneal metabolism. Likewise, thyroid gland dysfunction (TGD) can frequently associated with eye diseases such as Graves disease. Previous studies investigated the association between TGD and KC and suggesting positive correlation⁶⁻⁹. In 1936, Appelbaum⁶ reported a series of patients with KC with a high prevalence of hypothyroidism symptoms while King⁷ reported KC after thyroidectomy. In 1990, Kahán et al. ⁸ reported a possible role of tear fluid thyroxine in keratoconus development. Interestingly, thyroxine (T4) is important for corneal dehydration and transparency during embryonic development and regulates the synthesis of keratin sulfate proteoglycan in the chicken^{11,12}. T4 receptors (T4Rs) have been found in the lacrimal gland, confirming that the tear producing gland is a target organ of T4¹³. T4 level was elevated in the tears of patients with KC¹⁴. More studies were published till 2018 when two new case reports by Lee et al.^{15,16} claimed the existence of the association. Therefore, we aim to conduct an epidemiological study to assess the prevalence of TGD among patients with KC.

Dry eye syndrome (DES), also known as keratoconjunctivitis sicca (KCS), is the condition of having dry eyes.^[6] Other associated symptoms include irritation, redness, discharge, and easily fatigued eyes. Blurred vision may also occur.^[6] The

symptoms can range from mild and occasional to severe and continuous.[7] Scarring of the cornea may occur in some cases without treatment.[6]

Dry eye occurs when either the eye does not produce enough tears or when the tears evaporate too quickly.[6] This can result from contact lens use, meibomian gland dysfunction, allergies, pregnancy, Sjögren's syndrome, vitamin A deficiency, LASIK surgery, and certain medications such as antihistamines, some blood pressure medication, hormone replacement therapy, and antidepressants.[6][7][8] Chronic conjunctivitis such as from tobacco smoke exposure or infection may also lead to the condition.[6] Diagnosis is mostly based on the symptoms though a number of other tests may be used.[9]

Purpose:

To screen of the prevalence of thyrotoxicosis among patients complaining of keratoconus.

Patients and Methods:


Design: A prospective randomized study.

The authors will obtain the approval of the ethical committees in faculty of medicine in Soahg University Hospitals. All patients will sign an informed consent.

This study will be applied on 200 keratoconic patients (experimental group) and 100 non-keratoconic subjects (control group). All participants will be subjected to measurement of T3, T4 and TSH to detect TGD. Viual, refractive and topographic results will be recorded.

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