The importance of Schirmer test in the elderly patients with epiphora

Epifora yakınması olan yaşlı hastalarda Schirmer testinin önemi

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Abstract

Aim: To determine the importance of Schirmer test in elderly patients with epiphora.

Material and Method: A prospective study on the consecutive patients whose ages are 50 or more with a chief complaint of tearing. The cause of tearing was determined on the basis of the clinical examination including slit lamp examination, Schirmer test, dye disappearance test and irrigation test. The patients having eyelid and conjunctival abnormalities other than pinguecula and pterygium were not recruited in the study.

Results: This study included 132 patients with a mean age of 68.7 years. Nasolacrimal system abnormalities were detected in 16 eyes (6.1%). The number of eyes with a Schirmer value of 9 mm or lower was 95 (36.0%). The study population was divided into two groups in respect to the mean age. The patients under the mean age formed group 1 and the elderly patients formed group 2. The statistical analyses were performed between two groups and between two sexes. The only significant difference was detected in the comparison of the groups in respect to Schirmer test results ($p<0.01$). Lower Schirmer test results were obtained in the group 2 including the patients over the age of 68 years.

Conclusion: Epiphora in a normally appearing eye of an elderly patient should first bring the dry eye into mind. So the testing for the dry eye is more important than the dye disappearance test and the irrigation test in patients with a complaint of tearing.

Keywords: Dry eye, epiphora

Öz

Amaç: Epifora yakınması olan yaşlı hastalarda Schirmer testinin önemini belirlemek.

Gereç ve Yöntem: Bu prospektif çalışma gözlerinde sulanma şikayeti olan 50 yaş üzeri ardışık hastalar üzerinde planlanmıştır. Sulanmanın sebebi biyomikroskobik muayene, Schirmer testi, boya kaybolma testi ve irrigasyon testini içeren klinik muayeneyle belirlenmiştir. Pinguekula ve pterjiyum dışında konjonktiva ve göz kapağı anormalliği olmayan kişiler çalışmaya dahil edilmiştir.

Bulgular: Bu çalışmaya 132 hasta dahil edilmiştir. Yaş ortalaması 68,7 yıldır. Gözlerin 16'sında (%6,1) nazolakrimal sistem bozukluğu tespit edilmiştir. 9 mm ve altında Schirmer değeri tespit edilen gözlerin sayısı 95'tir (%36,0). Çalışma populasyonu ortalama yaşa göre iki gruba bölünmüştür. Ortalama yaş altında bulunan hastalar 1. grup, ortalama yaş üzerinde olanlar ise 2. grup olarak ele alınmıştır. Istatistiksel analizler iki grup ve iki cins arasında gerçekleştirilmiştir. Tek anlamlı istatistiksel fark Schirmer test sonuçlarıyla ilgili karşılaştırmada görülmüştür ($p<0,01$). Yani 2. grupta daha düşük Schirmer test sonuçları bulunmuştur.

Sonuç: Yaşlı bir kişide normal görünümlü bir gözde epifora mevcutsa öncelikle akla kuru göz gelmelidir. Bu nedenle sulanma şikayeti olan hastalarda kuru göze yönelik test yapılması boya kaybolması testi ve irrigasyon testinden daha önemlidir.

Anahtar Kelimeler: Kuru göz, epifora

Introduction

Epiphora is caused by increased tear production, which results from hyper-stimulation of the main lacrimal gland due to the ocular surface irritation, or by defective tear drainage due to an anatomical or functional defect. In addition to social embarrassment, tearing can affect the quality of a patient's life as it may interfere with daily activities, especially reading and driving.[1] Although various pathologies can present as tearing most of the ophthalmologists take the nasolacrimal abnormalities into the consideration firstly. There is a controversy between dryness and tearing, but it is wellknown that there may be an annoying reflex tearing in dry eye patients. In this study the importance of this controversy was emphasized from the clinical aspect with Schirmer test, dye disappearance test and irrigation test.

Material and Method

Consecutive patients, 50 years of age or older, with a chief complaint of epiphora were recruited for this study. Patients with a concurrent ocular infection or blepharitis, a palpebral abnormality such as entropion or ectropion, a history of palpebral, conjunctival or lacrimal surgery, facial palsy, ocular or peri-ocular trauma, facial radiotherapy and those using any eye medication were exluded. Slit lamp biomicroscopic evaluation was performed for all patients with the intention of identifying these pathologies.

Then all the patients were evaluated with the Schirmer test without anesthesia, dye disappearance test and lacrimal irrigation test. Diagnosis of dry eye with reflex tearing was based on a Schirmer test value less than 10 mm/ 5 minutes. Functional or anatomical obstruction of the nasolacrimal system was evaluated with the slit lamp biomicroscopy, dye disappearance test and irrigation test.

No informed consent was taken from the patients since the tests were part of the examination.

The study population was divided into two groups in respect to the mean age. The patients under the mean age formed group 1 and the elderly patients formed group 2. The statistical analyses were performed between two groups. Chi-square tests were performed to identify associations among variables. A P value of <0.01 was considered significant.

Results

This study included consecutive132 patients who presented to the ophthalmology clinic with tearing and appropriate for the design of this prospective study. The mean age was 68.7 years (range, 50-91 years) and 62.9% (83/132) of the patients were female.

The nasolacrimal system abnormalities such as punctum stenosis, functional and anatomical obstructions were detected in 6.1% (16/264) of the eyes. The ratio of nasolacrimal system abnormalities was 6.2% (8/130) in group 1, 6.0% (8/134) in group 2, 4.8% (8/166) in females and 8.2% (8/98) in males.

A Schirmer value of less than or equal to 9 mm was measured in 26.2% (34/130) in group 1, 45.5% (61/134) in group 2, 38.6%(64/166) in females and 31.6% (31/98) in males. Schirmer value was between 10 and 15 mm in 29.2% (38/130) in group 1, 27.6% (37/134) in group 2, 25.9%(43/166) in females and 32.7% (32/98) in males. It was measured over 15 mm in 44.6% (58/130) in group 1, 26.9% (36/134) in group 2, 35.5%(59/166) in females and 35.7% (35/98) in males.

A great difference was detected between the percentage of cases having nasolacrimal system abnormalities (6.1%) and the percentage of cases having Schirmer test value less than 10 mm (36.0%, 95/264). If we add the cases having Schirmer value between 10 and 15 mm (28.4%, 75/264) the difference will be greater (total 64,4%, 170/264).

Statistical analyses were performed between the groups and sexes (Table 1). No statistically significant difference was detected between the group 1 and group 2 and between females and males in respect to nasolacrimal system abnormalities (p>0.01). The groups and sexes were compared in respect to Schirmer test value of less than or equal to 9 mm and more than 9 mm. The difference between group 1 and group 2 was statistically significant (p<0.01), but the difference between sexes was not significant (p>0.01).

Table 1. Comparison in respect to the groups and sexes.

	Group 1*	Group 2**	Females	Males
Nasolacrimal system abnormality	6.2% (8/130)	6.0% (8/134)	4.8% (8/166)	8.2% (8/98)
Schirmer value<10 mm	26.2% (34/130)	45.5% (61/134)	38.6% (64/166)	31,6% (31/98)
Schirmer value between 10 and 15 mm	29.2% (38/130)	27.6% (37/134)	25.9% (43/166)	32.7% (32/98)
Schirmer value>15 mm	44.6% (58/130)	26.9% (36/134)	35.5% (59/166)	35.7% (35/98)

*Group 1. The patients under the mean age. ** Group 2. The patients over the mean age.

Discussion

The current study was planned mainly to compare the elderly patients in respect to dry eye and nasolacrimal system abnormalities. It is wellknown that the elderly patients complain of tearing in both cases. Most of the ophthalmologists accuse the nasolacrimal system for the tearing. Bukhari reported the punctal stenosis as the most common cause of tearing in a younger population (mean age 53.9 years). In that study nasolacrimal duct obstruction and canalicular obstruction were reported to be 10.1% and 4.2% respectively. Dry eye patients constituted only 27.7% of the cases. It should be noted that that study was performed on the patients seen in an oculoplastic clinic [1].

Mainville and Jordan also studied the etiology of tearing in patients referred to an oculoplastic clinic and reported that the main cause was nasolacrimal duct obstruction, which affected 40.7% of their study population while punctal and canalicular pathologies constituted only 8% of the cohort [2].

If we take the whole population into consideration again the nasolacrimal duct obstruction may be the first cause of tearing. Sibley et al reported in a new study that the nasolacrimal duct obstruction was responsible for tearing in 31.8% and dry eye with secondary reflex tearing was responsible in 29.2% [3]. The most common cause of tearing was nasolacrimal duct obstruction in the study of Williams et al. [4]. In fact nasolacrimal duct obstruction is the most frequent etiology of epiphora in infants [5,6].

Sometimes dry eye was not thought as the cause of tearing. Rozycki et al examined their epiphora patients in respect to eyelid and lacrimal punctum position, medial canthal tendon laxity, horizontal resting position, lateral distraction, fluorescein dye disappearance, upper and lower canaliculi, lacrimal sac and nasolacrimal canal [7].

Avisar et al gave attention to tearing in two cases with dry eye years ago. Despite the diagnosis of dry eye their cases complained of epiphora that ceased after treatment with tear substitutes, bromhexine and occlusion of the lacrimal puncti [8]. Lateron this type of dry eye was named as wet dry eye [9].

The present study shows that the lacrimatory system should be accused of the tearing more commonly. It has been documented that blepharitis and dry eye disease can lead to stimulation of the neurosensory receptors in the cornea and conjunctiva; this can result in increased lacrimal gland secretion in an attempt to reduce the tear film osmolarity with resultant reflex tearing [10].

This study was performed with a few tests although more than one lacrimal test were recommended for a definitive diagnosis in patients with epiphora, but I think this study also shows the importance of dry eye disease in this group of patients [11].

Another very important finding was gathered from the statistical analysis of group 1 and group 2. As the people get older the ratio of dry eye with a symptom of tearing increases. There was no significant difference between elderly females and elderly males in respect to nasolacrimal abnormalities and Schirmer test values.

In the older age group cataract surgery and other intraocular surgeries are performed very often. These patients also feel stinging and tearing complaints. I did not study the effect of intraocular surgeries. This is a limitations of this study. Another limitation of this study is that the magnitude of reflex tearing was not defined clearly. A basal secretion test might show dry eye condition.

In conclusion an ophthalmologist should not forget the dry eye disease in elderly patients with a complaint of tearing.

Declaration of conflicting interests

The author declared no conflicts of interest with respect to the authorship and/or publication of this article.

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