Abnormal protein profiles in tears with dry eye syndrome☆

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Abstract

Purpose
To verify the hypothesis that protein concentrations, such as lactoferrin, epidermal growth factor (EGF), and aquaporin 5 (AQP5), in tears are abnormal in patients with dry eye.

Design
Prospective case-control study.

Methods
One hundred three dry eye patients were divided into three groups: dry eye not associated with the Sjögren syndrome (non-SS; n = 71), Sjögren syndrome (SS; n = 23), and Stevens-Johnson syndrome (SJS; n = 9). Sixteen normal control subjects were also checked. The concentrations of lactoerrin, EGF, and AQP5 were measured by enzyme-linked immunosorbent assay.

Results
The concentration of lactoferrin was significantly decreased in tears of non-SS (P = .0001), SS (P = .00005), and SJS (P = .0006) patients compared with control subjects. The concentration of EGF was significantly decreased in non-SS (P = .0005), SS (P = .00002), and SJS (P = .0001) patients compared with control subjects. The concentration of AQP5 was significantly increased in tears of only SS patients (P = .01) compared with control subjects and increased in tears of only SS patients compared with non-SS patients (P = .007).

Conclusions
The decrease in both lactoferrin and EGF was found not only in SS patients but also in non-SS patients, indicating that tear components in dry eyes differ in their quantity and quality. Quantification of AQP5 increased only in SS patients, suggesting that AQP5 protein leaks into the tears when acinar cells of the lacrimal gland are damaged by lymphocytic infiltration.