IMPRESSION CYTOLOGY OF THE CONJUNCTIVA IN AIDS PATIENTS

Goblet and Orange Cells Analysis

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ABSTRACT

Keratoconjunctivitis sicca is one of the most frequent non-infectious ocular manifestations in AIDS patients. This study was performed to prospectively analyze goblet cell density in the conjunctiva of AIDS patients and to correlate orange cells and squamous metaplasia.

In this study conjunctival specimens of 37 patients with AIDS (CD4<200 cells/mm³) and 12 HIV-negative patients were examined by impression cytology in the interpalpebral zone, after clinical evaluation of break-up time, rose bengal staining, and Schirmer test. The AIDS group was subdivided into 19 patients with symptoms of dry eye and 18 patients without symptoms.

Results of this study showed no statistical difference in impression cytology or in evaluation of lacrimal film between the two AIDS groups. There was a statistically significant difference between AIDS patients and the control group in goblet cells counts and in lacrimal function tests (p<0.5). In AIDS patients, goblet cells were absent in 22 (59.45%) eyes. There was a positive correlation between CD4 and the goblet cell counts in AIDS patients with dry eye symptoms (p<0.05). The orange cells were higher in the two AIDS groups (p<0.05).

In this study decreased goblet cell numbers and the high incidence of orange cells suggested keratinization and metaplasia of conjunctival epithelium. Abnormal lacrimal function tests and damaged conjunctival epithelium, as evidenced by impression cytology, were observed in the two AIDS groups.

INTRODUCTION

Acquired immunodeficiency syndrome (AIDS) has been an important problem in public health care since 1981, when the C.D.C. in Atlanta received the news of homosex-
ual patients and drug abusers who had pneumonia by *Pneumocystis carinii* and Kaposi's sarcoma.\(^1\)

In 1993 some authors in Brazil studied the ophthalmologic alterations that occurred in 445 patients who had the virus.\(^2\) In addition to reduction of T and B cells in patients infected by HIV, the ocular defenses are also compromised and may develop non-infective keratoconjunctivitis, which is observed in 10% of patients. Keratoconjunctivitis sicca appears in 10 to 15% of patients. In many cases it is incidentally discovered and can be controlled easily with artificial tears. However, in the more severe forms, superficial abnormalities and even ocular perforations can occur.\(^3\)

In a 1991 study, the authors treated three AIDS patients with severe dry eye after the Steven-Johnson's syndrome and toxic epidermal necrolysis, which was misdiagnosed as chronic infectious conjunctivitis and did not respond to the use of topical antibiotics but improved with artificial tears. Because these patients have a great propensity for developing infections, it is not surprising that a patient with chronic red eye may be initially diagnosed and treated as infectious conjunctivitis.\(^4\)

Keratoconjunctivitis sicca occurs with some frequency in patients infected by the HIV-virus and aqueous tear deficiency has been observed. For a better study of the conjunctival surface of AIDS patients, impression cytology of the conjunctiva has been used because it is easy to perform, fast, and reproducible. Some authors have diagnosed xerophthalmia by this method.\(^5\)

The objective of this study was to use impression cytology to determine the number of goblet cells in the conjunctiva of AIDS patients with and without dry eye symptoms and compare them to HIV-negative patients. Additional goals are to evaluate, in a quantitative way, the distribution of orange cells of each patient and establish a possible correlation with squamous metaplasia.

**METHODS**

This study was performed between September 1993 and June 1994 at the Paulista School of Medicine, and Saint Vincent Hospital in Jundiaí (Sao Paulo). The study population included 37 group IV AIDS patients with CD\(_4\)<200 cells/mm\(^3\) or who had AIDS definition disease. This population was subdivided into two groups as follows: Group I—19 AIDS patients with dry eye symptoms; Group II—18 AIDS patients without dry eye symptoms; Control Group—12 HIV-negative patients. (See also Table 1).

Criteria for inclusion in this study consisted of the following items: (1) had not used eye drops in the last 6 months; (2) did not use contact lenses; (3) on biomicroscopy presented with no blepharitis, meibomitis, or eyelid alterations of any time; (4) absence of corneal or conjunctival abnormality such as scars, degenerations, infections, or inflammations of any nature; and (5) CD\(_4\) of less than 200 cells/mm\(^3\).

The symptoms established to characterize dry eye (Group I) were at least one of the following: burning, tearing, itching, pain, secretion, red eye, and foreign body sensation.

Blood samples were collected from all patients for HIV testing and CD\(_4\) counting. In all patients the ophthalmologic examination was made by the best corrected visual acuity, biomicroscopy of the lacrimal film done in a TOPCON SL2E (E.U.A.) slit lamp, and indirect ophthalmoscopy (Keeler - England).

Clinical tests performed in this study included tear break-up time (BUT), Schirmer test (Clement Clarke Int. Ltd. 0892/4/5000) done with topical anesthesia (proximetacayne 0.5%) and Rose Bengal test. The BUT was considered normal when values higher than 10