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SHORT COMMUNICATION

Case report

Twelve years' continuous wear of the same therapeutic soft contact lens: a case report

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ABSTRACT: Purpose. *To describe a case of a patient who had worn the same therapeutic soft contact lens (TSCL) continuously for twelve years, since he had failed to attend normal follow-up visits.*
Methods. *Microbiological histological and scanning electron microscopic (SEM) studies of conjunctiva, cornea and TSCL were done.*
Results. *Cultures were negative. Corneal histology revealed mild stromal edema and mild epithelial parakeratosis. Corneal SEM was remarkable for the preservation to some extent of normal corneal epithelial specialization with microtricae and microvillae. SEM of the TSCL showed a ruffed multi-layer surface with several cracks including different types of cells.*
Conclusions. *The patient showed surprising tolerance to the continuous wear of the same contact lens for l2 years. (Eur J Ophthalmol 1999, 9: 312-14).*

KEY WORDS: Therapeutic soft contact lens, Conjunctiva, Cornea, Scanning electron microscopy

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INTRODUCTION

For almost a decade, ophthalmologists have been treating patients with continuously worn therapeutic soft contact lenses (TSCL) to protect the front surface of the eye. However, this therapy is associated with many complications (1-4). The TSCL alters the normal physiological function of the cornea by inducing a relative state of hypoxia, producing mechanical trauma to the corneal surface, and altering tear film dynamics (3). We describe a patient who had continuously worn the same TSCL for 12 years, and had failed to attend regular follow-up visits. Microbiological and histopathological studies of the conjunctiva and cornea, and scanning electron microscopy (SEM) of the TSCL were performed.

Case report

A 75-year-old man was seen in the Athens University Eye Clinic, because of mild pain, redness, and foreign body sensation in his left eye (LE). Medical history was remarkable for Bell's palsy l3 years ago and mental retardation. Ocular history was significant for lagophthalmos in LE due to left facial nerve palsy. The patient had failed to attend regular follow-up visits.

Initial ophthalmic examination revealed a best corrected visual acuity of 50/20 in the right eye (RE) and light perception in LE. Biomicroscopic examination of LE showed moderate conjunctival hyperemia wiih mucopulurent discharge and giant papillary reaction on the upper palpebral conjunctiva. The anterior surface of the cornea was covered by a white calcified opaque plaque that prevented further examination (Fig. 1a). The plaque was removed and from the patient's medical records it was presumed to be the TSCL placed 12 years before (Fig. 1b).

After removing the TSCL, visual acuity increased to hand movement. Further biomicroscopic examination revealed intact corneal epithelium, stromal corneal edema and opacification with superficial stromal neovascularization extending to the visual axis, most prominent inferiorly (Fig. 1c). The anterior chamber, seen

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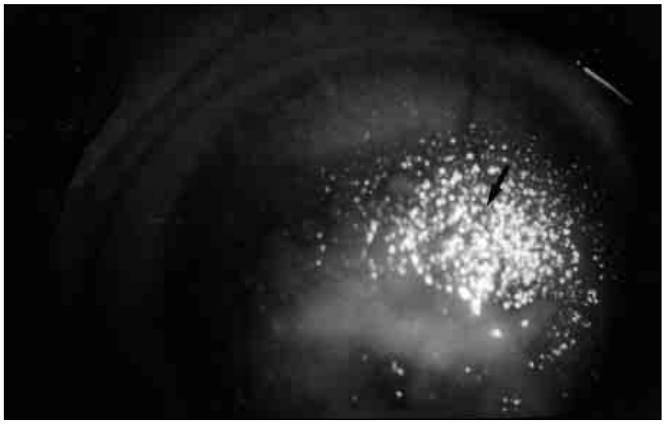

Fig. 1a - *External photograph of the affected left eye. The therapeutic soft contact lens is shown. Notice the corneal opacification and conjunctival hyperemia. There is some light reflex on this picture (arrow).*

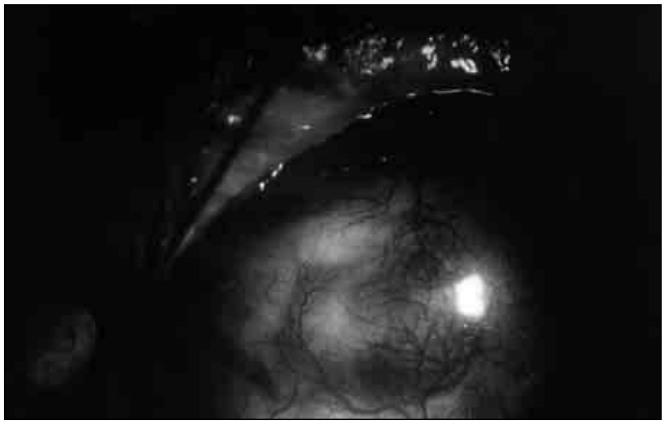

Fig. 1b - *The anterior surface of the eye after the TSCL was removed. Notice the intact corneal epithelium associated with stromal neovascularization extending to the visual axis.*

poorly through clear corneal areas, seemed to be quiet. The iris was roughly normal and the lens had cataract changes.

Corneal pachometry of LE showed a corneal thickness of 0.7 mm whereas the cornea of RE was 0.5 mm .

The patient was admitted to hospital for diagnostic cultures and treatment. Swabs of the inferior forix conjunctiva were directly placed and cultured on sheep blood agar, and corneal scrapings were directly placed and cultured on sheep and chocolate agar for rou-

Fig. 1c - *The anterior surface of the TSCl, with mucopurulent discharge.*

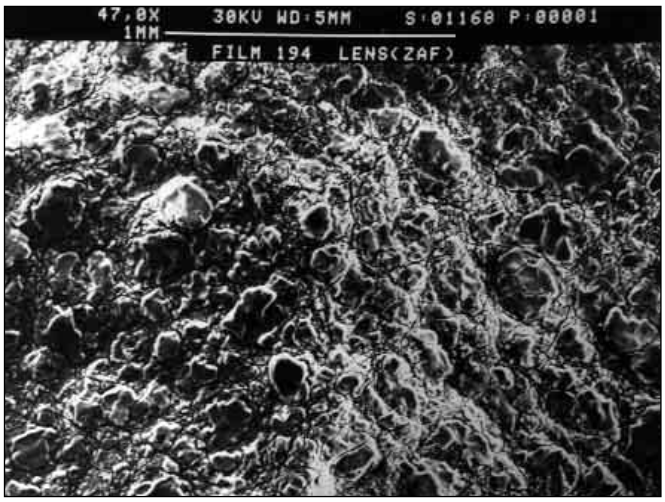

Fig. 2a - *Scanning electron microscopy of the TSCL. The surface has a "mars-like" appearance, with a desiccated "coat" of proteins and other deposits (original magnification x 47).*

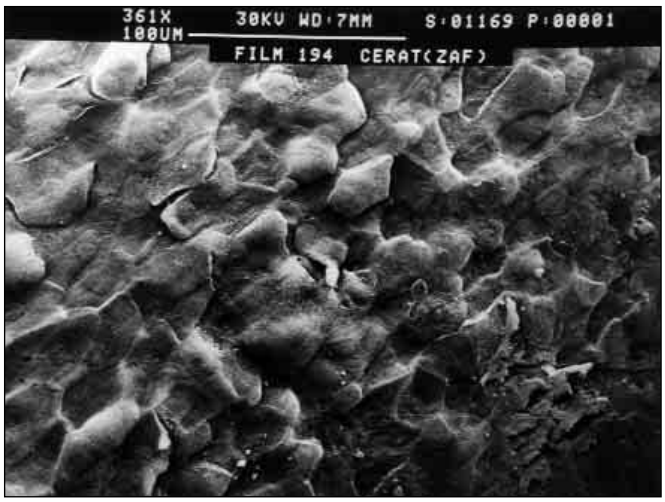

Fig. 2b - *Scanning electron microscopy of the cornea. The corneal epithelium is irregular with some desquamation (original magnification x 361).*

tine bacteriological growth. Corneal scrapings were also directly placed and cultured on Sabouraud's agar for routine mycological growth. While awaiting the culture results the patient was given tobramycin sulfate 2% every two hours.

The cultures were negative. After suecessful medical treatment, the patient asked for surgical correction to improve vision in LE. A lamellar keratoplasty was performed, without complications. The patient failed to attend regular follow-up visits once again.

Corneal and conjunctival tissue samples were analyzed with light and SEM, and the TSCL only with SEM. Histological examination of the conjunctiva showed attenuated epithelium and stromal infiltration by lymphocytes, neutrophils and few mast cells. The cornea had loose spaces between stromal fibers and stromal infiltration by lymphocytes, neutrophils and histiocytes. The corneal epithelium had mild parakeratosis. Corneal tissue was negative for acanthamoeba.

SEM studies showed the surface of the TSCL had "mars-like" appearance, with a desiccated "coat" containing not only proteins and other deposits but also some white cells, lymphocytes and mononuelear cells, and possibly mast cells, with a ruffled surface secondary to mast cell activation. There were several cracks in the coat, revealing its multi-layer nature and the surface of the TSCL deep in the crevices (Fig. 2a). The conjunctival epithelium showed desquamated cells, red blood cells and probable lymphocytes on the surface, with epithelial crypts containing probably mucous discharge. The corneal epithelium was irregular with dead cells desquamated. Higher magnifications of the corneal epi-thelium revealed surface specialization, with microtrichae and microvillae, which were not normal but were rather attenuated, traumatized and "blunted" (Fig. 2b).

DISCUSSION

TSCL are an important and useful tool in the management of a wide variety of ocular surface abnormalities provided they are used judiciously (5). However, regular follow-up visits are necessary to prevent the potential complications of wearing TSCL. Our patient failed to attend such visits, and had continuously worn the same TSCL for 12 years. Despite Ihe development of giant papillary conjunctivitis, our patient showed a surprising tolerance to the continuous presence of the same contact lens for 12 years. There was only mild stromal edema of the cornea confirmed by corneal pachometry and corneal histopathology. Corneal edema as a complication in patients wearing a soft contact lens for long periods has been described by others (6).

Cultures were sterile and negative for acanthamoeba. Corneal histology was noteworthy only for mild corneal parakeratosis without acanthosis and dyskeratosis, indicating a short period of epithelial regeneration. Finally, to some extent there was preservation of normal corneal epithelial specialization with microtricae and microvillae, as revealed by SEM.

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