

Case Report

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# Autologous Serum Treatment in the Dry Eye Syndrome: A Case Report



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## Abstract

**Aim:** We aimed to show that autologous serum drop may improve the recovery of patients with dry eye syndrome who did not respond to cyclosporine and lubricants.

**Case:** A 58-year-old female patient with rheumatoid arthritis for 20 years referred to the cornea department of our clinic with dry eye symptoms. Her best corrected visual acuity was 0.8 in both eyes, slit lamp examination showed intense punctate epitheliopathy (Figure 1), tear film break-up time (TBUT) was measured as 1-2 sec and Schirmer test was 0-1 mm in both eyes, and the other eye examinations were determined normally. The patient was first treated with lubricant tear drops, followed by topical cyclosporine treatment for about one year, but there was no change in symptoms and ocular surface parameters. For this reason, the autologous serum drop (ASD) was suggested to the patient. A significant improvement was observed in the symptoms of the patient who had OSD treatment for 6 months and an evident increase in complaints was occurred when the treatment was interrupted. At the last control of the patient, BCVA was 0,9 in both eyes, TBUT was 2-3 sec, Schirmer was 2-3mm, and there was mild punctate epitheliopathy on slit lamp examination.

**Conclusion:** ASD is an effective treatment option that should be kept in mind when there is no response to lubricants and topical cyclosporine treatment in severe dry eye syndrome cases. Significant reductions were achieved in the symptoms even if there were no expressive changes in the T BUT and Schirmer test results in patients. Patients under treatment of ASD should be closely followed due to contamination and secondary infection.

**Keywords:** Epitheliotropic; Immunoregulator; Topical cyclosporine; Antibacterial; antibacterial

**Abbreviations:** TBUT: Tear Film Break-Up Time; ASD: Autologous Serum Drop; EGF: Epithelial Growth Factor; TGF: Transforming Growth Factor

## Introduction

The tear film layer is critical for corneal and ocular surface health due to its ingredients and antibacterial properties

- Reduction of epitheliotropic factors in the dry eye syndrome can lead to complications up to visual loss as a result of impaired integrity of the surface epithelium.
- Lubricant eye drops moisten the ocular surface but do not contribute to tear components [1].
- Topical cyclosporin is an immunoregulator that inhibits proliferation of T lymphocytes and interleukin-2 production, and also has an effect of enhancing the tear secretion.
- One of the treatment options is to use tear drops made from one's own serum (autologous serum drops[ASD]) [1].

In this study, we presented a case of dry eye syndrome which did not respond to topical cyclosporin and lubricants but recovered with autologous serum drop.

## Case Report

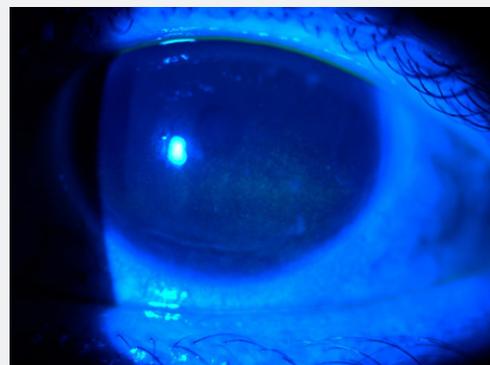


Figure 1: Punctate epitheliopathy before ASD.

A 58-year-old female patient with rheumatoid arthritis for 20 years applied to the cornea department of our clinic with the symptoms of dry eye. Her best corrected visual acuity was 0.8

in both eyes, slit lamp examination showed intense punctate epitheliopathy (Figure 1), tear film break-up time (TBUT) was measured as 1-2sec and Schirmer test was 0-1mm in both eyes, and the other eye examinations were determined normally.

The patient was first treated with lubricant tear drops, followed by topical cyclosporine treatment for about one year, but there was no change in symptoms and ocular surface parameters. For this reason, the autologous serum drop (ASD) was suggested to the patient. A significant improvement was observed in the symptoms of the patient who had OSD treatment for 6 months and an evident increase in complaints was occurred when the treatment was interrupted. At the last control of the patient, BCVA was 0,9 in both eyes, TBUT was 2-3sec, Schirmer was 2-3mm, and there was mild punctate epitheliopathy on slit lamp examination. The current treatment protocol of the patient is leflunomide 100mg, preganil 200mg, methyl prednisolone tablet 4mg for rheumatoid arthritis; for the dry eye syndrome sodium hyaluronate drop and ASD 5 times daily. No secondary infection was observed during follow-up visits.

**Discussion**

The ASD is largely similar with the tear content. The comparison of growth factors and nutrient contents of healthy human serum and tear is shown on (Table 1) [1]. In these contents; EGF (epithelial growth factor), TGF (transforming growth factor) -beta and vitamin E have an accelerating effect on epithelialization. ) Vitamin A, which is found more in serum, is important for the patients that have dry eye syndrome by reducing the squamous metaplasia progression [2]. Serum anti-proteases in it provide corneal collagenase inhibition. On the other way, IgG and lysozyme have antibacterial effects [2,3].

**Table 1:** Comparison of tear and serum components.

	Tear	Serum
<b>pH</b>	7.4	7.4
<b>Osmolarity</b>	298	296
<b>Fibronectin (mg/mL)</b>		
<b>In open eyes</b>	Mar-79	300
<b>In closed eyes</b>	1.177-11.384	-
<b>EGF (ng/mL)</b>	0.7-9.7	0.5
<b>TGF-beta (ng/mL)</b>	10	50
<b>Retinol (ng/mL)</b>	0.4-10.6	55
<b>Vitamin A (mg/mL)</b>	0.02	46

When OSD is being prepared, approximately 450ml of whole blood is collected by phlebotomy and then allowed to coagulate at room temperature for minimum 2, maximum 4 hours. The coagulated blood is then centrifuged at 3000xg for 15 minutes and the supernatant is removed from the precipitate in sterile conditions [3,4]. In RA patients whose fibronectin and TGF-beta concentrations are lower than healthy population, it can be used without dilution [5]. After being placed in the droppers, it can be kept at +4 degrees for 1 month and in the freezer for 3 months at

-20 degrees in a closed form [3,4]. The drops should be protected from light as vitamin A deteriorates under the light [1].

The ASD is applied topically in addition to lubricants 4-10 times in a day, in the form of generally accepted usage. The duration of treatment ranges from 1 to 6 months and is adjusted by ophthalmologists [1].

As well as the main indication for the use of ASD is the presence of dry eye syndrome, which is manifested by persistent corneal epithelial disorders, punctate epithelial erosions, filamentous keratitis or neurotrophic ulcers, it has had a broader field of application in from refractive to oculoplastic surgery in recent years [1].

There have been no reports of serious complications due to the use of ASD [6]. There is a risk of contamination in these drops due to high protein content [6]. Prophylactic antibiotic therapy should be given if there is a risk of infection thinking of the time and the additional personnel are necessary for the preparation and the distribution of these drops [7-13].

**Conclusion**

ASD is an effective treatment option that should be kept in mind when there is no response to lubricants and topical cyclosporine treatment in severe dry eye syndrome cases. Significant reductions were achieved in the symptoms even if there were no expressive changes in the T BUT and Schirmer test results in patients. Patients under treatment of ASD should be closely followed due to contamination and secondary infection.

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