



# OCULAR SURFACE CHANGES AFTER REPEATED ANTI-VEGF INJECTIONS

in neovascular age-related macular degeneration



Cengiz B<sup>1</sup>, Selcuk Kucuk N<sup>2</sup>, Bilici S<sup>3</sup>, Kucuk N<sup>4</sup>, Alpay A<sup>5</sup>, Canturk Ugurbas S<sup>6</sup>, Ugurbas S.H.<sup>7</sup>

Ophthalmology, Zonguldak Bülent Ecevit University School of Medicine, Zonguldak, Turkey

## Introduction

It has been reported that povidone iodine have deleterious effects on the corneal epithelium, leading to ocular surface inflammation(1,2). Ocular surface inflammation is a significant contributing factor to dry eye disease, particularly in the evaporative type, which is also linked to meibomian gland dysfunction(3).

## Objective

To evaluate the effects of repeated intravitreal injections (IVI) on the ocular surface and meibomian glands in patients with neovascular age-related macular degeneration (nAMD).

## Methods

Patients who underwent unilateral intravitreal anti-VEGF injections for nAMD were included. The untreated eye was used as the control group. All participants had applied a pre-IVI asepsis protocol with povidone-iodine. Non-invasive tear break-up time (NIBUT), the loss rate of meibomian glands, the Schirmer I test and the Ocular Surface Disease Index (OSDI) questionnaire were noted at a single visit at least four weeks after IVI.

## Results

Forty-five patients with a mean age of 68.1 ± 7.9 years were included. The median number of IVI was 9 (6-33) and median OSDI score was 10.41 (0-71.4). No statistically significant differences were observed between treated and untreated eyes regarding medians of NIBUT (5.6 vs 4.1 sec, p=0.247), the loss rate of meibomian glands (48.7% vs 46.7%, p=0.067), the Schirmer I test (8 vs 9 mm, p=0.420).

	Treated	Untreated	p value
OSDI score (median, min-max)	10,41 (0-71.4)	-	-
NIBUT (s)	5.6	4.1	0.247
Meibomian gland loss (%)	48.7	46.7	0.067
Schirmer I (mm)	8	9	0.420

Number of patients	45
Age (median ± SD)	68.1 ± 7.9 years
Number of IVIs (median, min-max)	9 (6-33)

## Discussion

Studies have demonstrated acute damage to the ocular surface following IVI, mostly as a result of the acute toxic effect of povidone iodine on the corneal epithelium, which depends on its concentration(1,2). However, there is potential for ocular surface recovery between IVI intervals. Understanding the long-term effects of serial IVI on the ocular surface is crucial for its management. There are conflicting findings regarding the impact of anti-VEGF treatment procedures on MG structure (4). Our results showed no significant difference in MG loss between treated eyes and untreated fellow eyes, but there was a significant correlation with aging, as reported previously (5).

## Conclusion

Repeated anti-VEGF IVI with povidone-iodine preparation shows no significant harmful impact on the ocular surface or meibomian glands

## References

- Ridder WH 3rd, Oquindo C, Dhamdhare K, Burke J. Effect of povidone iodine 5% on the cornea, vision, and subjective comfort. *Optom Vis Sci.* 2017;94:732-41.
- Kim S, Ahn Y, Lee Y, Kim H. Toxicity of povidone-iodine to the ocular surface of rabbits. *BMC Ophthalmol.* 2020;20:359.
- Craig JP, Nichols KK, Akpek EK, Caffery B, Dua HS, Joo CK, et al. TFOS DEWS II definition and classification report. *Ocul Surf.* 2017;15:276-83.
- Arita R, Itoh K, Inoue K, Amano S. Noncontact infrared meibography to document age-related changes of the meibomian glands in a normal population. *Ophthalmology.* 2008;115:911-5.
- Kiyat P, Palamar M, Nalçacı S, Akkin C. Dry Eye and Meibomian Gland Dysfunction in Neovascular Age-Related Macular Degeneration patients treated with Intravitreal injections. *Turk J Ophthalmol.* 2022;52(3):157-61.

