CAS Diagnostica FHNW

Case Report #1

Retinal Pigment Epithelial Detachment (PED)

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History and Symptomes

A 67 years old Caucasian female (#1245) first visited our clinic to get her eyes checked. Her last visit at an Ophthalmologist was about 40 years ago. Her glasses were prescribed in November 2019 by the optician.

Her subjective vision at far with her current glasses was normal, at near she sometimes described blurry vision. The recent pair of glasses were prescribed for the first time with a prismatic correction.

Refractive History

Glasses from 29.11.2019:

OD: -1.50 -0.25 35° Add 2.50 Prism 4.76 177° VA 1.0

OS: -1.25 -0.25 167 Add 2.50 Prism 4.76 357° VA 1.0

Her ocular history includes patching in childhood with unknown diagnose. She recently had twice a hordeolae that she self-treated with lidhygine. Her medical history is positive with hypertension (Medication Nifedipin). She has a positive family history of unknown eye disease that lead to blindness.

Differential Diagnosis

- Cataract
- AMD
- Glaucoma
- Other retinal findings

Eye Exam

Subjective refraction

OD : -1.25 - - Add 2.50 Prism 4.76 177° VA 1.0^{+2} VD 12mm

OS: -1.25 -0.25 168° Add 2.50 Prism 4.76 357° VA 1.0 VD 12mm

Motility testing showed no extraocular muscle restriction in any direction, both pupils were round and equal in size and reacted prompt to direct and indirect illumination. No RAPD was noted. Red cap showed no desaturation on either eye.

NPC: Break 5cm, recovery 8cm, within normal limits

Cover-Test: @ far: Esophoria, with prism correction no further phoria was found

@ near: Esophoria, with prism correction no further phoria was found

Amsler-Grid: OU within normal limits

Airpuff-NCT: 12.0 / 13.3mmHg @ 11:30 am

Anterior Segment

OU: lid and lashes normal, conjunctiva with nasal pinguecula, mild redness within normal limits, central cornea clear, periphery beginning of an arcus senilis, no fluorescein positive staining, limbal vasculature within normal limits, van Herrick $^{2}/_{3}$:1 nasal and temporal, anterior chamber no flare, no cells, crystalline lens within normal limits relative to her age, slight cortical cataract formation, no floaters in the anterior vitreous.

Her tearfilm showed an irregular reflex and oily particles.

For topography measurement and tearfilm analysis the Oculus M5 topographer was used. A nearly spherical regular cornea was found and K-Values within normal limits, the irregular tearfilm was confirmed.

OCT-Pachymetry showed OU slight thinner cornea than average (OD: 518 µm; OS 519 µm), her epithelial thickness map showed slight uneven distribution that is a marker for dry eye related.

Posterior Segment

Right eye: normal macular pigmentation, 1/2 DD temporal to the macula a yellowish lesion, 2 DD superior a small black lesion, in the mid peripheral fundus a few single small drusen (Fig. 1).

Optic nerve head: vital, sharply defined, no notching, follows ISNT rule, RNFL shows no obvious defects, C/D ratio h: 0.4/ v: 0.4

Left eye: normal macular pigmentation, mid peripheral fundus a few single small drusen (Fig 2).

Optic nerve head: vital, sharply defined, no notching, follows ISNT rule, RNFL shows no obvious defects, C/D ratio h: 0.3/ v: 0.3

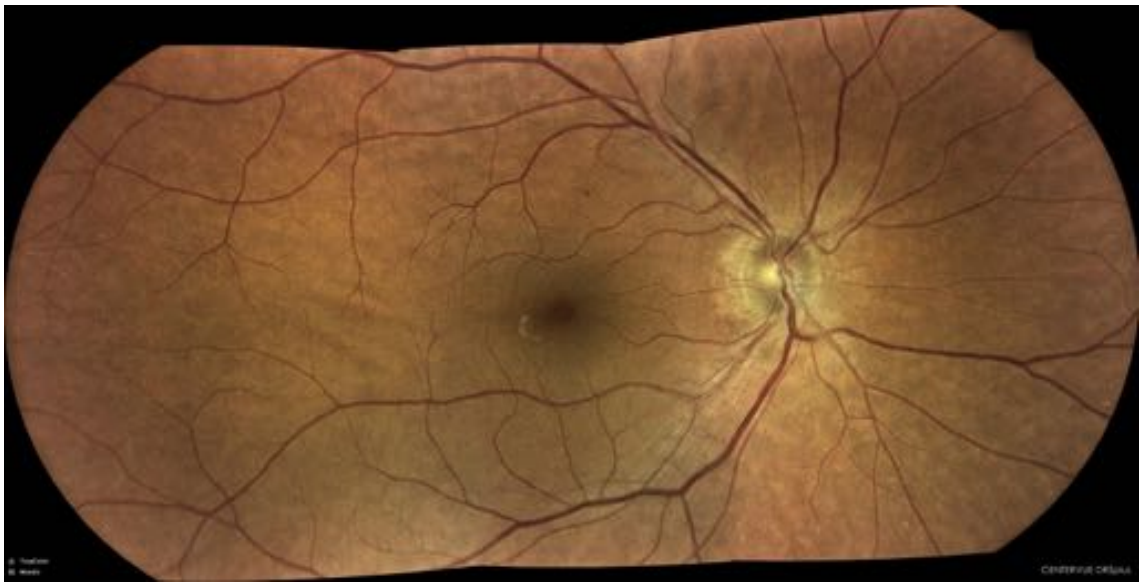

Fig. 1: *True color panorama fundus photography with DRS plus of the right eye*

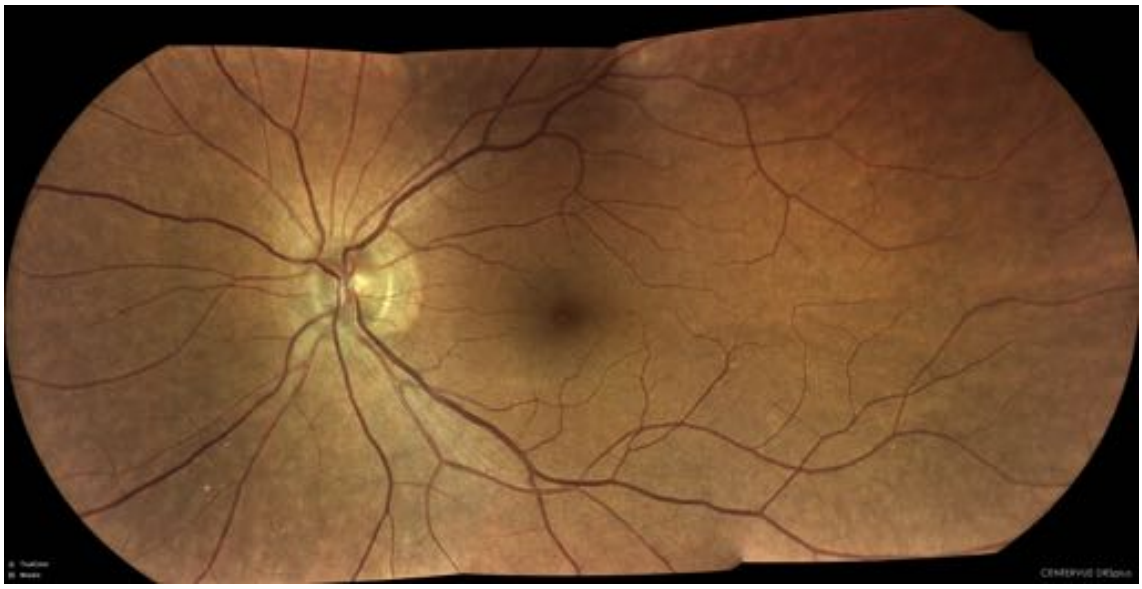

Fig. 2: *True color panorama fundus photography with DRS plus of the left eye*

OCT

OD: sharpely detached retinal pigment epithelium (PED) with a size of about 470 µm with a hyporeflective cystic space corresponding to the fundus fotography finding (Fig. 3), completely detached vitreous body

OS: normal appearance of macula, no intra- or subretinal fluid (Fig. 4), completely detached vitreous

OU: RNFL & GCC-complex analysis Tomography were found within normal limits (normative database) (Fig. 5).

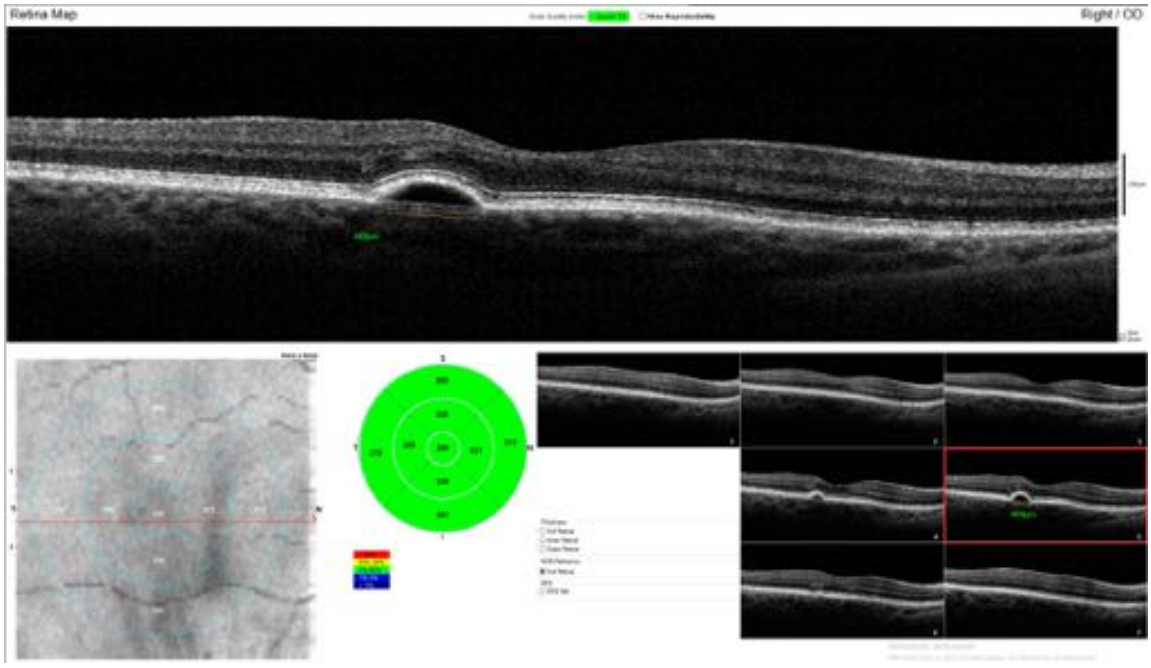

Fig. 3: *OCT Macular line scan of the right eye shows macular PED*

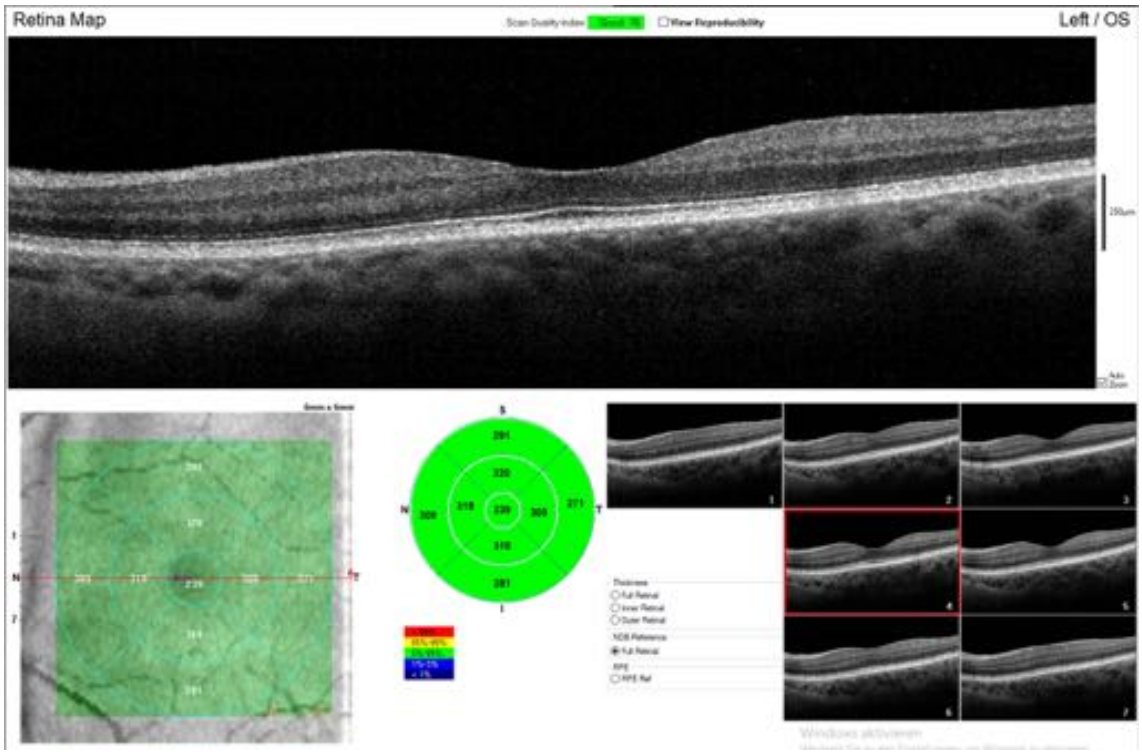

Fig. 4: *OCT Macular line scan of the left eye*

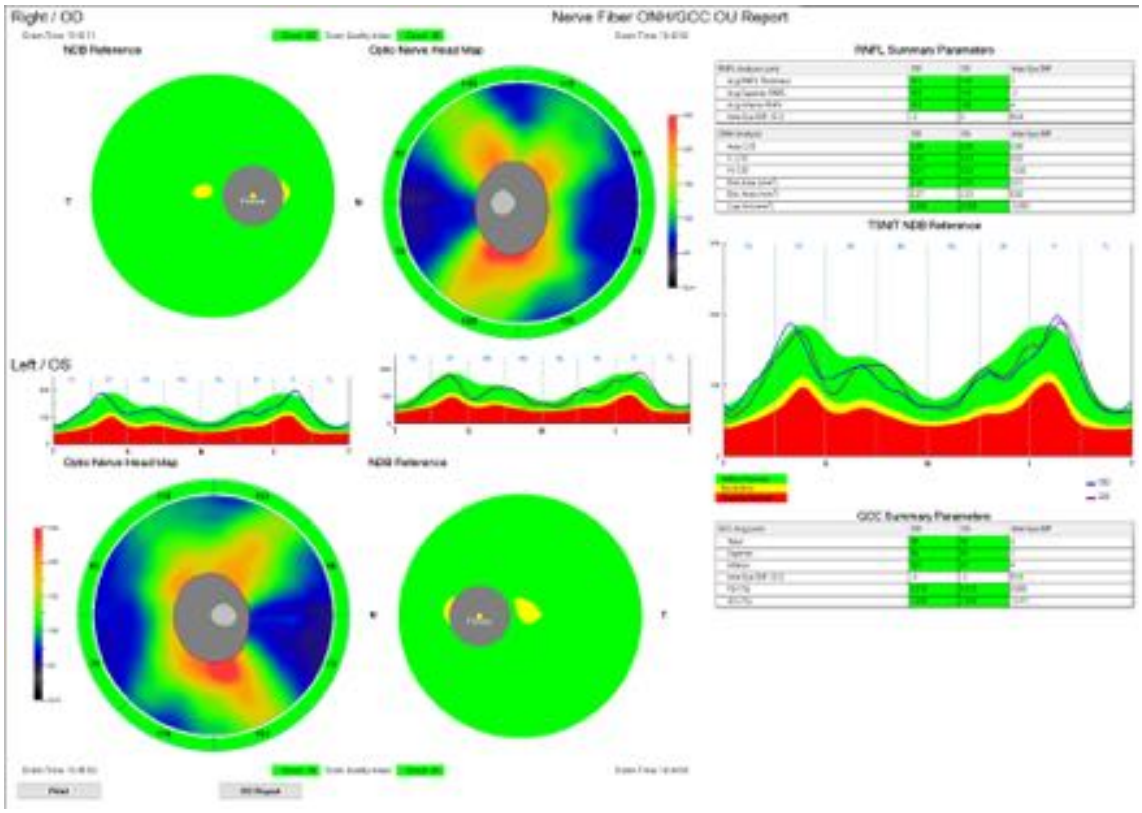

Fig. 5: *RNFL & GCC-complex analysis Tomography within normative database*

Diagnosis and plan

Based on the objective finding of the irregular tearfilm and irregular epithelial thickness a mild dry eye was diagnosed and lidhygene with tea-tree-oil twice a day was prescribed for 6 weeks to improve tearfilm regularity and also reduce an incidence of hordeolum.

As for the retinal finding of the pigment epithelial detachment (PED) a referral letter to the ophthamologist for a retinal workup within the next 4-6 weeks was sent. A take-home amsler grid was handed out and instructed to do twice a week and if any changes were seen, she should immediately present to the ophthalmologist.

Discussion

Based on her age a few changes of the ocular health could be expected. Cataract was ruled out based on a clear reflex in retinoscopy and slit-lamp examination of the lens crystalline. Long standing Glaucoma was ruled out based on normal IOP, optic nerve morphology on fundus photography and tomography analysis of the RNFL and GCC-complex.

Despite the negative amsler grid findings an accidental retinal PED was discovered in OCT imaging of the macula with absence of drusenoid changes at the macula.

PED is diagnosed based on it's typical dome-shaped, sharply demarked detachment and hyperreflectivity of the detached layer, the retinal pigment epithelium (RPE). It therefore could be clearly differentiated to retinitis centralis serosa (RCS) that has flatter angles at the edge where the neurosensory retina lifts off and the RPE remains attached to the bruchs membrane and appears relatively flat. A cystic macular edema (CME) was also ruled out where the cystic spaces are located within the retina in OCT imaging. A large confluent drusen was also ruled out due to it's hyporeflective cavity in OCT imaging.

PED can occur in a variety of degenerating ocular or systemic conditions. Most common in AMD, where it is classified in drusenoid, serous, vascularized or mixed PED according to the other findings[1]. Drusenoid could be ruled out due to the absence of drusen and its hyporeflective cavity. Vascularized PED with classic choroidal neovascularization (CNV) is unlikely due to the regular detached posterior surface of the RPE.

Early stage wet AMD with occult CNV has to be ruled out. Therefore the patient was referred to an ophthalmologist for a possible workup with AF, OCT-A or FA, where the diagnosis has to be made based on these additional examinations and to be continuous observed or treated.

Treatment options in progression and vascularization of the PED is anti-VEGF intravitreal injections or in peripheral cases photocoagulation. In this case if a leakage in the late AF-phase was detected it would suggest an occult CNV and anti-VEGF treatment would be indicated.

Reference

1. Altintas AGK, Ilhan C. Treatment of Retinal Pigment Epithelial Detachment. Int J Clin Exp Ophthalmol. 2018;2(1):008-014.*

Additional Images

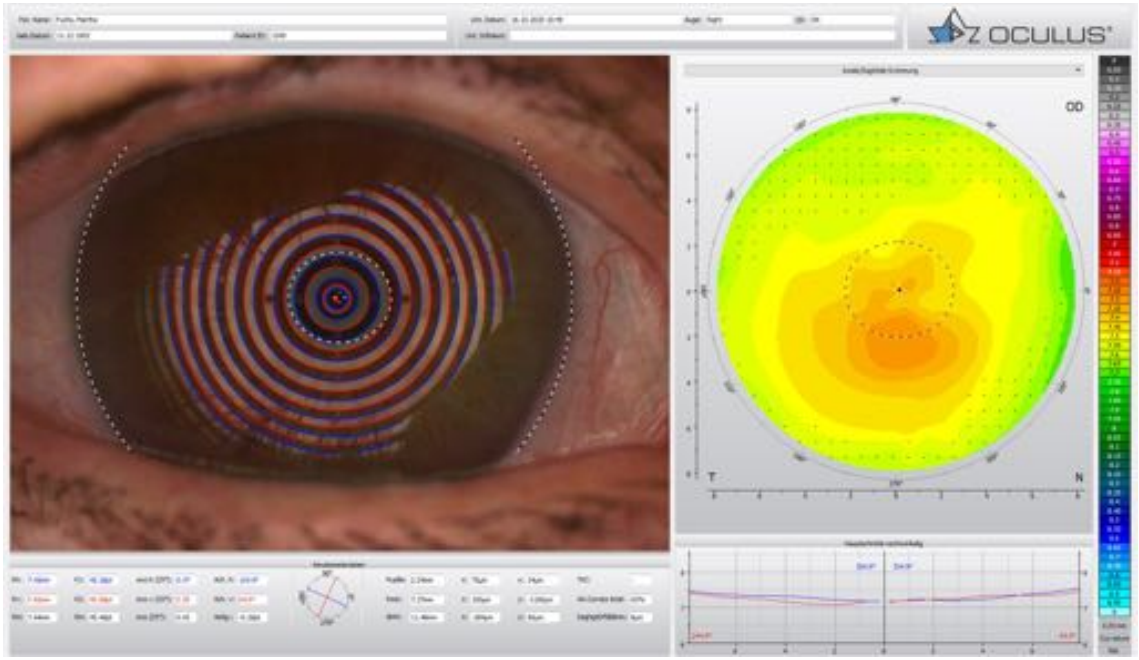

Fig. 6: *Oculus topography of the right eye*

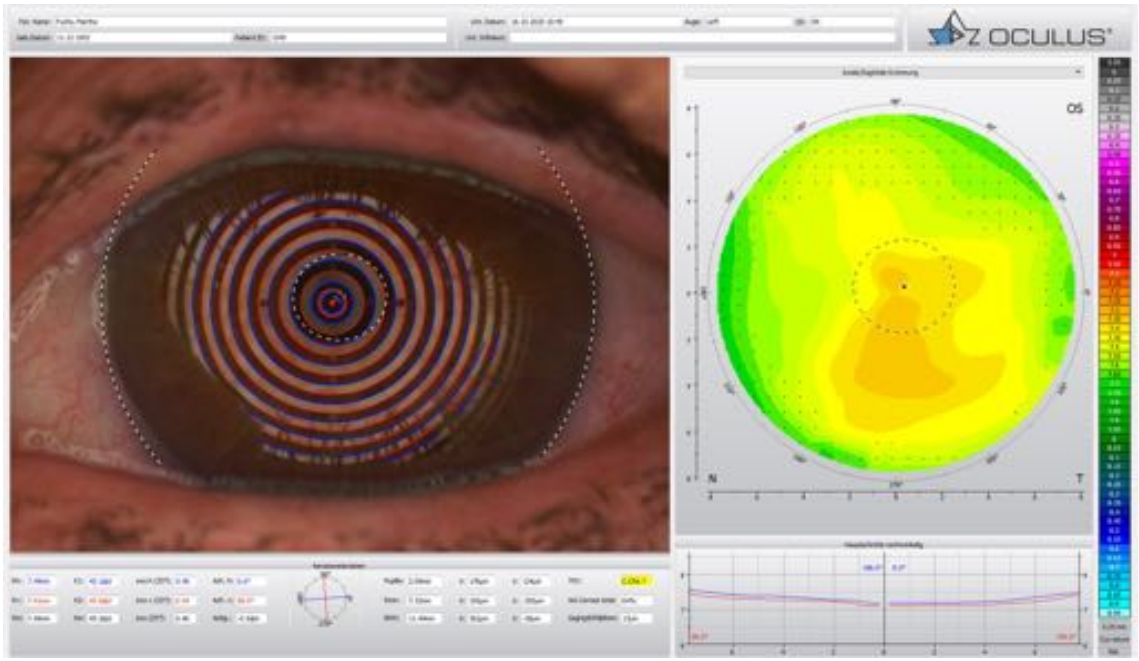

Fig. 7: *Oculus topography of the left eye*

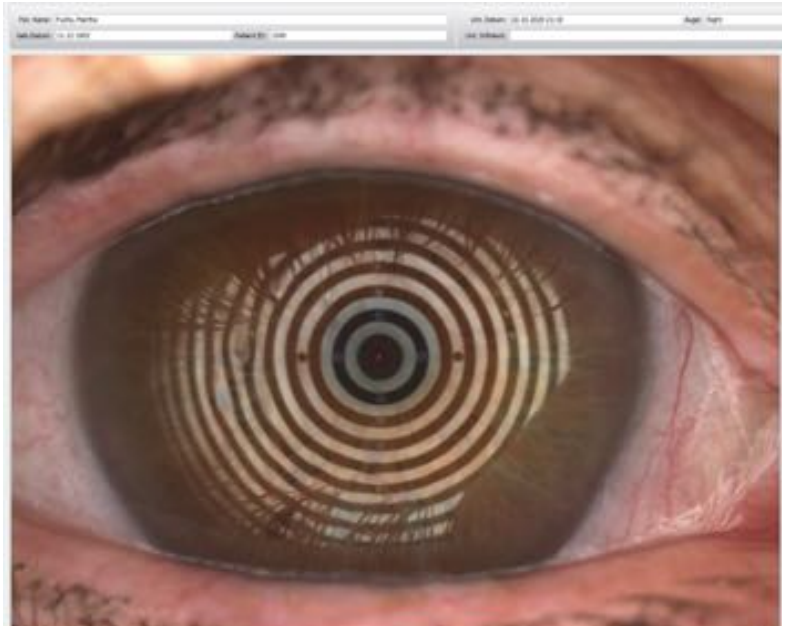

Fig. 8: *Oculus tearfilm analysis of the right eye*

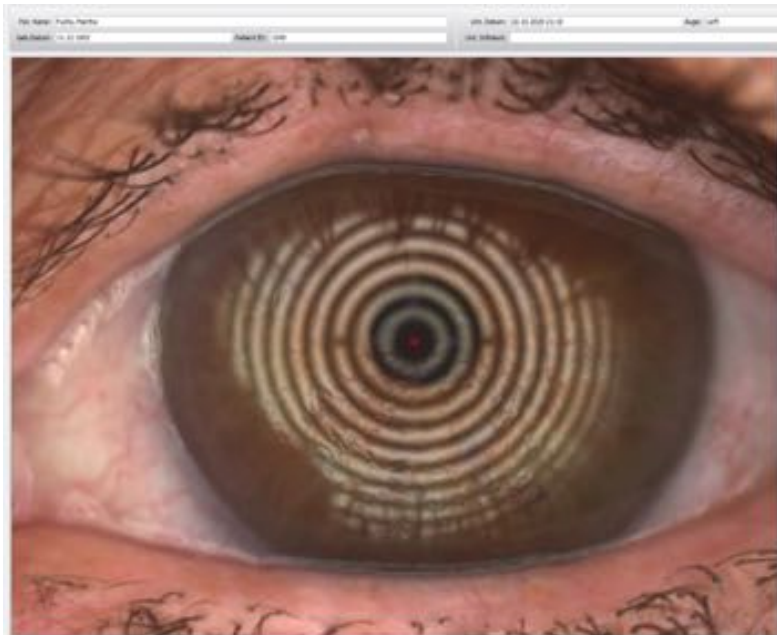

Fig. 9: *Oculus tearfilm analysis of the left eye*