Reply to the Letter by Kaya et al. Entitled 'Temperature Control Function of the Choroid May Be the Reason for the Increase in Choroidal Thickness During the Acute Phase of Familial Mediterranean Fever'

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Dear Editor

We read Kaya et al.'s comments [1] on our article entitled 'Choroidal Thickness Changes in the Acute Attack Period in Patients with Familial Mediterranean Fever' [2] with great interest. Kaya et al. [1] assert that there is no evidence of inflammation in the choroid during the acute phase of familial Mediterranean fever (FMF). The authors claim that if an inflammation was present, a uveitic presentation like Vogt-Koyanagi-Harada disease would be seen in the patients. We think it is probable that the systemic inflammatory and vasculopathic nature of FMF causes increased vascular permeability, exudation and enlargement of the choroidal vessels during the acute attacks, which give rise to an increase in choroidal thickness. The strongest sup-

porters of this assumption are the positive correlations between the choroidal thickness and the indicators of inflammation such as erythrocyte sedimentation rate, fibrinogen and C-reactive protein levels. These findings suggest that an increase in the severity of the inflammatory reaction causes an increase in the choroidal thickness in patients with FMF. Additionally, some clinical studies also demonstrated vascular capillary enlargement, tortuosity and extravasation in nail folds of patients with FMF [3, 4]. Another important point is that not all inflammatory conditions of choroid have funduscopic findings, even Vogt-Koyanagi-Harada disease [5, 6]. Kaya et al. [1] hypothesized that the cause of increase in choroidal thickness may be the

temperature control function of the choroid. As mentioned in the methods section of our study [2], body temperature of all patients was within normal limits. The patients were on colchicine treatment and received nonsteroidal anti-inflammatory drugs when they had fever and/or pain. Parver et al. [7] suggested that increased choroidal circulation is necessary for the maintenance of a stable temperature in the outer layers of the retina in monkeys. On the other hand, changes in choroidal blood flow were reported not only in the light-stimulated eye but also in the contralateral eye in human studies [8], indicating that the response of choroidal blood flow is under neural control rather than local temperature.

References

- 1 Kaya A, Aksoy Y, Sevinc MK, Diner O: Temperature control function of the choroid may be the reason for the increase in choroidal thickness during the acute phase of familial Mediterranean fever. *Ophthalmologica* 2016, DOI: 10.1159/000443849.
- 2 Gundogan FC, Akay F, Uzun S, Ozge G, Toyran S, Genç H: Choroidal thickness changes in the acute attack period in patients with familial Mediterranean fever. *Ophthalmologica* 2015, DOI: 10.1159/000442216.
- 3 Aytekin S, Aydin F, Akpolat T, Senturk N, Turanlı AY: Evaluation of nailfold capillaries in familial Mediterranean fever patients. *Clin Rheumatol* 2011;30:255–257.
- 4 Dinc A, Melikoglu M, Korkmaz C, Fresko I, Ozdogan H, Yazici H: Nailfold capillary abnormalities in patients with familial Mediterranean fever. *Clin Exp Rheumatol* 2001;19:S42–S44.
- 5 Sakata VM, da Silva FT, Hirata CE, Takahashi WY, Costa RA, Yamamoto JH: Choroidal bulging in patients with Vogt-Koyanagi-Harada disease in the non-acute uveitic stage. *J Ophthalmic Inflamm Infect* 2014;4:6.
- 6 Tagawa Y, Namba K, Mizuuchi K, Takemoto Y, Iwata D, Uno T, Fukuhara T, Hirooka K, Kitaichi N, Ohno S, Ishida S: Choroidal thickening prior to anterior recurrence in patients with Vogt-Koyanagi-Harada disease. *Br J Ophthalmol* 2015, DOI: 10.1136/bjophthalmol-2014-306439.
- 7 Parver LM, Aufer C, Carpenter DO: Choroidal blood flow as a heat dissipating mechanism in the macula. *Am J Ophthalmol* 1980; 89:641–646.
- 8 Fuchsjaeger-Mayrl G, Polska E, Malec M, Schmetterer L: Unilateral light-dark transitions affect choroidal blood flow in both eyes. *Vision Res* 2001;41:2919–2924.