Graefes Arch Clin Exp Ophthalmol (2016) 254:1021–1022
DOI 10.1007/s00417-015-3163-3

LETTER TO THE EDITOR (BY INVITATION)

Reply to the letter to the editor: genetic influence on visual outcomes of polypoidal choroidal vasculopathy

Masayuki Hata[1,2] · **Akitaka Tsujikawa**[1,2] · **Nagahisa Yoshimura**[1,2]

Received: 6 August 2015 / Accepted: 21 August 2015 / Published online: 4 September 2015

Dear Editor,

We thank Dr. Tan and associates for their insightful comments on our recently published paper [1]. In our study, photodynamic therapy (PDT) combined with intravitreal injections of ranibizumab for polypoidal choroidal vasculopathy (PCV) resulted in significant visual recovery in the first year, which was not sustained during the second year. Visual outcomes in the second year were affected by a genetic factor (*ARMS2* A69S). As noted by Dr. Tan and associates, the findings should be of help to the physician and the patient to predict the long-term visual outcomes for the phenotype of PCV. In the current study, however, we could not find any associations between visual outcomes in the second year and the phenotype (e.g., preoperative lesion size or the presence of pigment in epithelial detachment).

Recently, Dr. Tan and associates reported an original classification system for PCV, based on the type of branching vascular network seen on indocyanine green angiography and the presence of leakage seen on fluorescein angiography [2]. According to their suggestion, we applied their classification system to our patients. Of 30 eyes with a VA reduction during the second year, six eyes were classified as Type A, seven eyes as Type B, and 17 eyes as Type C; of 65 eyes without a VA reduction, 17 eyes were classified as Type A, 18 eyes as Type B, and 30 eyes as Type C. We could find no significant difference in the three subtypes between eyes with and without VA reduction. Visual outcomes in the second year would be mainly affected by the genetic factors, not by the phenotype.

In the current study, all eyes had polypoidal lesions, a branching vascular network, or type 2 choroidal neovascularization (CNV) beneath the foveal center. Tamura and associates previously reported that some polypoidal lesions with subretinal fibrinous tissue show a classic appearance in fluorescein angiography, even without type 2 CNV [3]. Visual prognosis in eyes with subfoveal type 2 CNV is poor. As Dr. Tan and associates pointed out, it is sometimes difficult to differentiate type 2 CNV from pure fibrin deposition in fluorescein angiography. We believe that multimodal imaging is helpful to evaluate these phenotypes. In our study, accordingly, type 2 CNV was anatomically confirmed by fluorescein angiography and optical coherence tomography.

It is certain that PDT effectively regresses the polypoidal lesions. In the EVEREST study, complete regression of polypoidal lesions was achieved in 71.4 % after PDT and 28.6 % after ranibizumab treatment [4]. However, Hirami and associates reported that postoperative subretinal hemorrhage was seen in 28 of 91 PCV cases treated with PDT, and that bleeding resulted in a vitreous hemorrhage in six eyes [5]. Although some polypoidal lesions develop spontaneous hemorrhagic events, postoperative hemorrhage is one of the most serious acute complications of PDT. In addition, the authors could not predict such acute complications from the phenotype of PCV. As Dr. Tan and associates noted, physicians may hesitate to apply PDT for PCV with good VA. However, a combination of anti-vascular endothelial growth factor agents with PDT would help to reduce the risk of such acute complications.

We deeply appreciate the constructive comments of Dr. Tan and associates. As discussed above, phenotype-based

✉ Akitaka Tsujikawa
tujikawa@kuhp.kyoto-u.ac.jp

[1] Department of Ophthalmology and Visual Sciences, Kyoto University Graduate School of Medicine, Kyoto, Japan

[2] Department of Ophthalmology, Kagawa University Faculty of Medicine, 1750-1 Ikenobe, Miki-cho, Kagawa 761-0793, Japan

prediction of acute complications and long-term VA prognosis is still clinically relevant in the treatment of PCV.

Conflict of interest Nagahisa Yoshimura is a paid advisory board member for NIDEK. Additionally, he received lecture fees from Topcon and research funding from Canon.

References

1. Hata M, Tsujikawa A, Miyake M, Yamashiro K, Ooto S, Oishi A, Nakata I, Takahashi A, Yoshimura N (2015) Two-year visual outcome of polypoidal choroidal vasculopathy treated with photodynamic therapy combined with intravitreal injections of ranibizumab. Graefes Arch Clin Exp Ophthalmol 253:189–197
2. Tan CS, Ngo WK, Lim LW, Lim TH (2014) A novel classification of the vascular patterns of polypoidal choroidal vasculopathy and its relation to clinical outcomes. Br J Ophthalmol 98:1528–1533
3. Tamura H, Tsujikawa A, Otani A, Gotoh N, Sasahara M, Kameda T, Iwama D, Yodoi Y, Mandai M, Yoshimura N (2007) Polypoidal choroidal vasculopathy appearing as classic choroidal neovascularisation on fluorescein angiography. Br J Ophthalmol 91:1152–1159
4. Koh A, Lee WK, Chen LJ, Chen SJ, Hashad Y, Kim H, Lai TY, Pilz S, Ruamviboonsuk P, Tokaji E, Weisberger A, Lim TH (2012) EVEREST study: efficacy and safety of verteporfin photodynamic therapy in combination with ranibizumab or alone versus ranibizumab monotherapy in patients with symptomatic macular polypoidal choroidal vasculopathy. Retina 32:1453–1464
5. Hirami Y, Tsujikawa A, Otani A, Yodoi Y, Aikawa H, Mandai M, Yoshimura N (2007) Hemorrhagic complications after photodynamic therapy for polypoidal choroidal vasculopathy. Retina 27: 335–341