Regression of retinal neovascularization after infliximab therapy in Behcet's disease

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Background

Chronic uveitis is considered a cause of neovascularization of the eye. Vitreous hemorrhage (VH), which occurs due to destruction of retinal neovascularization, causes visual impairment in Behcet's uveitis. We present 5 cases of Behcet's uveitis showing improvement of retinal neovascularization and VH following infliximab (IFX) therapy.

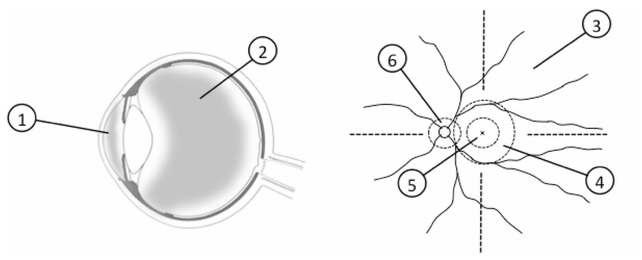
Patients & Results

The 5 patients comprised 3 men and 2 women with average age of 37 years (range, 16-58 years). All patients had retinal neovascularization and VH, 2 patients (40%) had neovascularization of the iris. Best-corrected visual acuity (BCVA) of 4 patients (80%) was < 1.0 log MAR unit. Before IFX therapy, the average number of inflammation attacks was 2.6/six months (range, 2-3), average Behcet's disease ocular attack score 24 (BOS24) was 19.8 (range, 12-24), and average score of activity evaluated by fluorescence angiography (FA) (developed at Tokyo Medical University, maximum score 12) was 10.2 (range, 5-12). Improvement of VH and regression of neovascularization of the iris and retina were observed on average 28.2 days (range, 4-90 days) after IFX treatment was started. BOS24 improved to 0.2 (range, 0-1), score of activity evaluated by FA improved to 5.8 (range, 0-8), and the average number of inflammation attacks decreased to 0.2/six months (range, 0-1) after IFX treatment. In three patients (60%), visual acuity improved, 2 patients (40%) did not improve visual acuity with IFX therapy, but improvement was observed after subsequent cataract surgery (Table 1).

TABLE 1. Change of ocular findings before and after IFX therapy in 5 cases

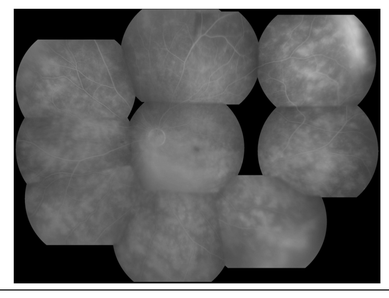
Characteristics	No. (%) or median (range) Before IFX		After IFX	
Neovascularization of				
retina	5	(100%)	1	(20%)
iris	2	(40%)	1	(20%)
Vitreous hemorrhage	5	(100%)	2	(40%)
Inflammation attacks	2.6	(2–3)	0.2	(0–1)
BOS24	19.8	(12–24)	0.2	(0–1)
Score of FA activity	10.2	(5–12)	5.8	(0–8)
BCVA				
< 1.0 logMAR unit	4	(80%)	2	(40%)
0 logMAR unit	1	(20%)	3	(60%)

BOS24



1. Anterior chamber cells	0, 1, 2, 3, 4 point
2. Vitreous haze	0, 1, 2, 3, 4
3. Peripheral retina lesions	0, 2, 4, 6, 8
4. Posterior pole lesions	0, 2, 3, 4
5. Foveal lesions	0, 2
6. Optic disc lesions	0, 2

Evaluation of activity using FA

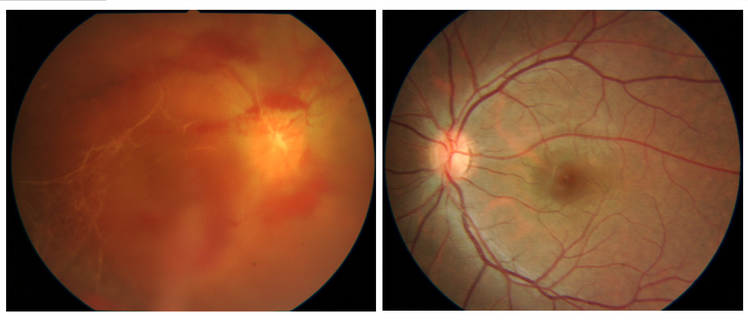


- Evaluate the more active eye
- Evaluate the evaluable eye if OCV is strong

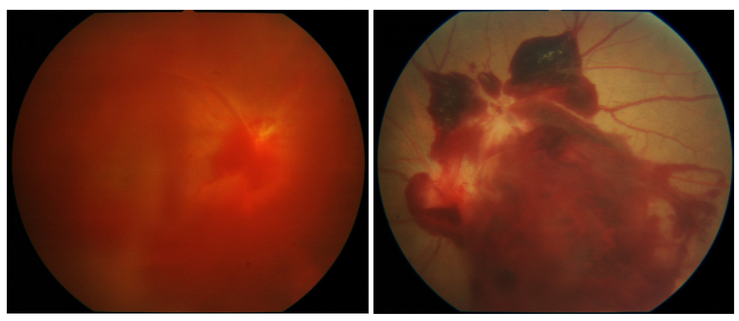
Optic disc lesions	0–2 points (NV is 2 points)
Posterior pole lesions	0–2 points (NV is 2 points)
Peripheral retina lesions	0–8 points (0–2 points for each lesion)

OCV: opacitas corporis vitrei NV: neovascularization

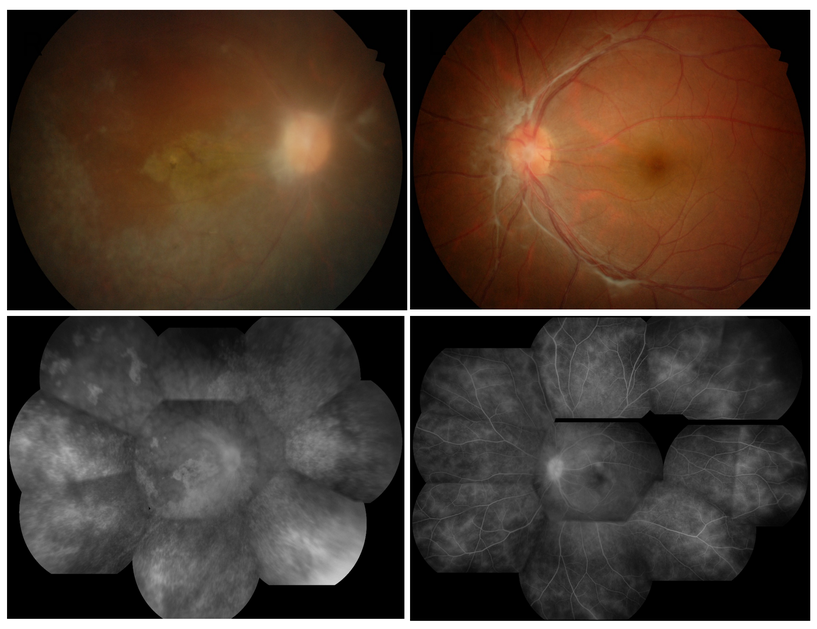
Case 1: 37 y.o. male【oral ulcerations (+), genital ulcerations (+), pseudofolliculitis (+), HLA-B51(+) 】



R) VH + OCV +optic disc swelling + anterior inflammation

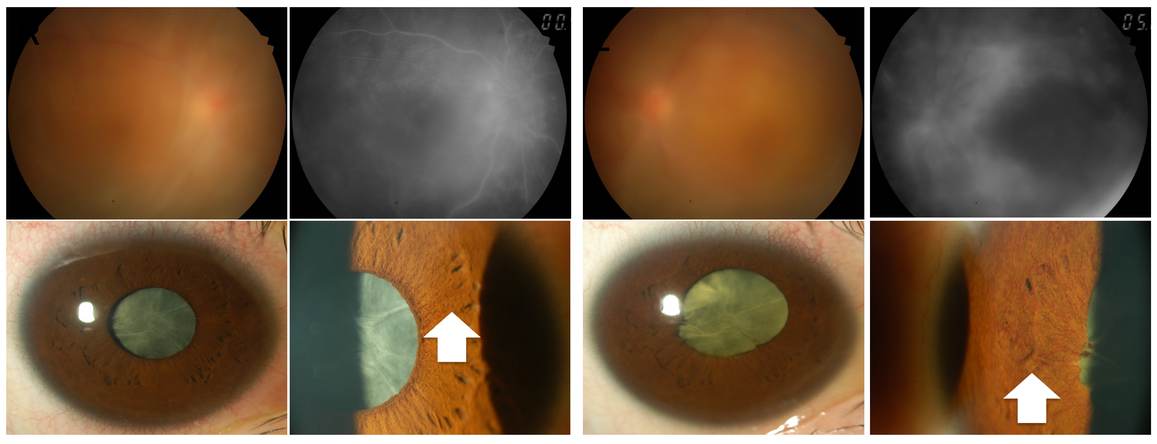


IFX started because VH and anterior inflammation worsened despite oral colchicine and subtenon triamcinolone injection.

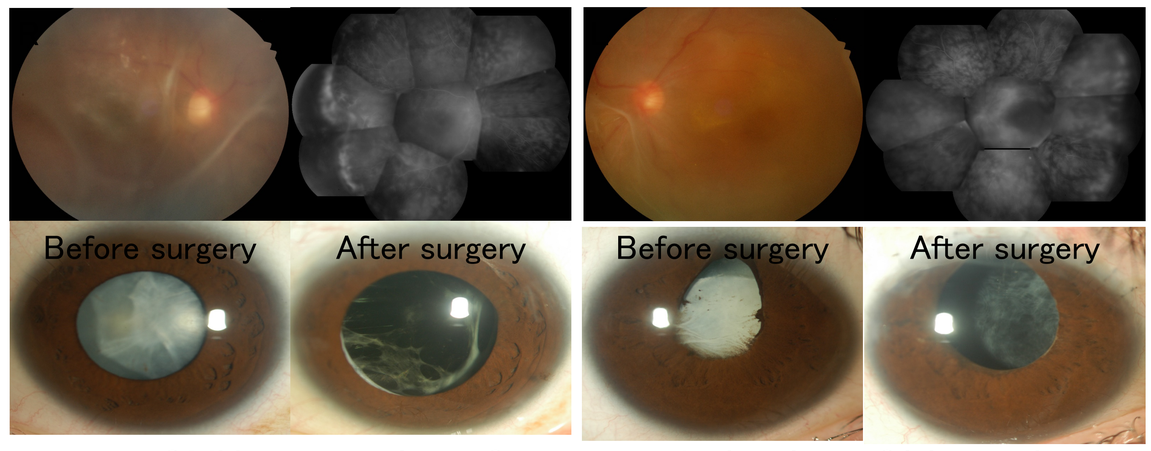


Improvement of VH and regression of retinal neovascularization by IFX.

Case 2: 32 y.o. female【oral ulcerations (+), pseudofolliculitis (+), pathergy test (+)】



B) VH + OCV + anterior inflammation + neovascularization of iris +secondary cataract



Improvement of VH, regression of neovascularization of iris, and no inflammation attack after IFX therapy followed by cataract surgery.

Discussion

Non-perfusion area caused by occlusive vasculitis increases local vascular endothelial growth factor (VEGF) level, which induces neovascularization. Although IFX is well known to reduce tumor necrosis factor (TNF-α), the relationship between IFX and VEGF is unclear. Recently, interest has focused on the involvement of Th17 cells in Behcet's disease. IL-17 and TNF-α produced by Th17 cells increase the production of VEGF. Moreover, IL-17 is involved in resistance to anti-VEGF treatment. Sugita S, et al reported that IFX inhibits Th17 differentiation in Behcet's disease. Therefore, IFX may cause regression of neovascularization by lowering VEGF level through inhibition of IL-17 and TNF-α.

Conclusion

Infliximab is an effective treatment for intraocular neovascularization in Behcet's uveitis.