

Retinal Neovascularization and An Angioma-like Lesion after Demarcation Photocoagulation for Rhegmatogenous Retinal Detachment

Yi-Cheng Chen, MD; Chia-Yun Li, MD; San-Ni Chen¹, MD

Laser photocoagulation might aggravate the ischemia of an area of retinal detachment and predispose the retina to formation of neovascularization and an angioma-like lesion. We present a case of retinal neovascularization (RNV) and an angioma-like lesion occurring after demarcation photocoagulation for rhegmatogenous retinal detachment (RRD). A 20-year-old woman suffered from a retinal atrophic hole with localized shallow retinal detachment in the right eye. Laser photocoagulation was performed to wall off the area of detachment. Fifteen months later, RNV and an angioma-like lesion had developed in the previously detached retina. Treatment with demarcation photocoagulation for RRD may run a risk of formation of RNV and angioma-like lesion if the retina is not reattached. (*Chang Gung Med J* 2006;29:212-5)

Key words: retinal neovascularization, angioma, photocoagulation, retinal detachment.

Retinal neovascularization (RNV) complicating focal laser photocoagulation has never been reported before. On the other hand, RNV complicating rhegmatogenous retinal detachment (RRD) is very rare.⁽¹⁻³⁾ To induce RNV, the retinal detachment (RD) is supposed to be large and longstanding according to the literature. However, we observed a case of RNV and even an angioma-like lesion occurring after demarcation photocoagulation for RRD.

CASE REPORT

A 20-year-old woman suffered from floaters in the right eye for 1 week. She had no familial history of hereditary retinal disease. She visited our clinic on January 18, 1999, when a fundal examination revealed a retinal atrophic hole surrounded by shallow retinal detachment (RD) localized from the 6:30 to 7:30 o'clock positions and anterior to the equator

in the right eye. No demarcation line, sign of proliferative vitreoretinopathy, or retinal vascular anomaly was noted after a meticulous fundal examination. The visual acuity in decimal notation was 0.3 with spectacle lens -11.50 D -0.50 D x 005 in the right eye and 0.6 with spectacle lens -11.75 D -0.50 D x 180 in the left eye. We created 256 spots using focal retinal photocoagulation (200- μ m spot size, 0.2 s in duration, and 160 mW of power) to wall off the detached retina. No further abnormality was noted in the right eye during the subsequent follow-up examinations. On January 24, 2000, the best-corrected visual acuity was 1.0 in decimal notation in both eyes. In April 2000, however, the patient again noticed floaters in her right eye. An ocular examination on April 7, 2000 revealed RNV and an angioma-like lesion with subretinal hard exudates within the previously detached retina and focal vitreous hemorrhage in the 6:30 o'clock position (Fig. 1). The visu-

From the Department of Ophthalmology, Chang Gung Memorial Hospital, Chiayi, ¹Department of Ophthalmology, Changhua Christian Hospital, Changhua.

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Correspondence to: Dr. San-Ni Chen, Department of Ophthalmology, Changhua Christian Hospital, 135, Nanhsiao Street, Changhua, Taiwan 500, R.O.C. Tel.: 886-4-7238595; Fax: 886-4-7228289; E-mail: 108562@cch.org.tw

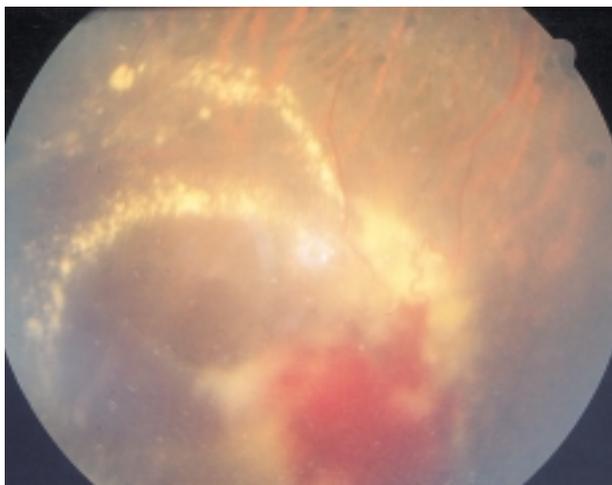


Fig. 1 Retinal neovascularization (RNV) and an angioma-like lesion with subretinal hard exudates surrounded by previous laser scars.

al acuity in decimal notation was 0.4 with spectacle lens -11.25 D -1.00 D x 170 in the right eye and 0.4 with spectacle lens -11.25 D -1.00 D x 180 in the left eye. Fluorescein angiography revealed dye leakage from the new retinal vessels. An area of capillary non-perfusion was visible surrounding the new vessels. No other area of capillary non-perfusion was found in the entire fundus after a meticulous examination. We created 763 spots of retinal photocoagulation (200- μ m spot size, 0.2 s in duration, 160 mW of power) on and surrounding the angiomatous lesion on April 10, 2000. However, the RNV and angioma-like lesion still persisted with dye leakage from new retinal vessels (Fig. 2). The subretinal hard exudates and angioma-like lesion did not regress even after another 77 spots of retinal photocoagulation (200- μ m spot size, 0.2 s in duration, and 340 mW of power) were produced on the angiomatous lesion on June 12, 2000. A segmental scleral buckling from the 6 to 9 o'clock positions and cryotherapy on the angioma-like lesion with repeated cryo-thawing for 3 sessions were performed on November 8, 2000. The retina was reattached, and the new retinal vessels and angioma-like lesion completely regressed after the surgery (Fig. 3). The best-corrected visual acuity was 1.0 in decimal notation in both eyes on June 23, 2003.

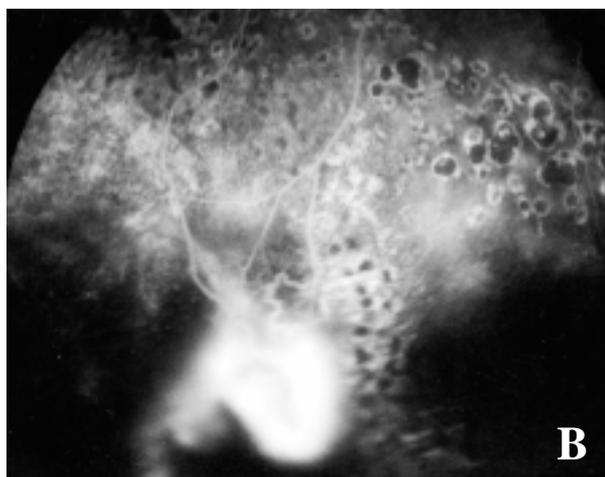
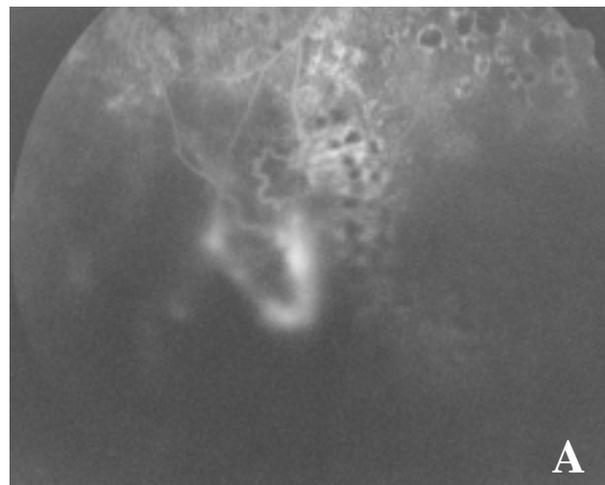


Fig. 2 Fluorescein angiography on May 15, 2000 still showing dye leakage from the new retinal vessels and an angioma-like lesion in the area of capillary non-perfusion after the second laser photocoagulation (A: early phase; B: late phase).

DISCUSSION

RNV is a common consequence of extensive capillary non-perfusion. The development of RNV in very long-standing RD is probably also related to extensive hypoxia of the detached retina.⁽¹⁻⁴⁾ All reported cases had rhegmatogenous retinal detachments of long duration (1~24 years). The extent of retinal detachment ranged from larger than 1 quadrant to total detachment. In this case, however, RD might not have been the only cause of RNV because the extent of detachment was much smaller and the duration was shorter in comparison with previously

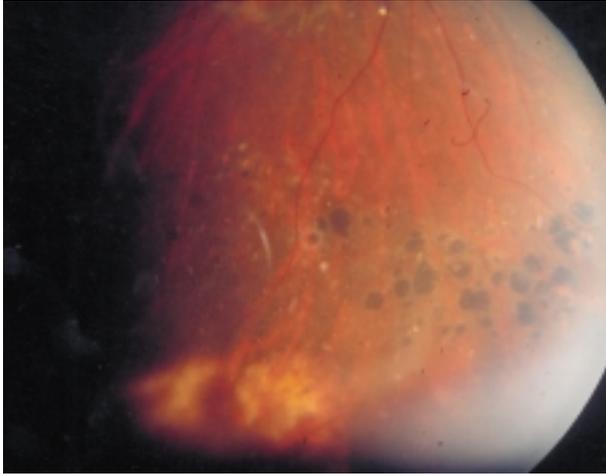


Fig. 3 Fundus photograph on February 26, 2001 showing the reattached retina and regression of the new retinal vessels and angioma-like lesion after surgery.

reported cases.

The patient had no familial history of hereditary retinal disease. No retinal vascular anomaly was noted before the demarcation photocoagulation. Furthermore, the area of capillary non-perfusion was only visible surrounding the RNV and angioma-like lesion but not in other peripheral areas of the retina. Therefore, familiar exudative vitreoretinopathy was not likely in this situation. Except for the RNV and angioma-like lesion within the area of the previously detached retina, no other vascular anomaly such as telangiectasia, venous dilation, microaneurysm, or fusiform capillary dilation was found in the fundus. So the possibility of Coats disease was excluded. The RNV was not sea fan neovascularization as in sickle cell retinopathy, and there were no other signs of sickle cell retinopathy such as salmon patch hemorrhages, iridescent spots, or black sunburst lesions.

Primary idiopathic retinal vasculitis (Eales disease) can also exhibit RNV with vitreous hemorrhage, but it occurs primarily in males and shows obliterative periphlebitis in the peripheral retinas of both eyes.

Laser photocoagulation might have played an important role in this case. A detached retina has a decreased blood supply from the underlying choroidal vessels. By walling off the detached retina with the laser, the horizontal blood supply from retinal vessels was reduced. This further aggravated the ischemia of the detached retina and may have stimulated the formation of RNV. This case demonstrates that laser photocoagulation may predispose the retina to formation of retinal neovascularization and an angioma-like lesion if the retina is ischemic.

In conclusion, laser photocoagulation might aggravate the ischemia of an area of retinal detachment and predispose the retina to formation of neovascularization and angioma-like lesion. Demarcation photocoagulation for small RRD might run the risk of formation of retinal neovascularization and angioma-like lesion if the retina is not reattached.

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劃界性雷射光凝固治療裂孔性視網膜剝離後 發生視網膜新生血管及類似血管瘤

陳以晟 李佳芸 陳珊霓

本文報告一個劃界性雷射光凝固治療裂孔性視網膜剝離後發生視網膜新生血管及類似血管瘤的病例。一位 20 歲女性右眼發生視網膜萎縮性裂孔併發局部視網膜剝離，因而接受雷射光凝固治療圍住視網膜剝離部位。15 個月後在視網膜剝離部位發生視網膜新生血管及類似血管瘤。劃界性雷射光凝固治療可能會加重視網膜剝離部位之缺氧，而使視網膜容易發生新生血管及類似血管瘤。(長庚醫誌 2006;29:212-5)

關鍵字：視網膜新生血管 膜血管瘤，雷射光凝固治療，視網膜剝離。

長庚紀念醫院 嘉義院區 眼科；彰化基督教醫院 眼科

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通訊作者：陳珊霓醫師，彰化基督教醫院 眼科。彰化市500南校街135號。Tel.: (04)7238595; Fax: (04)7228289; E-mail: 108562@cch.org.tw