

BRIEF ARTICLE

Successful Treatment of Cutaneous Collagenous Vasculopathy with Pulsed Dye Laser: A Case Report

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ABSTRACT

Cutaneous collagenous vasculopathy (CCV) is clinically characterized by symmetrical, progressive telangiectasias and an absence of systemic involvement. Histopathology is distinct and helps in differentiation from other vascular conditions that result in cutaneous telangiectasias. We present a case of biopsy proven CCV that had localized clearance following biopsy and was successfully treated with pulsed dye laser. A healthy 36-year-old male presented with a 10-year history of progressive, blanching telangiectasias of the legs, thighs, and forearms. A punch biopsy of a representative patch on the patient's right thigh demonstrated telangiectasias with thickened PAS-positive vessel walls and a sparse perivascular lymphoid infiltrate, features consistent with a diagnosis of CCV. While there was localized clearance at the biopsy site and adjacent skin, the patient opted for treatment with PDL for his lesions elsewhere. After testing various PDL settings, greatest cosmetic improvement and minimal PIH was achieved with a spot size of 7 mm, pulse duration of 3 milliseconds (ms) and a fluence of 8 J/cm². Continued resolution of CCV was noted at 24 months. We present this case to underscore the potential efficacy of PDL in the treatment of CCV.

INTRODUCTION

Cutaneous collagenous vasculopathy (CCV) is a relatively rare microangiopathy that presents clinically as symmetrically distributed, blanching telangiectasias that progressively spread over several years.¹ These generally asymptomatic vascular lesions first appear on the lower limbs before spreading to the trunk and arms, sparing the nails, mucosa, and without evidence of systemic involvement. Given that the clinical presentation of CCV can be

indistinguishable from other vascular disorders with cutaneous telangiectasias, especially generalized essential telangiectasia (GET), diagnosis requires biopsy to confirm the histopathology.²⁻³ Distinctive histopathological findings of CCV include ectatic superficial blood vessels with thickened vessel walls containing type IV collagen, that stains periodic acid-Schiff (PAS) positive.¹⁻²

Fewer than fifty cases of CCV have been reported in the literature since it was first described by Salama and Rosenthal in

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2000, and the etiology of these telangiectatic lesions is not well understood.¹ One study published by Salama et al. suggested that damage to endothelial walls results in intravascular fibrin thrombi, which may induce perivascular fibrosis via disordered collagen production by veil cells.⁴ Numerous cases have identified common comorbidities in patients with CCV, which include hypertension, diabetes, and dyslipidemia.⁵ While microvasculature changes can be observed in cardiovascular conditions, it is unclear whether or how these comorbidities are involved in the pathophysiology of CCV. Regarding the treatment of CCV, four cases have reported improved cosmetic appearance and/or lack of progression of CCV following pulsed dye laser (PDL) therapy, and two additional publications have demonstrated success with other light-based therapies.⁶⁻¹⁰ Our case highlights a sustained response with 2 years of follow up as well as ideal PDL settings in a patient with Fitzpatrick skin type I-II. Additionally, as there are so few published cases in the literature regarding CCV as an entity, we hope to further its recognition in the Dermatologic community.

We report a 36-year-old male patient with no relevant past medical history who has developed CCV over a 10-year period, which is successfully being treated with PDL. Notably, this patient experienced local clearance of CCV following biopsy, which to our knowledge has not been described in the literature. Telangiectatic lesions elsewhere have responded well to PDL treatment.

CASE REPORT

A 36-year-old healthy male with a 10-year history of telangiectasias on his bilateral upper and lower extremities initially

presented to the Dermatology clinic in 2018. He denied any history of easy bleeding or similar findings in family members and denied taking any medications. The telangiectasias began on his lower legs and spread to the thighs and forearms. Examination revealed blanching telangiectasias coalescing into large patches covering his lower legs, onto the thighs and bilateral forearms (Fig. 1a). There was no facial, nail, or mucosal involvement. Biopsy of a representative area on his right thigh was performed, revealing telangiectasias with thickened vessel walls confirmed by PAS and a sparse perivascular lymphoid infiltrate, consistent with CCV (Fig. 2). The biopsy site healed well, remarkably leading to clearance of telangiectasias at biopsy site and adjacent surrounding skin (Fig. 1b).



Figure 1a. Bilateral upper thighs at presentation of CCV, showing diffuse, blanching telangiectasias.



Figure 1b. Right thigh with local clearance of telangiectasias at biopsy site.

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The patient began treatment with pulsed-dye laser (595 nm) and thus far has completed nine total treatments—eight treatments which included the thighs and two treatments involving the shins. Various settings were tested to determine the best outcome with least amount of side effects. Initially, a 7 mm spot size with 1.5 ms pulse duration at 7 J/cm² was tested on the right thigh versus a 3 ms pulse duration with same spot size and energy on the left thigh. The patient noted more improvement with the 1.5 ms, but also more bruising and change in skin texture. At his third treatment, the pulse duration was increased to 6 ms due to patient endorsement of post-inflammatory hyperpigmentation (PIH) with the 3 ms pulse duration. Given that there was less improvement using the 6ms pulse duration and near resolution of PIH, the patient ultimately preferred to resume the 3 ms pulse duration at 8 J/cm² for subsequent treatments. Significant improvement is noted on the bilateral thighs as well as some improvement with PIH on the shins (Fig. 3a & 3b). The plan is to resume treatments to the shins post summer months and continue treatments on the thighs as needed.

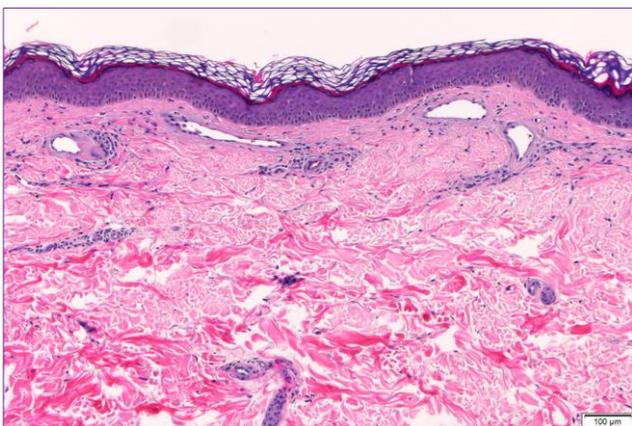


Figure 2. Histopathology of biopsy site demonstrating the telangiectasias with thickened vessel walls that are positive for PAS.



Figure 3. Bilateral thighs with improvement of telangiectasias after 8 treatments with PDL.

DISCUSSION

Laser therapy is well documented to treat various cutaneous vascular lesions. Given the rare and potentially underdiagnosed nature of CCV, its treatment has not been extensively reported; however, several cases have demonstrated success with PDL, intense pulsed light (IPL), and other variations of energy-based treatments.⁶⁻¹⁰ In our case, the patient had optimal improvement and minimal post-inflammatory hyperpigmentation with PDL at a wavelength of 595 nm, spot size of 7 mm, pulse duration of 3 ms and fluence of 8 J/cm² for the treatment of his thighs and shins. Previous PDL settings to treat CCV that have been reported include a wavelength of 585 nm, spot size of 7 mm, pulse duration of 2 ms and fluence of 8 J/cm² for treatment of the legs.⁶ Similar settings resulted in significant improvement of CCV in our patient with sustainable resolution with 24 months of follow up. However, the use of PDL for other conditions and varying skin types should take into consideration the propensity for PIH when identifying treatment settings.

In addition to improvement following PDL therapy, localized clearance of CCV status post biopsy was observed. Although the underlying mechanism that would explain this localized clearance is unknown, it may be comparable to a reverse Koebner reaction, which can be described as local trauma resulting in the resolution of a dermatosis. Reverse Koebner phenomenon has been reported in the setting of psoriasis, vitiligo, granuloma annulare, and small vessel vasculitis, among other dermatologic conditions.¹¹⁻¹² While many factors may influence the clearance of telangiectasias following biopsy, this is a unique aspect of

this CCV case that has not been previously described.

CONCLUSION

In summary, our case reiterates previously observed improvement in CCV patients with PDL laser. Future studies may explore the pathophysiology and specific factors that induce CCV and whether a reverse Koebner phenomenon has a role in the local clearance of CCV following biopsy or other therapies.

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