Clinical and Dermoscopic Improvement of Cutaneous Collagenous Vasculopathy with Intense Pulsed Light

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Introduction

- Cutaneous collagenous vasculopathy (CCV) is a rare acquired idiopathic microangiopathy that affects the superficial cutaneous vessels.[1,2]
- CCV was first reported by Salama and Rosenthal in 2000 and fewer than 50 cases have been described in the literature.[3]
- We describe the novel use of intense pulsed light (IPL) treatments in a case of CCV.

Case Presentation

CC: Rash

HPI: A 73-year-old Caucasian female presented with a rash that began several months prior on her distal bilateral extremities and was spreading proximally.

PMH: Hypertension, hyperlipidemia

ROS: Denied pain, photosensitivity, pruritus

PE: Blanchable telangiectasias on the dorsum of the forearms and legs (Figure 1)

Pathology: Abundant superficial dilated telangiectasia with concentric perivascular hyalinized collagen deposition consistent with CCV (Figure 3A, H&E); PAS-Diastase resistant (+) (Figure 3B)

Treatment: Patient desired cosmetic improvement, and test spots with Intense Pulsed Light (IPL) and Nd:YAG (neodymium-doped yttrium aluminum garnet) 1,064-nm laser therapies were performed with the following parameters: IPL: Setting A at 18J/cm2 fluence (not sun mode) with gel and Nd:YAG 1,064-nm laser: Fine vessel telangiectasia setting, <0.5mm, 5mm spot size, 20ms pulse duration, 130J/cm2 (lateral) - 140 J/cm2 fluence (medial) with gel (Figure 2).

Follow-up: Clinical and dermoscopic improvement was noted in all the treatment modalities, but the region treated with IPL had the most notable treatment response with clinical resolution of many of the telangiectasia (Figure 2). Subsequently, the patient received two full IPL treatments on both arms with six weeks between each treatment. The patient reported high satisfaction with her treatment outcomes, however, due to the current COVID-19 pandemic she has not returned to clinic.

Discussion

CCV is difficult to differentiate from a number of similar entities, and histopathology is essential for diagnosis.[3] Because telangiectasias are not routinely biopsied, it is thought to be an underdiagnosed condition.[2,3] CCV affects patients of both sexes of various ages, but most affected patients are middle-aged or elderly.[2] Histologically, dilated small vessels are seen in the superficial dermis with flat endothelial cells and a thickened basement membrane containing PAS-positive diastase-resistant hyaline material.[3,4] Immunohistochemistry is strongly positive for type IV collagen.[2] Congo red stain for amyloid deposits is negative.[4]

Clinically, most patients with CCV present with blanching telangiectatic macules that occur symmetrically, with lesions that begin on the lower extremities and spread cephalically to the trunk and upper extremities.[2-4] Lesions are typically asymptomatic, but there are some reports of associated pruritis.[2,3] Due to this nonspecific presentation, it must be differentiated from a number of similar clinical presentations, most notably generalized essential telangiectasia, hereditary hemorrhagic telangiectasia, hereditary benign telangiectasia and drug-induced telangiectasia. Telangiectasia macularis eruptive perstans, ataxia-telangiectasia and angioma serpiginosum may also be considered given the clinical scenario.[3-5]

The etiology of this entity is largely unknown, but recent reports suggest the pathogenesis is related to repeated endothelial damage inducing the formation of microthrombi leading to intravascular obstruction, though the triggering factor for this endothelial cell damage is still undetermined.[2,3] Notably, statins and beta blockers are the most commonly reported medications taken by patients with CCV, though these are unlikely to cause less damage than hypertension or hyperlipidemia.[3] Other cases reported an association with trauma, neurologic injury, stressful events such as childbirth, and medications.[2]

Clinical Presentation & Pathology

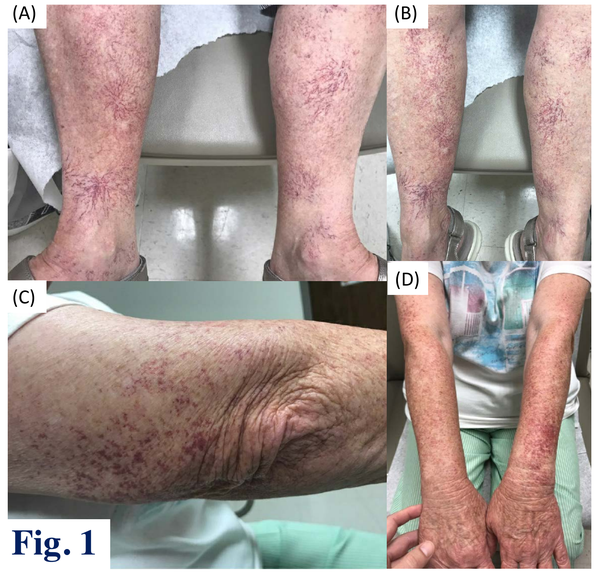


Fig. 1

Figure 1 (above): Patient at presentation. (A-B) Lower legs, (C) Right elbow, (D) Bilateral arms

Figure 2 (below): Pre-treatment forearms and left forearm test spot site. (E-F); Pretreatment left forearm test spot site and map for Nd:YAG and IPL (G); Immediately post-treatment left forearm test spot site and map for Nd:YAG and IPL, dusky greyed vessels following IPL denoted by yellow stars and NDYAG denoted by red dot (H); left forearm site and map 6 weeks post-test spot treatment with Nd:YAG and IPL, greatest improvement noted with IPL treatment area (I); Marked improvement at 6-week follow-up of bilateral forearms with one IPL treatment: Setting A at 18J/cm2 fluence (not sun mode) with gel.

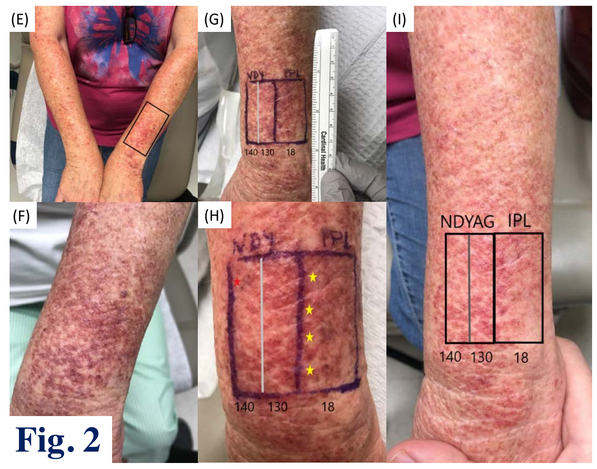


Fig. 2

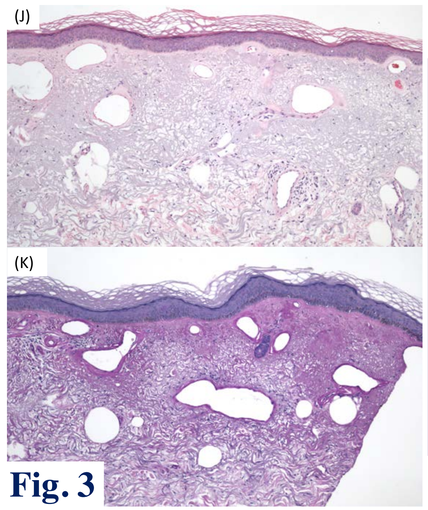


Fig. 3

Figure 3 (left): Histopathology. (J) Telangiectasia with concentric perivascular eosinophilic hyaline deposits (H&E, 100 x magnification), (K) Hyalinized material stained positively for Periodic-acid Schiff-Diastase resistant (PAS, 100 x magnification).

Figure 4 (below): Clinical improvement of CCV 6 weeks after 1 full IPL treatment of bilateral arms (L). (M) Right forearm; (N) Left forearm.

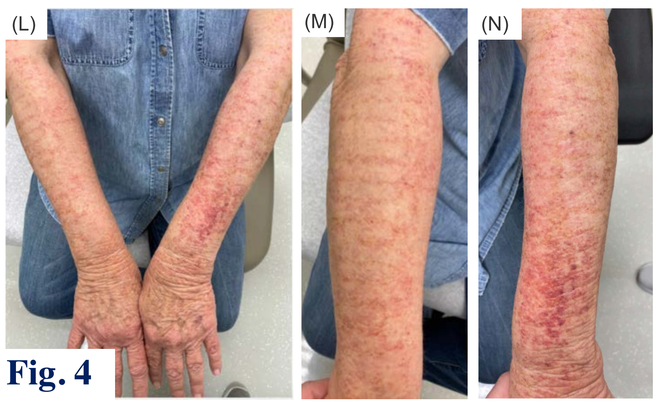
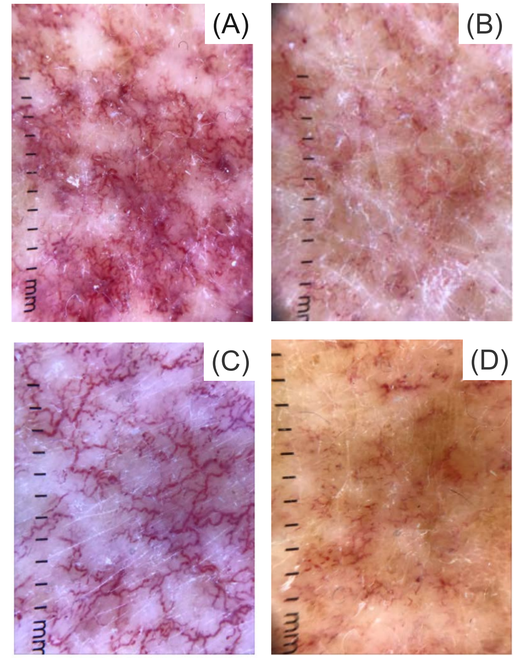


Fig. 4

Fig. 5

Figure 5 (left): Persistent improvement of CCV on bilateral posterior arms 9 months after 2 full IPL treatments. Patient provided photo via telemedicine; she has not returned to clinic for further treatments due to the COVID-19 pandemic.

Dermoscopy



Sharply demarcated, abundant reticulate and radiating thick vessels of the left forearm (A) and right forearm (C) before IPL treatment. Greatly diminished appearance of vessels after IPL treatment in left (B) and right (D) forearm.

Conclusion

The current literature is sparse on effective treatments for CCV, apart from a few reports of laser therapy. A report of a 77-year-old woman with CCV on her upper limbs and trunk showed complete resolution of her telangiectasias after 7 treatments using Multiplex PDL 595-nm/Nd:YAG 1,064-nm laser and OPL (optimized pulsed light).[4] The patient's thicker, violaceous lesions were targeted with the Multiplex PDL/YAG laser while OPL was used on the redder, flatter lesions.[4] Other reports of PDL in patients with CCV have also been reported.[5] Mitteldorf et al. described a case of complete remission of the dilated telangiectasias without evidence of PAS-positive hyalinized type IV collagen deposits after PDL treatments; only post interventional degenerative changes of the vessels were shown on histopathology.[1] Additionally, some cases of generalized essential telangiectasia and poikiloderma, which are comparable to this entity, have also been successfully treated using IPL.[4]

Given the safety and efficacy of IPL for telangiectasia treatment and our patient's excellent response to IPL both clinically and dermoscopically, we believe IPL is a novel approach to cosmetic improvement for patients with CCV and should be considered as a first line treatment in appropriate patients.

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