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Latent Demodex infection contributes to intense pulsed light aggravated rosacea: cases serial

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ABSTRACT

Intense pulsed light (IPL) is a good option for erythema and telangiectasia of rosacea. Demodex, which is light and heat sensitive, is an important risk of Rosacea. Sometimes, IPL can induce rosacea aggravation. Here, we show two cases of erythema rosacea aggravated as pustule in several hours after IPL. Both cases show high density of Demodex after IPL. Neither of them had photosensitivity, systemic disease, or any other contraindication for IPL. One of the patients received IPL again after Demodex infection relieved and this time there was no inflammation induction. We need to attract more attention to IPL-induced rosacea aggravation and latent Demodex infection may act as a cofactor.

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KEYWORDS
Rosacea; Demodex; intense pulsed light

What is already known about this topic?

(1) IPL (Intense Pulsed light) can treat the redness and telangiectasia of rosacea.
(2) Rosacea is associated with Demodex infection.
(3) Demodex is photophobia and light sensitive.

What does this study add?

(1) Demodex infection may contribute to the rosacea aggravation after IPL in a few hours.

Introduction

Erythema and telangiectasia of rosacea treated by intense pulsed light (IPL) can achieve good response(1,2). Sometimes, IPL may induce rosacea aggravation, while the exact mechanism is still unclear. Demodex infection is an important risk for Rosacea(3, 4). Demodex is light and heat sensitive. IPL-generated light and heat may react with Demodex, then induce acute inflammatory and get worse rosacea. Here, we show two similar cases of IPL-aggravated rosacea in several hours. Photosensitivity, systemic disease, or any other contraindication are all excluded before IPL treatment. After aggravation, both cases were detected with high density of Demodex (15–22 cm^2 skin). After Demodex infection is relieved, one of the cases received IPL again without inflammation induction. IPL-induced rosacea aggravation and latent Demodex infection may act as a cofactor. Now we share our two cases as following.

Case 1

A 25-year-old woman presented with consistent erythema on her face. She was diagnosed as Rosacea for 2 years. Before this admission, she was treated with topical 0.03% tacrolimus for 2 months. She denied photosensitivity, allergies, and other systemic diseases. Skin examination showed multiple erythema, scattered papules, and telangiectasia on nasal and cheeks (Figure 1a). The laboratory examination showed that ANA, dsDNA, ENA, and other autoantibodies were negative. As the patient concerns the erythema and telangiectasia, IPL (lumenis, M22, pulse width 5.0 ms, dual pulse, pulse delay 30 ms, 15 J/cm^2) was applied. Cooling device come with the IPL machine and cold air spray were applied during our IPL treatment. Ice cold wet mask was applied with cold air spray immediately after IPL for half an hour. She followed doctor's advice to avoid hot air and sunshine. Sustained itch appeared 6 h later and cannot be alleviated by cold wet spray. About 16 h later, multiple small pustules were developed on nasal and cheeks (Figure 1b). About 24 h post IPL, we checked Demodex folliculorum by standardized skin surface biopsy (6) and found numerous Demodex (23 cm^2 skin) on forehead, cheek, and nasal dorsum. Then, the patient was treated with oral doxycycline 100 mg bid for 4 days and the pustules relieved. But because of stomach discomfort caused by doxycycline, she switched to oral minocycline 100 mg bid for 2 weeks. Meanwhile, she applied cream and cold spray twice a day. At the revisit 4 months later, there was no pustule or obvious erythema on her face (Figure 1c). Demodex detection showed normal range (only 1–2 cm^2 skin).

Case 2

A 50-year-old woman accompanied by repeated facial blush, papules, and pustules for 3 years sought for laser therapy. Previously, she was treated by intermittent oral minocycline 50 mg bid, oral herb medicine, topical clindamycin gel, and

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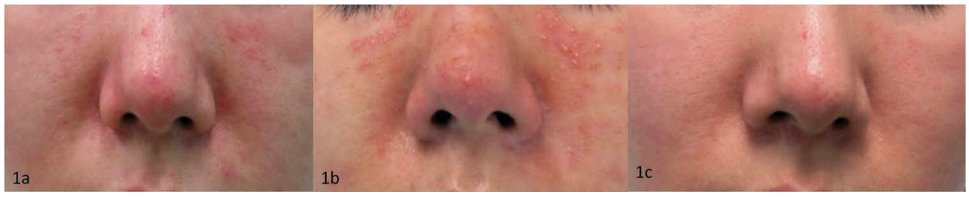

Figure 1. (a) Before 1st IPL; (b) irratation after 1st IPL; (c) after minomycin + topical treatment.

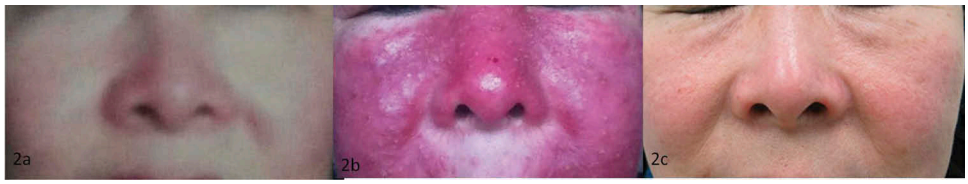

Figure 2. (a) Before 1st IPL; (b) irratation after 1st IPL; (c) after minomycin + topical treatment + IPL again.

topical 0.03% tacrolimus cream. She also had undergone red light (630 nm) treatment four times (twice a week). She denied photosensitivity, allergies, and other systemic diseases. Skin examination showed multiple erythema and scattered telangiectasia on nasal and cheeks. The laboratory examination showed that ANA, dsDNA, ENA, and other autoantibodies were negative. Then, she received IPL treatment (lumenis, M22, pulse width 5.0 ms, dual pulse, pulse delay 30 ms, 15 J/cm^2). She also applied cooling treatment as in Case 1. The next day she developed pustules and papules with significant itching on her face (Figure2b). From the skin sample acquired from her face using adhesive dehydration, there were numerous Demodex (15 cm^2 skin). Then she was treated with oral minocycline 100 mg bid for 1 month. Pustules and papules subsided and there is still diffuse erythema. Demodex detection showed normal range (only 1–2 cm^2 skin). In order to treat the diffuse erythema, IPL was applied again. Meanwhile, 0.03% topical tacrolimus was applied. This time, there was no side effect and the erythema partially relieved after IPL. So she received IPL once a month for eight times and the erythema was almost gone (Figure2c).

Discussion

For the treatment of rosacea, IPL, laser, red, and blue light played an important part. Especially, IPL and pulsed dye laser on telangiectasia and persistent erythema treatment achieved good results(1,2,5,6). Some scholars suggested that IPL should be applied after inflammatory lesions relieved. For acne vulagris treatment, IPL can improve inflammatory papules of acne (7,8). IPL can invoke rosacea which has been buzzed through patients and doctors. These two cases presented rosacea exacerbation in 6–24 h. Both cases detected many Demodex. One of the possibilities is Demodex infection. Intense light irritation may make large amount of *Demodex folliculorum* sensitive, temporary active, or death in one time, thus stimulating the acute inflammatory response. The Demodex infection symptoms had not been found before IPL, which may be due to suppressed inflammation caused by topical tacrolimus. These two patients were also treated with topical tacrolimus for more than 2 weeks. One of the patients treated with IPL after Demodex infection got relieved and did not show rosacea exacerbation, which confirm our hypothesis. Heat may also aggravate rosacea. During and after treatment, cooling treatment was applied and the patients did not feel heat or burn. And the patient treated with IPL again did not show rosacea worse.

The limitation of our report is that only two retrospective cases were analyzed. Here, we just remind doctors to observe and record similar cases and to analyze the causes. In addition, before IPL treatment for rosacea, *Demodex folliculorum* detection may be necessary. If it is high density, be alert and prepared to the aggravation. In the future, more studies should be addressed on the exact mechanism.

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