

Can periocular hypermelanosis be treated with platelet-rich plasma (PRP) intradermal injections?

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Sir,

Can periocular hypermelanosis be treated with platelet-rich plasma (PRP) intradermal injections?

Periocular hypermelanosis, also known as periorbital hyperpigmentation, is a common, worldwide condition caused by multiple etiological factors. Here, genetic (hereditary) post-inflammatory endocrinopathy, drug ingestion, hormonal imbalance, excessive hypervascularity, and secondary eyelid edema are common causative agents [1].

Atopic and allergic contact dermatitis are common in the eyelids and, since they are accompanied by significant chronicity and inflammation, they can be involved in numerous cases of periorbital hyperpigmentation [2]. Sometimes, it is likely that infraorbital dark circles are caused by the visibility of prominent veins; in other words, venous congestion may be responsible for the dark pigmentation [3].

From October 15, 2015, to October 15, 2016, 15 female patients with idiopathic periocular hypermelanosis, clinically and photographically documented by two separate dermatologists, were included in the following clinical study after giving consent for participation. They did not report any underlying medically-significant diseases in their histories nor any specific drug ingestion. All possibility of uncooperative behavior or unusual expectation was eliminated from the study. Because a confirmation by histologic examination is rarely necessary, we refused to take biopsies of the

patients' skin, even more so as they did not consent to this. The photographs of the patients were taken under standard optical conditions.

The design of the clinical study consisted of three sessions of autologous platelet-rich plasma (PRP) injections into periorbital skin with two months in between the injections. They were followed up to one year, in other words, up to 6 months after the end of the treatment.

Therapeutic outcomes were evaluated by standardized imaging and, then, judged by two independent dermatologists blinded to the study and the patients' satisfaction rates. Three patients refused to continue the study as they were in the process of moving to another city. After 12 months, the final results were as follows: One patient (8%) reported a significant improvement, 3 patients (25%) moderate improvement, and 6 patients (50%) poor if any response to the dark circles. Two patients (17%) reported an exacerbation and dissatisfaction from the trial due to unmet expectations. The only objectively measured side effects were swelling and bruises around the areas of injection, which were transitory in nature and did not need intervention.

In our opinion, due to divergent etiologies and differing patterns, no single treatment can yield miraculous results. For this reason, PRP is not considered, at the moment, an exceedingly helpful treatment for periocular hypermelanosis, although this is in opposition to Mehryan et al., who believe that the use of PRP yields a statistically significant improvement in infraorbital color homogeneity [4]. The differing results may be due to the

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variation of design and technique in the two studies. Very few controlled studies mention a possible therapeutic role of PRP injections in periocular hypermelanosis.

According to Ranu et al., lack of sleep, stress, alcohol abuse, and smoking, although not clinically substantiated, may aggravate the hyperpigmentation of the eyelids. Changes in lifestyle are an important part of preservative therapy [5,6].

There is some concern about the role of needle trauma during PRP injections in inducing post-inflammatory pigmentary changes, especially in dark-skinned individuals, in whom the problem is more common.

Nofal E. et al. believe that PRP injections are a promising treatment option for periorbital hyperpigmentation, but, because of its multifactorial etiology, are not an ideal solution [7]. Medication intolerance, stressful circumstances, and the need for multiple intradermal injections are the challenges that the physicians faced during the PRP injection procedure.

We believe that further studies, with larger sample sizes or different methods and treatment modalities, should be considered for proper periocular hypermelanosis treatment.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients have given consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Amani S. News in periorbital hyperpigmentation treatment. *J Clin Exp Dermatol Res.* 2017;8:3(Suppl):38.
2. Sheth PB, Shah HA, Dave JN. Periorbital hyperpigmentation: a study of its prevalence, common causative factors and its association with personal habits and other disorders. *Indian J Dermatol.* 2014;59:151–15.
3. Ma G, Lin XX, Hu XJ, Jin YB, Chen H. Treatment of venous infraorbital dark circles using a long-pulsed 1,064-nm neodymium-doped yttrium aluminum garnet laser. *Dermatol Surg.* 2012;38:1277–82.
4. Mehryan P, Zartab H, Rajabi A, Pazhoohi N, Firooz A. Assessment of efficacy of platelet-rich plasma (PRP) on infraorbital dark circles and crow's feet wrinkles. *J Cosmet Dermatol.* 2014;13:72–8.
5. Ranu H, Thng S, Goh BK, Burger A, Goh CL. Periorbital hyperpigmentation in Asians: an epidemiologic study and a proposed classification. *Dermatol Surg.* 2011;37:1297–303.
6. Ahmed NA, Mohammed SS, Fatani MI. Treatment of periorbital dark circles: Comparative study of carboxy therapy vs chemical peeling vs mesotherapy. *J Cosmet Dermatol.* 2019;18:169–75.
7. Nofal E, Elkot R, Nofal A, Eldesoky F, Shehata S, Sami M. Evaluation of carboxytherapy and platelet-rich plasma in treatment of periorbital hyperpigmentation: A comparative clinical trial. *J Cosmet Dermatol.* 2018;17:1000–7.

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