Comparative study of the use of exogenous pigmentation as an adjuvant therapy to Intense Pulsed Light in the treatment of melanoses on the dorsum of the hands

Estudo comparativo do uso de pigmentação exógena como adjuvante à luz intensa pulsada no tratamento de melanoses solares do dorso das mãos

Abstract

Introduction: The use of exogenous pigmentation as an adjuvant therapy to Intense Pulsed Light in the treatment of melanoses is routine, nevertheless there is an absence of published comparative studies.

Objective: To compare Intense Pulsed Light therapy in isolation, or combined with exogenous pigmentation in the treatment of solar lentigines on the dorsum of the hands.

Methods: Twenty women (mean age = 56.5 years) with skin types from I to III, underwent three sessions of Intense Pulsed Light, with a brown makeup pencil pigment reinforcement being applied to the lesions on the right hand. The patients were queried about the degree of discomfort, swelling, crusting, and improvement experienced, their treatment of preference and which they felt provided greater effectiveness, and the incidence of side effects.

Results: When assessing all three of the treatment sessions together, the median discomfort score, as well as the degree of inflammation and crusting (p <0.01), were higher on the right hand. Regarding the subjective impression of the final result, 15 in 20 patients preferred the technique applied on the right hand, considering it more effective (p <0.01). Eleven in 20 patients reported fewer side effects in the un-pigmented side (p = 0.12). The degree of discomfort did not correlate significantly with the preferred technique (p = 0.67).

Conclusions: In this sample, there was a preference for the method with the adjuvant use of exogenous pigmentation, however the incidence of pain and side effects was higher in this group.

Keywords: melanosis; hand; pigmentation; light.

Resumo

Introdução: O uso de pigmentação exógena como adjuvante à luz intensa pulsada no tratamento das melanoses é rotineiro, porém não se publicaram estudos comparativos.

Objetivo: Comparar o tratamento de lentigos solares em dorso das mãos com luz intensa pulsada isolada ou associada à pigmentação exógena.

Métodos: 20 mulheres, com idade média de 56,5 anos e fototipos de I a III, foram submetidas a três sessões desse método, sendo que na mão direita foi aplicado reforço de pigmento castanho com lápis de maquiagem nas lesões. As pacientes foram questionadas sobre grau de desconforto, inflamação, formação de crostas e melhora, tratamento de preferência e de maior efetividade e incidência de efeitos colaterais.

Resultados: Avaliando as três sessões associadas, a mediana dos escores de desconforto foi maior à direita, bem como o grau de inflamação e formação de crostas (p <0,01). Quanto à impressão subjetiva do resultado final, 15/20 pacientes preferiram a técnica à direita e a consideraram mais efetiva (p < 0,01); 11/20 pacientes referiram menos efeitos colaterais do lado não pigmentado (p = 0,12). O desconforto não se correlacionou significativamente com a técnica preferida (p = 0,67).

Conclusões: Nessa amostra, houve preferência pelo método com o uso adjuvante de pigmentação exógena, porém a ocorrência de dor e efeitos colaterais foi maior nesse grupo.

Palavras-chave: melanose; mão; pigmentação; luz.
INTRODUCTION

Solar lentigines are macular hyperpigmented lesions that range in size from a few millimeters to over a centimeter in diameter. The potential negative social impact of this condition is due to the fact that it is interpreted as an early sign of photoaging. Its treatment can be carried out through physical procedures, such as Intense Pulsed Light therapy (IPL). As with lasers, IPL’s basic principle is the selective photothermolysis of the target chromophore, with selective damage inflicted to the structure to be treated. The use of exogenous pigmentation with brown makeup pencil has been used in practice to increase the capture of energy by the target, however there are no standardized studies or evaluations of the technique’s safety profile. The objective of this study was to compare the treatment of solar lentigines on the dorsum of the hands through a conventional IPL procedure, with the treatment of the disease in the other hand of the same patient using a combined exogenous pigmentation and IPL technique.

METHOD

The authors carried out a monocentric, prospective, comparative study, which was approved by the Research Ethics Committee. Twenty-two female patients between the ages of 46 and 68 years (mean = 56.5 ± 6.27 years old), with skin types I to III, bearers of solar melanoses on the dorsum of the hands were recruited from the general outpatient clinic of a dermatology care service. All patients used 0.025% retinoic acid combined with 4% hydroquinone and 1% alpha-bisabolol for at least 15 days, suspending its use four days before the sessions commenced. Three IPL sessions were carried out using the Bioflash IPL System (BIOSET Indústria de Tecnologia Eletrônica Ltda., Rio Claro SP - Brazil) on the dorsum of both hands — with a reinforcement of the melanoses’ color being made with brown makeup pencil on the right hand (Figure 1). The same parameters were used during the three sessions: fluence = 36.16 J/cm², energy = 448 J and duration of pulse = 35 ms, according to the equipment’s protocol. The average interval between sessions was one month. After periods of seven and thirty days of each session, the patients answered a questionnaire that covered the degree of discomfort, inflammation, crusting, and improvement. In the final evaluation, the volunteers were also asked about their treatment of preference, the one with greater effectiveness, and the one with the greater incidence of side effects. After the sessions, the patients were instructed to maintain strict use of sunscreen. After the spontaneous and complete fall off of the crusts, the volunteers were instructed to restart the use of the previously mentioned depigmenting formula. Photographs were taken before and after the treatment (Figures 2 and 3).

RESULTS

Of the 22 patients, 20 reached the end of the study. Two were excluded due to non-adherence to the protocol. Evaluations of the three sessions yielded a general median of scores of discomfort greater on the right hand (5 X 4; p <0.01; Wilcoxon) (Graph 1). The same tendency was observed for the degree of inflammation and formation of crusts (p <0.01;
There was a significant difference regarding the subjective impression of the final result, with 15 out of 20 patients preferring the technique applied on the right hand, considering it more effective (p <0.01; chi-square) (Graph 2). Eleven of the 20 patients reported fewer side effects on the non-pigmented side (P = 0.12; chi-square). The degree of discomfort did not correlate significantly with the preferred technique (p = 0.67; Spearman Rho = -0.10).

DISCUSSION

In light of the results obtained, it was possible to observe that when evaluating the three sessions together, the discomfort at the time of application, the inflammation and the formation of crusts in the subsequent days, and the perception of the improvement of the lentigines were higher on the hand that underwent pigmentation enhancement. The authors believe that the exogenous pigmentation applied on melanoses with brown makeup pencil can act as a new chromophore superimposed on the skin, which increases the local capture of energy. The use of exogenous pigmentation can hypothetically increase the potential for epidermal burns, however no permanent side effect was evidenced in the 30-day follow-up period in this study. The safety profile could be better evaluated in future clinical studies with a greater number of volunteers. It is important to emphasize that the application of exogenous pigmentation is difficult to standardize, with an absence of studies in the literature describing such a technique.

CONCLUSION

According to the evaluation of patients, the use of exogenous pigmentation in the studied sample was associated with more intense adverse effects, however it was considered more effective and preferred by patients in the treatment of melanoses in the dorsum of the hands. Wider studies are necessary to assess the amount of applied pigment advised, as well as the safety profile of this practice, in order that such a seemingly promising adjuvant treatment can be utilized.

REFERENCES