

Case Report

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Treatment of lichen planus pigmentosus with intense pulsed light. Case report

ABSTRACT

This a case report of lichen planus pigmentosus associated with classical lichen planus treated with intense pulsed light. Intense pulsed light technology has been used successfully for removal of various benign pigmented skin lesions and, in this rare case, it has proved its effectiveness.

Keywords: lichen planus, physical-chemical treatment, hyperpigmentation.

INTRODUCTION

Lichen planus pigmentosus (LPP) is a rare variant of lichen planus that is characterized by macules and/or hyperpigmented papules, with occasional itching that occur on the face, neck and flexures.¹ Its etiology is unknown, although contact with some chemicals has been observed.^{1,2}

Pigmentary disorders with features similar to lichen planus pigmentosus (LPP) were described with several synonymous in scientific literature.¹⁻³ However, it was Gougerot¹ the first author who reported the occurrence of pigmented macules with histopathological findings of lichenoid type inflammatory reaction.

The association of LPP with LP is rare and only few cases have been reported in literature.¹

LPP is a common pigmentary disorder seen in the Indian population, although it may be present in other racial groups.¹ Lichen planus (LP) is an immunologic disorder mediated by lymphocytes, in which the basal layer keratinocytes appear to be the target of T lymphocytes.

T lymphocytes are thought to mediate death of basal keratinocytes, resulting in the formation of colloid or Civatte's bodies in the lower portion of the epidermis and papillary dermis. These reactions are called lichenoid tissue reactions.¹⁻³

Emission of intense pulsed light (IPL) produces a beam of incoherent light, whose radiation spectrum concurrently covers various wavelengths.^{4,5} Currently, IPL has been widely used for treatment of some pigmented lesions with promising results. Superficial pigmented lesions respond better than those located deeper in the skin, which requires multiple sessions.^{4,5}

We present a case of LPP associated with classic PL and treated with IPL in pigmented lesions of face and neck

CASE REPORT

Female patient, 41 years, presenting for three years grayish-brown confluent blotches that started on the face, with subsequent involvement of the neck, anterior chest, and upper limbs (Figures 1A and 1B). Initially, referring burning and itching without erythema or edema, with subsequent appearance of pigmented lesions. She was treated with topical bleaching (hydroquinone), glycolic acid, non-fluorinated corticosteroids and sunscreens without improvement. There was worsening of clinical status due to the increase in number and intensity of lesions pigmentation. After two years, the patient developed pruritic erythematous papules on wrists and back of hands. Biopsies were performed on lesions of the face and forearms, and the histopathology showed respectively: a) vacuolar degeneration of the basal layer, perivascular lymphocytic and focal band-like infiltrate with intermingled melanophages (Figure 2A); and b) intense vacuolar degeneration of basal layer with subepidermal cleft formation and band-like lymphocytic infiltrate in papillary dermis with intermingled melanophages (Figure 2B). Due to



Figure 1A – Before treatment with IPL (11/30/2006).
Figure 1B – Before treatment with IPL (11/30/2006).



Figure 3A – After treatment with IPL (03/30/2009).
Figure 3B – After treatment with IPL (03/30/2009).

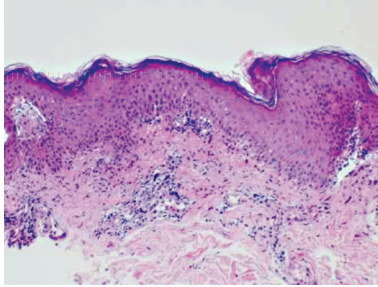


Figure 2A (HE 100X) – Anatomopathology of facial injury. Vacuolar degeneration of the basal layer, lymphocytic perivascular and focal band-like infiltrates intermingled with melanophages.

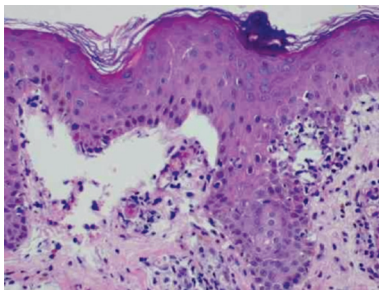


Figure 2B (HE 200X) – Anatomopathology of forearm injury. Intense vacuolar degeneration of basal layer with subepidermal cleft formation and band-like lymphocytic infiltrate in papillary dermis intermingled with melanophages.

clinical status worsening, some tests with IPL were proposed and carried out with wavelengths of 540 and 570 nm. After evaluation of these tests, according to therapeutic response, the wavelength was set at 570 nm.

The IPL device used was the Harmony, with a wavelength of 570 nm, exposure time 12 msec, fluence of 15 J/cm² across hyperpigmented area of the face. Soon after treatment, there was very intense reaction with erythema, swelling, burning at the site, and subsequent bleaching without the need for other applications or other topical bleaching. One year after treatment with IPL (Figures 3A and 3B), a new face biopsy was performed, which showed the preserved skin, basal layer

with irregular distribution of melanin pigment, both typical and evenly distributed melanocytes, papillary dermis with mild dilation of lymphatic vessels of the superficial vascular plexus, increase of fibroblasts, presence of several melanophages distributed mainly around blood vessels, absence of inflammatory infiltrate, and reticular dermis without changes (Figures 4A, B and C).

DISCUSSION

LPP is a rare and chronic variant of classic LP characterized by the insidious appearance of hyperpigmented macules on sun-exposed skin and joints. The onset usually occurs between the third and fourth decades of life, with a slight predominance in females.^{1,2} The lesions appear as small macules, without an erythematous border, ranging in color from slate gray

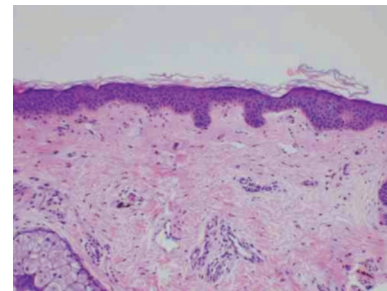


Figure 4A (HE 40X) – Anatomopathology of facial injury. After treatment with IPL (05/19/2009).

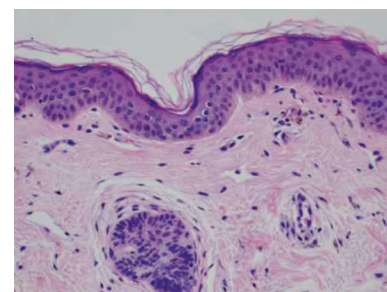


Figure 4B (HE 100X) – Anatomopathology of facial injury. After treatment with IPL (05/19/2009).

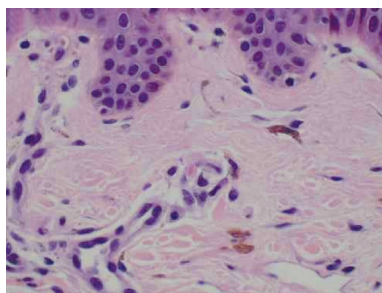


Figure 4C(HE 200X) – Anatomopathology of facial injury. After treatment with IPL (05/19/2009). Preserved epidermis, basal layer with irregular distribution of melanin pigment, typical and evenly distributed melanocytes, papillary dermis with slight dilation of lymphatic vessels of the superficial vascular plexus, increase of fibroblasts, presence of several distributed melanophages mainly around blood vessels, absence of inflammatory infiltrate, and reticular dermis without changes.

to brownish black.¹ The cutaneous distribution is generally diffuse, symmetrical and bilateral in 91% of the cases,¹ and may be reticular, perifollicular,¹⁻³ or even with linear or zosteriform distribution.^{1,2}

Lesions often begin on the neck and face, with subsequent involvement of upper extremities and upper torso, similar to these case, and, less frequently, can involve the flexural areas (LPP inversus)^{1,2} and scalp. Oral mucosa can also be affected,¹ however it was not observed the involvement of nails and palmoplantar regions.¹ Evolution of LPP is chronic, with periods of exacerbations and remissions. Pruritus is variable,^{1,2} and sun exposure can worsen the lesions.¹

In LPP, the coincident lesions of LP (papular, oral, follicular, linear, or actinic) were found in 9%,¹ 23.5%,¹ and 27%, respectively. It is believed that the lichenoid inflammatory reaction may be due to the delayed response of the skin to contact allergens,¹⁻⁴ such as mustard oil, amla oil, henna and hair dye.¹

The histological study described by Kanwar¹ showed hyperkeratosis in 13.8%, thinning of the epidermis in 7.7%, degeneration of the basal layer in 78.5%, perivascular infiltrate in 81.5%, melanophages in 63%, and band-like infiltrate in the outer dermis in 18.5%. Collagen was normal, and the dermis showed no vascular changes. Deposit of amyloid material and iron pigment were not present, with most histological changes being diagnosed as mild or moderate, similar to our patient.

It should be considered in the differential diagnosis, according to literature, the inflammatory disorders that share histopathological findings of lichenoid inflammatory reaction (described by Pinkus as Riehl's melanosis) and erythema dyschromicum perstans (ashy dermatosis).²

The presence of LPP lesions in the face/neck is a serious cosmetic problem. Currently, many types of laser or intense pulsed light have been used in the treatment of benign cutaneous pigmented lesions.^{4,5} IPL appears to be the treatment of choice to promote destruction of intraepidermal melanosomes by presenting effectiveness, few side effects and complications related to laser use.^{4,5} We find no evidence in scientific literature of any case of LPP, which have been treated with IPL and attained improvement in skin pigmentation and inflammatory lichenoid infiltrate.

In this case, through pathology, we have shown the effectiveness of IPL in the destruction of intraepidermal melanosomes (Figures 4A, 4B and 4C). Moreover, we believe that IPL, which reduces the basal layer melanosomes, may have indirectly contributed to the improvement of the inflammatory lichenoid infiltrate, although the process mechanism of removing the pigment is not fully understood. Yamashita *et al.* (2006)⁴ demonstrated through noninvasive methods that IPL photothermolysis removes dense melanosomes in basal layer by triggering the accelerated differentiation of basal keratinocytes and, therefore, the melanosomes migrate faster to the cell surface, being observed in microcrusts along with necrotic keratinocytes.

In conclusion, we emphasize the importance of the diagnosis of LPP, which can be difficult in the absence of typical lesions, occurrence of rarer forms such as the linear variant and, specially, in the response to treatment with IPL. Although more scientific studies are needed, IPL appears to be a promising, effective, and safe method in the aesthetic treatment of LPP.

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