Review paper

Treatment modalities of palmoplantar lichen planus: a brief review

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Abstract

Palmoplantar lichen planus is a localized and uncommon variant of lichen planus which is mostly resistant to treatment. Our purpose was to discuss all treatment modalities proposed and tested for palmoplantar lichen planus in the literature. A systematic review of the literature was conducted to evaluate evidence regarding all treatment modalities proposed and tested for palmoplantar lichen planus in the literature. Two major databases (PubMed, Google scholar) were searched. The review included all case reports, letters and original articles reporting any treatment for palmoplantar lichen planus but not treatment used in the other type of lichen planus, generalized lichen planus or other type of palmoplantar dermatoses. We have gone over more than 50 articles. There are many drugs that have been used in the treatment of lichen planus and generalized lichen planus but the palmoplantar type is a rare variety of lichen planus. That is why we could not find any clinical trial on the subject and just case reports have been described in this manuscript. In spite of plentiful investigations carried out on lichen planus, there is no treatment modality that has proved to be utterly satisfactory in treatment of palmoplantar lichen planus.

Key words: treatment, palmoplantar lichen planus, review.

Introduction

Lichen planus (LP) is a common idiopathic inflammatory papulosquamous disorder that affects the flexor aspect of the wrists, legs, oral and genital mucosa. Nail and hair may be involved [1, 2]. Lichen planus can occur in many different shapes and locations such as annular, linear, hypertrophic, atrophic, bullous, ulcerative and pigmented ones [3–5]. Palmoplantar LP is a localized and uncommon variant of LP which is mostly resistant to treatment [6]. Interestingly, LP of palms and soles does not resemble classic LP and does not demonstrate Wickham's striae and its typical polygonal lesion [7]. Approximately in one-quarter of palmoplantar LP cases, typical lesions can be seen on the other skin and mucosal surfaces [6].

Many clinical variants of palmoplantar LP have been described in the literature such as erythematous scaly form which is the most common [7], pitted plaques [8], ulcerative lesions [8, 9], vesicle-like papules [10], umbilicated papules [7, 11], punctate keratoderma, perforating palmar LP [7, 11, 12] and petechiae-like lesions [13]. Multiple variants can occur simultaneously within one individual [14].

Palmoplantar LP can pose a diagnostic problem to the clinician as it resembles many dermatoses, such as psoriasis, punctate porokeratosis, lichen nitidus, punctate palmoplantar keratoderma, reactive perforating collagenosis, syphilis, arsenical keratoses, porokeratotic eccrine ostial and dermal duct nevus, perforating granuloma anulare and Bazex's syndrome [2, 15–18]. In spite of plentiful investigations carried out on LP, there is no treatment modality that has proved to be utterly satisfactory in treatment of palmoplantar LP [8]. There are many drugs such as sulfasalazine, metronidazole, griseofulvin, thalidomide and therapeutic modalities such as UVA1 radiation and extracorporeal phototherapy that have been used in the treatment of LP and generalized LP [17] but just a few case reports and drugs used in the treatment of palmoplantar LP.

Methods

An extensive literature search from two databases, PubMed and Google scholar, was performed. In this review article we have gone over about 24 articles and we

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have aimed to discuss all treatment modalities proposed and tested for palmoplantar LP in the literature.

The main search terms used were 'palmoplantar LP, acitretin, enoxaparin, cyclosporine, systemic corticosteroid, topical corticosteroid, retinoic acid, topical cyclosporine, topical tacrolimus, surgery, steroid cream, UVA1, metronidazole, sulfasalazine, hydroxychloroquine, mycophenolate mofetil, griseofulvin and thalidomide (Table 1).

Results

Acitretin

In a Chinese case report, a 46-year-old man presented with a 1-month history of asymptomatic LP on his hands, wrists, and feet and 3-day history of erosions on his glans. He was treated with acitretin at an initial dose of 0.5 mg/kg/day (30 mg/day), which resulted in a significant improvement after 1 month of treatment. The dose of acitretin was tapered gradually for 2 months. No recurrence was observed during the follow-up period of 4 months [17]. Lospinoso *et al.* demonstrated a significant clinical response to systemic acitretin therapy in a patient with coexistence of palmoplantar LP and lupus erythematosus overlap syndrome with painful and atrophic palmoplantar involvement as a characteristic feature of this condition [19]. In another case report, De Jong *et al.* reported coexistence of palmoplantar LP and lupus erythematosus that well responded to acitretin with prolonged remission [8]. Several potential mechanisms such as immunomodulation, anti-inflammation, antiproliferative effects and regulating epidermal proliferation and differentiation have been proposed to explain why retinoids have therapeutic effects in treating LP [20].

Enoxaparin

There is one case report of successful treatment of palmoplantar hyperkeratotic LP with enoxaparin in 2 patients. Enoxaparin was administered at a dose of 3 mg subcutaneously into the abdominal wall once a week.

Table 1. Main suggested treatment for palmoplantar lichen plantus

Drug	Case	Dosage	Length of treatment time	Reference
Acitretin	46-year-old man	0.5 mg/kg/day (30 mg/day)	One month	[17]
Enoxaparin	24-year-old male and 45-year-old male	3 mg subcutaneously into the abdominal wall once a week for 3 months	Improvement after 12 sessions	[3]
Topical corticosteroids	Unknown	Topically applied	Improvement after 2–9 months but recurrence is frequently seen after discontinuation of the drug	[21]
Combination of topical corticosteroids and oral acitretin	60-year-old woman	Topically applied corticosteroids + oral acitretin	Improvement after 2-month follow-up	[22]
Cyclosporine	63-year-old woman	3.5 mg/kg/day	Improvement after 4 weeks of treatment and then cyclosporine tapered off gradually over the next 4 weeks, giving a total treatment duration of 8 weeks	[4]
Systemic corticosteroid	25-year-old woman	40 mg/day prednisolone	6 weeks	[8]
Retinoic acid (topical)	68 patients	Topically applied	Few weeks	[7]
Topical cyclosporine	81-year-old female	500 mg of cyclosporine per day (50 mg cyclosporine/ml) in topical oily dressings	Twice a week for 10 months	[24]
Topical tacrolimus 0.1%	75-year-old woman	Topically applied twice daily	6 months	[25]
Topical tacrolimus 0.1%	65-year-old female	Topically applied twice daily	4 weeks	[26]
Combination of a low dose of cyclosporine and steroid cream	68-year-old woman	Cyclosporine A 2.5 mg/kg/day and steroid cream twice daily	4 months follow up	[21]
Combination of surgery and cyclosporine A	68-year-old man	Start of cyclosporine A 10 days before Thiersch split-skin graft until 10 months later	10 months cyclosporine A	[27]
Surgery	2 reports	Excision and split skin graft	14-year follow-up	[28]

Platelet count assays and coagulation parameters of the patients were within normal limits. A significant improvement was seen at the end of 12 sessions but oral mucosa lesions remained stable. No complication was seen in the patient [6]. Enoxaparin's mechanism of action is based on the inhibition of the heparanase enzyme released by active T lymphocytes. Since the heparanase enzyme is inhibited by low-dose, low-molecular-weight heparin, T lymphocytes cannot reach their target tissue [21, 22]. It also inhibits the cytokines' role in inflammation, and especially the expression of tumor necrosis factor α [21].

Cyclosporine

Karakatsanis *et al.* demonstrated a case of a 63-year-old woman who presented with pruritic eruptions on her palms, forearms, soles and the lateral aspects of the feet and who responded very rapidly to cyclosporine [7].

Systemic corticosteroid

A Turkish case report presented a 25-year-old woman with a palmoplantar LP resistant to topical corticosteroids who responded well to systemic corticosteroid therapy [10].

Combination of a low dose of cyclosporine and steroid cream

There is a case of good response of a 68-year-old retired woman with palmoplantar LP who did not respond to steroid ointments to low doses of cyclosporine A of 2.5 mg/kg/day, in association with steroid cream twice daily. There was no recurrence for 4-month follow-up [23].

Topical corticosteroids

Topical-systemic corticosteroids and other treatment regimens provide healing within 2–9 months in most cases of palmoplantar LP, but recurrence is frequently seen after discontinuation of the drug [24].

Combination of topical corticosteroids and oral acitretin

In another case report, a 60-year-old woman presented with a very unusual palmoplantar eruption characterized by violaceous pustule-like papules treated with a combination of topical corticosteroids and oral acitretin. The eruption responded dramatically and resolved within 2-month follow-up [25].

Retinoic acid (topical)

In a study on 68 patients suffering from palmar/plantar hyperkeratoses of different etiology, small doses of vitamin A acid (retinoic acid) applied topically, produced a striking improvement in hypertrophic LP of palms or soles; the regression was complete and in most cases permanent [9].

Topical cyclosporine

Topical cyclosporine, which is not absorbed by the normal stratum corneum, has been used in mucosal forms of erosive LP, without undesirable secondary effects. There was no detectable cyclosporine level in blood during treatment, which probably depended both on the concentration of the solution used and the surface of application [26]. Paçi and Silva reported a case of an 81-year-old female with just ulcerative LP on the sole of her right foot, without any other lesions. Treatment with topical cyclosporine was started on the affected skin with 500 mg of cyclosporine per day (50 mg cyclosporine/ml) in topical oily dressings applied on the plantar surface. The dressings were changed daily. The treatment was continued twice a week for 10 months with a considerable improvement. During the treatment cyclosporine was never detected in blood tests and the authors did not notice any undesirable secondary effects [26].

Topical tacrolimus 0.1%

It has been reported a case of a 75-year-old woman with ulcerative LP of the sole, who responded well to tacrolimus 0.1% cream prescribed for application once daily. After 2 months tacrolimus application was increased to twice daily and the ulcer had almost completely epithelialized after 6-month follow-up [27]. In another case report, a Saudi female patient with ulcerative LP of the soles resistant to many systemic and topical agents responded excellently to topical tacrolimus 0.1% ointment. Complete healing was reported in a few weeks as well as good maintenance during a follow-up period of more than 2 years [28].

Surgery and cyclosporine A

Patrone *et al.* demonstrated a recalcitrant case of a 68-year-old man with a 10-year history of painful, disabling, ulcerative LP on the soles of both feet who temporarily improved due to cyclosporine A. Cyclosporine A treatment was begun and after 10 days the ulcer on his left sole was covered with a Thiersch split-skin graft. The grafting was successful, so cyclosporine A was gradually reduced to smaller maintenance doses and 10 months later it was completely withdrawn. The result was good after eighteen months following grafting and 10 months after total withdrawal of cyclosporine A [29].

Surgery

There are two reports of recalcitrant and painful, hypertrophic ulcerative LP of the hands and feet in the English literature; in both, patients responded to surgical treatment with excision and split skin grafting. There was no recurrence after 14-year follow-up in one of them. The other one achieved a satisfactory long-term outcome. Accordingly, it has been suggested that surgical treatment should be considered in painful LP of the hands and feet [30].

Miscellaneous

There is a case of cutaneous LP and palmoplantar hyperkeratosis due to the use of imatinib mesylate for chronic myeloid leukaemia in a 57-year-old man. The skin lesions improved after discontinuation of imatinib mesylate but re-administration of the drug at a lower dose provoked a mild recurrence but skin lesions were well-controlled by topical corticosteroid treatment [31].

There are many other chemical and herbal drugs such as Aloe Vera, green tea [32, 33], sulfasalazine, metronidazole [18], mycophenolate mofetil [34], griseofulvin, thalidomide and therapeutic modalities such as PUVA and bath PUVA [35], excimer laser [36], UVA1 radiation and extracorporeal phototherapy used in the treatment of LP or generalized LP [18] or other palmoplantar dermatoses but just the above-mentioned drugs have been used in the treatment of palmoplantar LP. As mentioned before palmoplantar LP is a rare variety of LP, that is why we could not find any clinical trial and just case reports have been described in this manuscript.

Discussion

Palmoplantar LP can pose a diagnostic problem to the clinician as it resembles many dermatoses [2, 15–17]. In spite of plentiful investigations carried out on LP, there is no treatment modality that has proved to be utterly satisfactory in treatment of palmoplantar LP [8]. Many drugs have been used in the treatment of LP and generalized LP [18] but just a few case reports and drugs have been described in the treatment of palmoplantar LP. In this review article we have gone over about 24 articles and discuss all treatment modalities proposed and tested for palmoplantar LP in the literature but because palmoplantar LP is a rare entity we could not find any trial on this subject and just case reports have been found. Drugs such as acitretin, topical and systemic corticosteroid, enoxaparin, topical tacrolimus, topical and systemic cyclosporine and surgery have been used in the treatment of palmoplantar LP with promising results but for better management of this conundrum, additional studies and clinical trials are required.

Conclusions

In spite of numerous investigations carried out on LP, there is no proved satisfactory therapeutic modality in treatment of palmoplantar LP and additional clinical trials are required.

Conflict of interest

The authors declare no conflict of interest.

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