

Case Report

Palmoplantar Psoriasis Successfully Treated with Raw Natural Honey: A Case Report

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Article information

Received: November 6th, 2018; Revised: November 28th, 2018; Accepted: December 11th, 2018; Published: January 4th, 2019;

Cite this article

Al Meslamani L, Al Lenjawi B, Al Majid S, Mohamed H. Palmoplantar psoriasis successfully treated with raw natural honey: A case report. *Dermatol Open J.* 2019; 4(1): 1-6. doi: [10.17140/DRMTOJ-4-133](https://doi.org/10.17140/DRMTOJ-4-133)

ABSTRACT

Palmoplantar psoriasis is a disabling condition linked to significant reduction in quality-of-life. It is manifested by the development of hyperkeratosis and/or recurrent batches of sterile pustules with associated erythema, scaling, and fissuring with symmetrical distribution on the palm and soles. Many modalities of treatment exist including systemic therapies such as psoralen-UVA (PUVA), retinoids, corticosteroids cyclosporine and methotrexate. Many of these systemic agents have unwanted and severe side effects besides their high cost. Furthermore, new agents such as TNF-alfa blockers have been reported to cause paradoxical induction of pustular psoriasis following their use or withdrawal. As a result safe, topical and effective alternatives are highly needed in treating this chronic condition. We describe the clinical characteristics and evolution of a 68-years-old female with palmoplantar psoriasis who was treated successfully with topical raw honey. This report provides preliminary evidence to support the use of topical raw honey under occlusive dressing in the management of palmoplantar psoriasis.

Keywords

Palmoplantar psoriasis; Raw natural honey; Inflammation.

INTRODUCTION

Palmoplantar psoriasis is a disabling condition that is difficult to treat and is present in up to 40% of patients with plaque psoriasis.¹ It is a disabling condition that can manifest in a hyperkeratotic plaque-type, pustular form or combination. In comparison with plaque psoriasis on other areas of the body, palmoplantar psoriasis leads to a disproportionately greater impairment of health-related quality of life (HRQoL).² Psoriasis is a multifactorial condition influenced by numerous factors in its presence and severity, such as stress, exercise, alcohol, obesity, etc. Patients with palmoplantar psoriasis have difficulty walking, suffer a significant amount of pain in the palms and soles which may lead to an inability to work.²⁻⁴ Palmoplantar psoriasis typically represents a difficult to treat variety of psoriasis and unlike plaque-type psoriasis, pustular psoriasis is characterized by homozygous or compound heterozygous interleukin-36 (IL36RN) gene mutations leading to aberrations in IL-36R antagonist function.⁵ The thickened horny layer of palmar and plantar⁶ epidermis partially causes low bio-availability of classic topical anti-psoriatic drugs, hence the unsatisfactory results after prolonged usage. Systemic treatment on the

other hand may include psoralen-UVA (PUVA), systemic retinoids and a combination of both,^{7,8} but they often fail to give convincing results.⁹ Tumor necrosis factor (TNF) antagonists are successfully being used in the treatment of psoriasis. However, unexpected side effect of TNF antagonists include the new onset or worsening of psoriatic skin lesions,¹⁰⁻¹⁵ eczematous eruptions, bacterial infections, herpes simplex, cutaneous lymphomas, lichenoid eruptions, erythema multiforme, acute generalized exanthematous pustulosis and lupus erythematosus pustulosis. Acitretin, cyclosporins lead to quick remissions but recurrence rate limits their wide application. Here we present a case report in which a patient with palmoplantar pustular psoriasis showed complete healing with raw natural honey.

CASE REPORT

An otherwise healthy female subject, 68-years-old, presented to Umgwillinah Health Center, Doha, Qatar, with pustule palmar psoriasis (Figure 1), on her feet, showing numerous small flat pustules (2-3 mm in diameter), yellowish in color, on an erythematous basis.

Figure 1A. Involvement of Right Foot



Figure 1B. Involvement of Left Foot Prior to Treatment



The patient was complaining of continuous pain and burning sensation. She reported the appearance of her feet lesions about three months prior to presentation, and explained the emergence of new pustules in few hours, while older lesions were forming a yellowish crust which were falling spontaneously after few days. The patient does not smoke, had no family history of psoriasis or other skin diseases, was not on any medications and reported no contact with any topical irritants. Further clinical evaluation was negative for bone or joint pain suggestive of concomitant arthritis or Synovitis-Acne-Pustulosis-Hyperostosis-Osteitis (SAPHO) syndrome. Additionally, the patient did not report any symptoms suggestive of thyroid disease or gluten sensitivity (eg, diarrhea, flatulence, abdominal pain, steatorrhea). Family history was negative for thyroid and coeliac disease. During the clinical examination, no other lesions were observed in any other part of the body including the nails. A rheumatologic assessment showed no clinical joint involvement and blood investigations for inflammation and infections was negative. The patient had visited a dermatologist prior to presenting to our health center. He carried out clinical examination, took swabs and blood cultures for infections which revealed sterile pustules and negative serology for infections. Similarly, mycological and bacteriological test was carried and found to be negative. This was followed by a punch biopsy on which revealed subcorneal unilocular pustulosis filled with neutrophils and eosinophils in the upper dermis and mixed perivascular and diffuse infiltrate in the dermis (neutrophils, eosinophils, lymphocytes

and mast cells). Epidermal changes revealed (loss of granular layer, parakeratosis and psoriasiform epidermal hyperplasia).

On examination, the patient had bilateral well-demarcated erythema, hyperkeratosis, desquamation and multiple pustules on the instep, medial border and at the insertion of the Achilles tendon (Figure (1)). It involved at least 50 percent of the plantar surface significantly limiting her daily activities with no additional body involvement. The patient was instructed to apply raw honey directly on the lesions and cover it with Adaptic (glycerin based dressing) to prevent the absorption of natural honey away from the lesions and into the secondary cotton gauze bandage. The dressing was changed on a daily basis, and the patient was educated about a transient stinging sensation at the site of application due to the acidic nature of honey. After eight weeks the clinical picture of the right foot was substantially improved, showing a reduction of inflammation, desquamation, and complete disappearance of pustules (Figure (2a)). On the left foot similar finding were achieved with total resolution of the inflammation, erythema, desquamation and pustules (Figure (2b)).

Figure 2A. Right Foot Disappearance of Scales & Pustules 8 weeks Later



Figure 2B. Left Foot Showing Normal Skin After Treatment with Raw Honey



DISCUSSION AND CONCLUSION

Despite the wide range of therapeutic options, treatment of a patient with palmoplantar psoriasis can be challenging. Although systemic therapies often show initial efficacy, none the less relapse and

unwanted side effects along with resistance by some patients to any kind of therapy leads to frustration and disappointment by both patients and healthcare providers. According to a systematic review by Li *et al*¹⁶ current topical treatments including laser therapy, tazarotene ointment and methotrexate gel apart from phototherapy do not have sufficient evidence to justify their use. None theless, phototherapy needs to be administered over a long treatment period, around 21.9 months before noticeable improvements can be seen,¹⁷ it also causes erythema, irritation and burning.^{16,17,18} Topical methotrexate has been advocated as an adequate alternative to systemic side effects with less adverse effects.¹⁹ However, a small prospective, open label study involving fourteen patients showed variable results by Kumar *et al*.²⁰ Similar to PUVA various side effects have been reported with topical methotrexate including redness, burning sensation, purpura and blisters at the site of application.²¹⁻²³ Tar topical ointment had been studied in the treatment of Palmoplantar Psoriasis (PPP) by Kumar *et al*, however only 50% of patients reported improvements in their symptoms^{24,25} along with various side effects including pruritus, itchiness, folliculitis, staining, irritant contact dermatitis and redness.²⁶ Similar disappointing results had been obtained with topical retinoids where only 52.9% of patients with PPP achieved complete resolution maxacalcitol ointment where only 17% of test subjects reported marked improvements.^{27,28} Although topical corticosteroids are an integral part of the therapeutic options available to treat psoriatic lesions, numerous and common cutaneous side effects are undesirable and lead to dissatisfaction among patients and health care practitioners alike. The most common side effect being striae rubrae distensae, skin trophy and perturbed cicatrization. Steroid acne, hypertrichosis perioral dermatitis, telangiectasia, erythema, rubeosis steroidica and hyperpigmentation may also occur.²⁹ Furthermore, topical steroids may exacerbate cutaneous bacterial or fungal infections.³⁰

Maintaining corticosteroids efficacy and at the same time abolishing side effects represents a formidable challenge to clinicians and researchers alike. The use of raw of natural honey in the management of various cutaneous lesions including, seborrheic dermatitis,³¹ knee psoriasis,³² thermal burns,³³ second degree burns complicated by dermatitis³⁴ and chronic diabetic foot ulcers³⁵⁻⁴¹ provides a promising alternative remedy for PPP. The patient did apply various over the counter creams including aqueous cream, petroleum based jelly and glycerin prior to her presentation to us but was disappointed with the results. In our case, we specifically used a glycerin based barrier dressing to maximize contact of raw honey with the skin by preventing the absorption of honey onto the secondary dressing (cotton gauze). Application of honey provides a thick film that provides continuous supply of water and at the same time hinders water evaporation from the skin. Therefore, the water content of raw honey increases hydration in the stratum corneum and consequently leads to reduction in scaling and erythema and pruritus associated with psoriasis.

The anti-inflammatory effects of honey have been observed in animal models as well in clinical settings.⁴² Some compounds like prostaglandins and nitric oxide are major players in the process of inflammation. Honey is known to increase nitric oxide end products and decrease the prostaglandin levels. The efficacy

of natural honey in wound care has been attributed to its anti-inflammatory activity. Important constituents in honey thought to be responsible for its anti-inflammatory activity include flavonoids, specific polyphenols, phenethyl ester, and caffeic acid. Honey exerts its anti-inflammatory activity by suppressing the production and proliferation of inflammatory cells at the site of inflammation (wound), thereby preventing the prolonged inflammatory response, and at the same time enhances proinflammatory cytokine production, thereby helping normal healing to occur. Wound healing involves a remodeling process of the inflicted tissue, consisting of a systematic cascade of events comprising various interactions that are regulated by growth factors, cytokines, and proteases. An important marker of inflammation is the transcription factor nuclear factor-kappa beta (NF-KB). It stimulates proinflammatory activity which in turn contributes to an amplified inflammatory response, and stimulates genes encoding for proinflammatory cytokines tumor necrosis factor- α (TNF- α), interleukin (IL)-6, IL-8. As a result of enhanced production of proinflammatory cytokines, nitric oxide production is stimulated, an essential mediator of inflammation. Flavonoid in honey suppresses the production of nitric oxide and NF-KB activation.⁴³ Cost-effective, efficacious, topical and tolerable remedies are needed to treat this long-term disease due to the low quality of life patients with psoriasis have. Nonetheless rigorous clinical trials have to be conducted to validate the efficacy of natural honey with regards of type of honey, concentration of flavonoids and optimal duration of therapy.

In a recent Cochrane systematic review the authors concluded "Honey appears to heal partial thickness burns more quickly than conventional treatment (which included, soframycin-impregnated gauze, paraffin gauze polyurethane film, sterile linen and leaving the burns exposed) and infected post-operative wounds more quickly than antiseptics and gauze".⁴⁴ Another systematic review assessing the healing effects of honey dressings compared to silver dressings for acute or chronic wounds demonstrated the unequivocal result that honey had an even more positive effect than silver on wound healing.⁴⁵ The rationale of using honey is that it not only provides moisture but rather exhibits anti-inflammatory actions thereby helping in the management of psoriasis. Honey anti-inflammatory activities is partially due to the presence of at least 11 phenolic compounds such as kaempferol and caffeic acid which leads to a decrease in the myeloperoxidase activity in $75\pm 3\%$, which suggests a lower leucocyte infiltration that was confirmed by histological analysis. This extract also provided a reduction of $55\pm 14\%$ in the production of reactive oxygen species.⁴⁶ Furthermore, honey flavonoid significantly inhibits the release of pro-inflammatory cytokines such as TNF- α , IL-1 β and the production of reactive oxygen intermediates (ROS).⁴⁷

The anti-inflammatory effects of honey can be summarized by several mechanisms of action: (a) inhibition of leukocyte infiltration⁴⁸ (b) inhibition of matrix metal-loproteinase-9 (MMP-9) production in keratinocytes, inhibition of ROS formation⁴⁹ (c) inhibition of cyclooxygenase-2 (COX-2) and iNOS expression.⁵⁰

Phenolic compounds (including flavonoids) are demonstrated to exert the primarily anti-inflammatory effects of honey.⁵¹

Chrysin, a flavonoid discovered in honey, has been demonstrated to have a powerful anti-inflammatory action.⁵² It suppresses lipopolysaccharide-induced COX-2 expression through the inhibition of nuclear factor for IL-6 Deoxyribonucleic acid (DNA)-binding activity⁵³ and inhibits the release of NO and pro-inflammatory cytokines such as TNF- α and IL-1 β . Furthermore, Majtan et al⁵⁴ discovered two other flavonoids in aqueous extract of honey, namely kaempferol, and apigenin which suppresses the activity of TNF- α -induced Multiple Medical Problems (MMP)-9 expression in HaCaT. Their findings are in line with Palmieri et al where apigenin inhibited TNF- α -induced MMP-9 expression *via* modulating Akt signaling in endothelial cells.⁵⁵

Honey has been used here as an alternative therapy due to the preference of the patient (patient centered care) who refused flatly the main stream medical approach, so the wish of the patient was respected and as a result topical honey was used. The idea of having natural honey as a first line agent is not the intent of this case report but rather it's an eye opener for the scientific committee to think of utilizing a safe and cost-effective approach which can only be advocated after a rigorous multicenter randomized controlled clinical trial.

CONSENT

The authors have received written informed consent from the patient.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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