

Treatment of stasis dermatitis using short term Topical Perilla seed oil : A Case Report

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ABSTRACT

Stasis dermatitis is a common skin disease in clinical practice and related to chronic venous insufficiency caused by venous hypertension. Signs and symptoms of Stasis dermatitis include lower leg edema, superficial vein dilatation, varicose vein, venous ulcers, inflammatory and trophic skin changes with purpura, and hemosiderosis. The lesion locates around ankle and lower leg area. This report represents a 70-year-old Asian man with stasis dermatitis who was treated with short term Topical Perilla seed oil for approximately five days in addition to the standard treatment of stasis dermatitis. The perilla seed oil has high proportion of polyunsaturated fatty acid such as omega 3, 6, 9 fatty acids which can reduce inflammation and improve the vascularity. Within the period of treatment, the lesion of stasis dermatitis was improved dramatically. As a result, topical perilla seed oil may be an alternative product for treatment of stasis dermatitis.

KEYWORDS: Stasis dermatitis, chronic venous insufficiency, Perilla seed oil

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การรักษาผื่นผิวหนังอักเสบที่ข้อเท้าระยะสั้น ด้วยน้ำมันงาขี้ม่อน : รายงานผู้ป่วย

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บทคัดย่อ

ผื่นผิวหนังอักเสบที่ข้อเท้า (Stasis Dermatitis) เป็นโรคผิวหนังอักเสบที่เกิดร่วมกับอาการแสดงอื่นของภาวะหลอดเลือดดำบกพร่องเรื้อรัง (Chronic Venous Insufficiency) พบได้บ่อยในเวชปฏิบัติที่เกิดจากภาวะ venous hypertension ของขา ลักษณะทางคลินิกจะพบผื่นผิวหนังอักเสบที่ข้อเท้าร่วมกับลักษณะทางคลินิกของ venous hypertension มีอาการบวมของข้อเท้าและขา บวม การขยายตัวของหลอดเลือดดำที่ขา เส้นเลือดขอด และแผลแตก บริเวณผิวหนังฝ่อบางรายมีผื่นจ้ำเลือดขนาดเล็ก (purpura), hemosiderosis รอยโรคจะพบบริเวณข้อเท้าและขาช่วงล่าง ในรายงานของผู้ป่วยเพศชาย อายุ 70 ปี มีลักษณะอาการทางคลินิกเข้าได้กับการวินิจฉัยผื่นผิวหนังอักเสบที่ข้อเท้าร่วมกับภาวะหลอดเลือดดำบกพร่องเรื้อรังได้มีการนำน้ำมันงาขี้ม่อนแบบทามาใช้เป็นเวลา 5 วันร่วมกับการรักษาโรคผิวหนังอักเสบที่ข้อเท้าตามมาตรฐาน ได้แก่ การใช้ยากุ่มคอร์ติโคสเตียรอยด์ร่วมกับการทำแผลแบบเปียกเพื่อลดการอักเสบและบรรเทาอาการคันซึ่งน้ำมันงาขี้ม่อนมีส่วนประกอบหลักเป็นกรดไขมันไม่อิ่มตัว เช่น โอเมก้า 3, 6, 9 ซึ่งมีส่วนช่วยในการลดกระบวนการอักเสบและเพิ่มการไหลเวียนของเลือด จึงถูกนำมาใช้ร่วมกับการรักษาตามมาตรฐานอื่น ๆ จากการรักษาพบว่ารอยโรคดีขึ้นเป็นอย่างมากในช่วงเวลา 5 วันที่ใช้น้ำมันงาขี้ม่อนแบบทา น้ำมันงาขี้ม่อนแบบทาจึงเป็นหนึ่งในทางเลือกเพิ่มเติมในการรักษาผู้ป่วยที่มีอาการแสดงของผื่นผิวหนังอักเสบที่ข้อเท้า เพื่อลดการอักเสบของผิวหนัง

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Introduction:

Chronic venous insufficiency is a common medical problem that can result in significant morbidity and mortality. The pathogenesis of chronic venous insufficiency is the development of venous hypertension, particularly within the deep venous system.¹ Sustained venous hypertension is associated with histologic and ultrastructural changes that cause increased vascular permeability and the long term release of inflammatory mediators which result in trophic skin changes, and ulceration. Stasis dermatitis is a common inflammatory dermatosis of the lower extremities occurs in patients with chronic venous insufficiency. Signs and symptoms of stasis dermatitis include inflammatory and trophic skin changes, pruritus, hyperpigmentation and edema.²⁻⁴ Signs of advanced venous disease include lymphedema, lipodermatosclerosis, and ulceration.

The management of Stasis dermatitis involves the treatment of the underlying chronic venous insufficiency, symptomatic treatment of skin dryness, inflammation, pruritus and prevention of ulceration. The inflammation and decrease in vascular support are the problems in patient with stasis dermatitis. *Perilla frutescens* seeds are a good source of polyunsaturated fatty acids which contains high proportions of omega-3 fatty acids, at 54–64%. The omega-6 component is around 14% and omega-9 is also present in perilla seed oil which can prevent abnormal clotting, reduce inflammation, and relax blood vessels.⁵

This case presents about the short-term use of topical perilla seed oil as an adjuvant treatment in stasis dermatitis by anti-inflammatory effect from omega 3, 6, and 9 fatty acids.

Case presentation:

A 70-year-old Asian man presented with pain in his lower legs, progressive brown patches and varicose veins over a period of four years. He was a cook in the noodle shop hence he has to stand all day during work. On physical examination, brownish patches, dilated veins and reddish punctiform spots, edema were identified on his lower third of lower leg and ankle regions (Figures 1-4).

A Doppler ultrasonography showed saphenous vein insufficiency and collateral varicose veins. The stasis dermatitis was diagnosed based on the clinical appearance of the skin lesions such as erythema, hyperpigmentation, scaling, edema, erosions with the history of venous insufficiency and other clinical signs of chronic venous insufficiency, including pitting edema, hyperpigmentation and varicosities. The patient was previously treated with general measures to reduce edema and venous hypertension (eg, leg elevation, daily walking) and Continuous compression therapy for chronic venous insufficiency and medication such as topical Desoximetasone for a month. Since we knew that the topical perilla seed oil has high proportion of Omega3 fatty acid and contains amount of omega 6, 9 which can reduce inflammation so he was prescribed with short term topical Perilla seed oil in a five-day therapy as an adjuvant therapy. The lesion was improved dramatically.

As we can see from the figure 1-4 ; the patient presents chronic stasis dermatitis with sign of chronic venous insufficiency. Patient has hyperpigmentation, lipodermatosclerosis, atrophie blanche, and varicosities on the lower leg. After a day of treatment, decreased in reddish punctiform spots and purpura was observed. (Figure 5-6) After second day of treatment, dry skin and scaling were improved. (Figure 7-8) After third day of treatment, the scaling was exfoliated and there were no new reddish punctiform spots and purpura. (Figure 9-12) After fourth day of treatment, the texture and moisture was dramatically improved. (Figure 13-14) After fifth day of treatment, there were an improvement in hyperpigmentation, lipodermatosclerosis, atrophie blanche. (Figure 15-17)



Figures 1-4 : Patient with chronic stasis dermatitis both lower legs



Figures 5-6 : 1 day after treatment



Figure 7-8 : 2 days after treatment



Figure 9-12 : 3 days after treatment



Figure 13-14; 4 days after treatment with topical perilla seed oil cream



Figure 15-17 ; 5 days after treatment with topical perilla seed oil cream

Discussion

Case report showed that the clinical improvement of stasis dermatitis with topical perilla seed oil had a good result from the reduction of inflammation. Perilla seed oil is rich in omega 3 fatty acids, on metabolism gives eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), which can displace arachidonic acid (AA) from cell membranes. These omega-3 fatty acids are also released with AA by phospholipases and act as substrate inhibitors of conversion of AA by cyclo-oxygenases(COX) and the terminal synthases to the pro-inflammatory oxygenated inflammatory mediators known as eicosanoids.

EPA is structurally identical to AA with the exception of its additional n3 double bonds and can be converted to eicosanoids that resemble eicosanoids. In addition to these effects on inflammatory eicosanoid synthesis, Perilla oil has been shown to reduce the production of the inflammatory cytokines IL-1 β and TNF α by monocytes stimulated in vitro.⁵⁻⁸

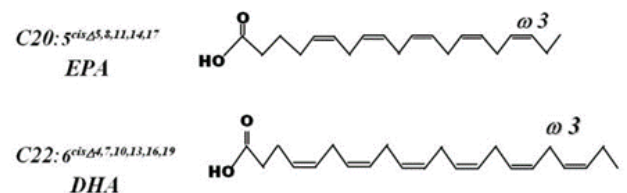


Figure 18 Chemical Structure of Common Omega-3s

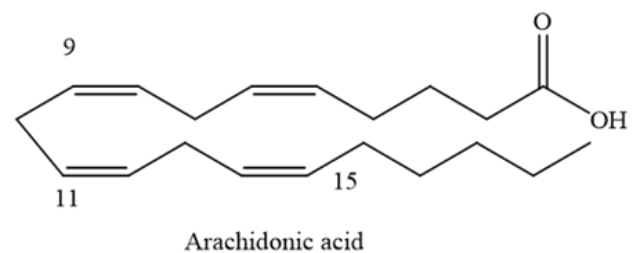


Figure 19 Chemical Structure of Arachidonic acid (AA)

Topical applications of plant oils may have different effect on the skin according to their composition and the pathophysiological context of the skin. The composition varies by different extraction methods. When applied topically, constituents of plant oils (triglycerides, phospholipids, FFAs, phenolic compounds and antioxidants) may act synergistically by several mechanisms such as promoting skin barrier homeostasis, anti-oxidative activities, anti-inflammatory properties, direct and indirect (upregulation of antimicrobial peptides) anti-microbial properties, promoting wound healing; and anti-carcinogenic properties¹⁵ (Figure 20).

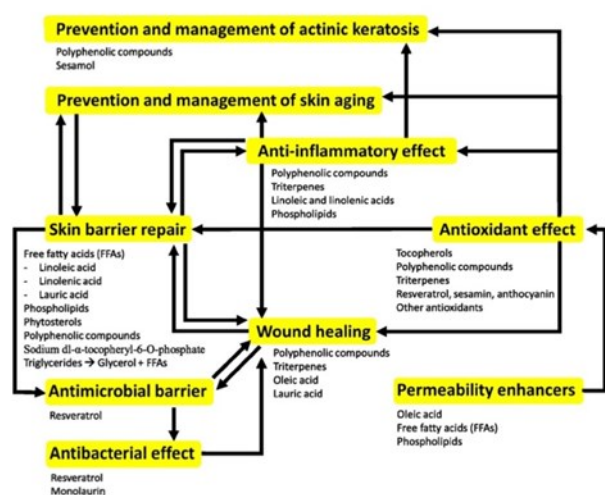


Figure 20 The potential benefits of plant oil topical application are diverse.

Physiological responses are the result of the interaction between the bioactive compounds and the pathophysiological context of the skin¹⁵

Since it was well known about the advantaged of many plant oil product, clinical studies of perilla seed oil are still insufficient; therefore, further study needs to be done to validate its therapeutic effects and to ensure its safety and efficacy.^{16,17}

Future studies can add to current findings to allow for better understanding of the plant oils especially perilla seed oil , with the potential to develop dermatological treatments and skin care products using this oil.

To the best of my knowledge, this approach has not been described in the literature and thus this is a novel therapeutic option as an adjuvant treatment. The important aspect of therapy is the duration of treatment. This has proven to be around five day, after which time an inflammatory sign and lesion texture were improving remarkably. The daily follow up with photographic documentation was performed for clinical evolution control purposes and was approved by the patient. The use of Perilla seed oil for short periods, such as a five day course of treatment, seems to be efficacious to reduce the inflammation. As what I have described is a case report, further controlled studies, including randomized double-blind controlled trials, which aim to reproduce the results and define the optimal time and efficacy rate of treatment are necessary in the use of topical Perilla seed oil.

Conclusion:

This is the first case report of using topical Perilla seed oil as an additional novel proposal in the treatment of stasis dermatitis to reduce the inflammation.

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