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Application of Medical Moisture Retention Cream (ALHYDRAN®), A New Option in the Treatment of Venous Eczema

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Abstract

Aim: Patients with venous eczema may suffer considerably from redness, crusts, pain, flaking and itching. In general, as treatment, compression therapy and indifferent ointments/crèmes are used, often together with topical steroids, though the latter may exhibit considerable side effects. This study aims to explore the effect of Medical Moisture Retention Cream (MMRC = ALHYDRAN®) on the symptoms and complaints of patients suffering a venous eczema, often next to an existing VLU. The working mechanism of MMRC involves a combination of the moisturizing effect of Aloe Vera gel and the moderate occlusion effect of added fatty acids.

Method: In an open case series, 18 patients attending an outpatient wound clinic with moderate venous eczema (maximum TIS score<3) participated. MMRC was applied twice a day and its use was clinically assessed for 4 consecutive weeks. Next to the registration of patient characteristics and capturing the clinical details of the skin lesions in weekly pictures, a VAS scale to assess the patients' and caregivers' experience with the treatment was used.

Results: During the application of MMRC, the signs and symptoms of a dry, itchy, scaly, crusty and erythematous skin, fainted in all patients. The skin condition of most participating patients improved and there was also a visibly better skin hydration status in all patients. Relevant aspects such as 'night rest', 'mood' and 'social participation' improved, except for 2 patients. The clinical skin condition of one of these deteriorated in a week, which was not related to the use of MMRC. No side effects to the use of MMRC were observed. The wound care experienced nurses assessed MMRC as effective and feasible.

Conclusion: This study shows that MMRC is effective, safe, and feasible in the treatment of venous eczema. Future Randomized Controlled Trials are necessary to compare the efficacy and feasibility of MMRC with the application of other hydrating creams/ointments and topical steroids.

Keywords: Venous eczema; Venous leg ulcer; Moisturizer

Introduction

A venous leg ulcer (VLU) is due to sustained venous hypertension, which results from chronic venous insufficiency (CVI) [1-3]. Venous hypertension is usually caused by a combination of factors of which venous disease, obesity, and immobility are the most important. Venous eczema is an erythematous dermatitis and according to the Clinical Etiologic Anatomic and Pathophysiologic (CEAP) classification it is classified as C4a [4,5]. The prevalence of community dwelling VLUs is between 0.18% and 1% [6,7]. Over the age of 65, the prevalence increases to 4% [8]. Due to the aging population, within the next forty years there is an expected grow of people suffering from immobility and obesity, and this may lead to an additional increase of the incidence of venous hypertension and venous leg ulceration as well [9].

Venous hypertension increases the size and permeability of the dermal venules and arterioles leading to extravasation, or leakage of fluid and electrolytes, plasma protein and macromolecules, such as fibrinogen, into the dermis [10]. This leakage initiates a cascade of inflammatory reactions, including leukocyte activation which increases metabolic activity in the affected areas of skin [11,12]. Over time, inflammation causes varying degrees of injury to the vessels, tissues and skin, and lengthens the healing process [13,14]. Varices, corona flebectatica, edema, hyperpigmentation (brown discoloration), hyperkeratosis, atrophy blanche, induration and lipodermatosclerosis are physical signs of CVI. However, the most serious clinical consequence, related to CVI, is a (venous) leg ulcer [1].

Venous eczema often appears in addition to a VLU, and results in an annoying erythematous, weeping, scaly, itchy and aching skin [9]. In the urban area of 24 cities in Italy the prevalence of venous eczema was 3.4% [15].

Appropriate wound assessment helps in the treatment and management of VLUs. Optimizing wound management focuses on assessment and treatment beyond the wound edge, also including the periwound skin. In developing a treatment plan, it is important to ensure the correct diagnosis and to develop a treatment plan that takes into consideration the holistic needs of the patient, as well as addressing the wound and also periwound skin problems that may impact healing [16,17].

A healthy stratum corneum forms an effective permeability barrier that restricts water loss from the body and blocks the penetration of harmful irritants and allergens [18,19]. Both patients with dry skin conditions and patients with a healthy skin commonly use moisturisers. However, a lack of knowledge persists regarding the effects of moisturisers on skin barrier function [18,20]. Studies conducted on individuals with both healthy and diseased skin have shown that some moisturisers tend to weaken the skin barrier function, whereas others may strengthen it, and these discrepant results might be caused by the varied compositions of moisturisers [18,20].

Topical steroids are often used to treat the existing periwound eczema, even though there still is little evidence for their effect [21]. In addition, they may exhibit systemic side effects e.g. on bone density, glaucoma and growth as a result of local treatment. Therefore one is searching for less harmful creams of which Medical Moisture Retention Cream (MMRC) is an example. MMRC is an oil in water emulsion with freshly processed pure Aruba Aloe Vera gel, oils and other fatty ingredients. The working mechanism of MMRC involves a combination of the moisturizing effect of the Aloe Vera gel with a moderate occlusion effect of the special fatty ingredients of the hydrating cream [22]. The balanced degree of occlusion and hydration bring the Trans Epidermal Water Loss back (TEWL) to values slightly above the level of normal skin [22,23].

In this case series, Medical Moisture Retention Cream was explored in patients having symptoms and complaints of an existing venous eczema, often next to an existing VLU.

Methods

Design

Descriptive study design, a case series.

Population

Patients were included when they attended an outpatient wound clinic and suffered from a moderate venous eczema according to their Three Item Severity score (TIS), with the maximum TIS score<3 [21]. They were at least 18 years of age and signed an informed consent. They were excluded when they were known to have an allergy to one of the components of MMRC or when they already had used the cream in the four weeks before their start in this study (Table 1).

Procedure

At the start of evaluation the duration of the skin problems as well as their precise location (upper leg, knee, goiter, lower leg or ankle) were registered using a prepared and Medically Ethically approved evaluation template. Except for patients' age and sex and duration of their skin disorder, the local treatment before using MMRC and also the relevant main underlying diagnosis and co-morbidities were registered. Related symptoms of the skin problem, e.g. the experience of a dry and/or itchy and/or flaky skin, were noted. Additionally to the clinical assessment, the Ankle Brachial Pressure Index (ABPI) or their Toe Ankle Index (TAI) was measured. The ABPI or TAI indicates whether the actual skin disorder has an underlying peripheral arterial disease (ABPI <0.6; TAI <0.5). At the start of evaluation and thereafter every week at the time of evaluation, a photograph of the affected skin was taken. At each evaluation patients were asked to score three questions regarding their well-being (night rest, mood, social participation) in an analogue scale from 1-10 (1 = totally disagree; 10 = totally agree). The first question was whether their 'night rest' was negatively affected by the venous eczema. Question two and three asked if their 'mood' and/or 'social participation' were negatively affected by their skin problem.

MMRC was applied at least twice a day up to a few centimetres beyond the visually affected area and its use was clinically assessed for the maximum of 4 consecutive weeks after their inclusion visit.

At the end of the evaluation period, patients' satisfaction with the received MMRC treatment was noted as well as whether their initial complaints had fainted. At the clinic, the nurses were asked if the MMRC therapy had been effective and /or feasible and to score their assessment on an analogue scale from 0 to the maximum of 10 (not effective vs. effective and not feasible vs. feasible, respectively). The nurses were also asked to give their professional clinical impression whether the affected skin area of the patients showed to be 'improved', 'not changed', 'worsened' or 'healed'.

Ethical considerations

From all patients informed consent was obtained. Permission from the medical ethics committee was received to undertake the case series, using a prepared and Medically Ethically approved evaluation template. Confidentiality was maintained throughout the evaluation period.

Results

Finally 18 patients with a venous eczema were included in this case series. The male to female ratio was 12:6. The mean age was 69.8 years (SD 13.6). All skin problems were situated at the patients' lower legs (Table 1).

Inclusion Criteria	Exclusion criteria
Patient or legal guardian received a comprehensive explanation of the evaluation and provided informed consent	Known allergy for one of the ingredients of MMRC
Aged over 18 years	Patient treated with MMRC within the previous 4 weeks
Patient has: (extreme) dry and itching skin associated with venous eczema or dry and/or itchy and/or flaky skin around venous or mixed leg ulcers	No informed consent
Affected skin area treatment at least twice a day	
The patient has signed an informed consent	

Table 1: Patients with a chronic wound, suffering from moderate venous eczema: inclusion and exclusion criteria.

Main diagnosis

12 patients clinically suffered from a venous leg ulcer, 5 patients had a post-traumatic leg ulcer and 1 patient had a pressure ulcer. All 18 patients clinically suffered from chronic venous insufficiency and had a

venous eczema, whereas the existence of serious peripheral vascular diseases was excluded. In all cases the conducted ABPI and TAI were measured higher than 0.9 or 0.75, respectively.

Use of other creams or ointments before the start of the MMRC application

One patient (patient number 7, Table 2) used fluticasone 0.05% cream, once a day, three weeks in advance of the MMRC. Another patient used hydrocortisone 1%, once a day, for two weeks until the start of MMRC (patient number 13, Table 2). Also indifferent creams such as milking grease (patient number 11, Table 2) and cetomacrogolis cream (patient number 16 and 18, Table 2) were used in advance.

Complaints related to the skin disorder

At the start of application of MMRC all 18 included patients had some signs of a dry, itchy, scaly, sometimes crusty and erythematous skin, which fainted during the consecutive 4 weeks of application of MMRC (Table 2).

Photographs of the affected skin

After 4 consecutive weeks of application of MMRC, the patient' s skin disorder was visually assessed by the clinical nurses as 'improved' in 17 cases. One patient clinically showed a much more scaly skin only, after one week of application of MMRC. Local treatment with triamcinolone acetonide 0.1% cream applied once a day, for two weeks long, let her signs and symptoms completely disappear (Figure 1).

Wellbeing of the patients at start of application of MMRC (by analogue scale 1-10)

With regard to their 'night rest', 'social participation' or 'mood', 11 patients had no complaints at the start of the MMRC application.

In particular, 3 patients complained about their 'night rest' (and scored 2, 2 and 9 out of 10 on the analogue scale) and 3 patients experienced that their mood was negatively affected (scores of 2, 2 and 3, respectively). Another 2 patients experienced that their social participation was hampered because of the existing venous eczema (scores of 8 and 2, on the analogue scale) (Table 2).

Wellbeing of the patient after 4 weeks of application of MMRC (by analogue scale 1-10)

After 4 consecutive weeks of application the 'night rest', 'mood' and 'social participation' of all patients improved, except for 2. After 4 weeks of application 1 patient complained of his negatively affected mood and also experienced a hampered social participation (scores of 3 and 2, respectively). However, he had a better 'night rest' better than before the start of application of MMRC (Table 2).

Just after one week of application of MMRC the scores of a second patient deteriorated considerably. After one week of application she scored high numbers on 'night rest', 'mood', and 'social participation' (scores of 8, 8 and 5, respectively). The wound care experienced nurse assessed that patient's clinical situation had worsened considerably one week after the start of the study (Table 2).

Professional assessment

After 4 weeks of follow up of patients the wound care experienced nurses were asked to assess the efficacy and feasibility of the MMRC by means of an analogue scale. The nurses scored a mean of 6.6 (out of 10) on the efficacy of the MMRC, and a mean of 7.6 (out of 10) on its feasibility (Table 2).

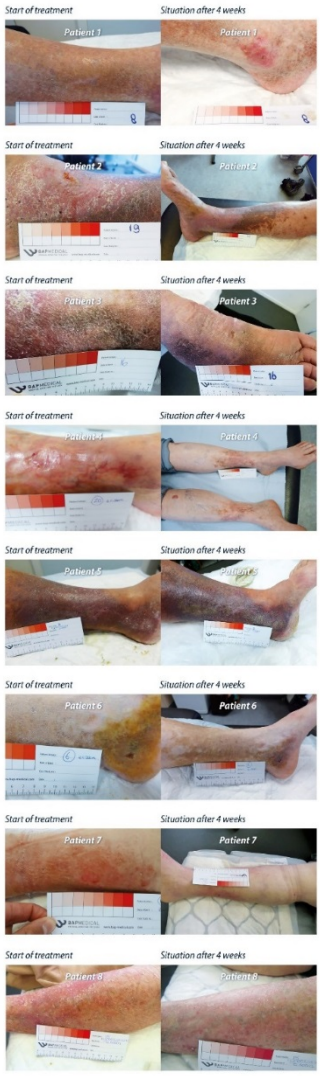

Figure 1: Examples of pictures taken from 7 patients their affected skin at the start of the study and after 4 weeks of consecutive application of MMRC.

It was the nurses' clinical impression that the affected skin of 17 out of 18 patients had 'improved' (Table 2).

Age (yrs)	Sex (M/F)	'Night rest' at start	'Night rest' after 4 weeks	'Mood' at start	'Mood' after 4 weeks	'Socially hampered' at start	'Socially hampered' after 4 weeks	Effective	Feasible	Treatment effect
58	M	2	1	1	3	1	2	4	8	Improved
54	M	1	1	1	1	1	1	6	7	Improved
77	M	1	1	2	1	1	1	8	9	Improved
67	F	1	1	1	1	1	1	9	9	Improved
76	M	1	1	1	1	1	1	5	7	Improved
49	M	1	1	1	1	1	1	8	8	Improved
54	M	1	1	1	1	1	1	6	7	Improved
85	M	1	1	1	1	1	1	8	8	Improved
74	M	1	1	1	1	1	1	6	7	Improved
83	M	1	1	1	1	8	1	7	7	Improved
87	F	1	1	1	1	1	1	10	10	Improved
79	M	1	1	1	1	1	1	4	4	Improved
82	F	1	1	1	1	1	1	3	6	Improved
62	M	2	1	2	1	2	1	5	7	Improved
73	F	1	8	1	8	1	5	1	1	worsened-stop trial after one week
83	F	1	1	1	1	1	1	8	8	Improved
71	M	1	1	1	1	1	1	7	8	Improved
42	F	9	1	3	1	1	1	8	9	Improved-follow up of 21 days

Table 2: Patient and skin disorder related data: results of 4 consecutive weeks of application of MMRC and its effectiveness and feasibility assessed by wound care experienced nurses.

Discussion

In general, the participating patients were satisfied using MMRC twice a day, for the dry, itchy, scaly, sometimes crusty and erythematous skin they experienced, in association with the venous eczema they suffered. After 4 consecutive weeks of application the skin condition of most patients ameliorated and was visibly better hydrated than before (Figure 1). The initial complaints of patients fainted and the 'night rest', 'mood' and 'social participation' of most patients improved, except for 2. After 4 consecutive weeks use of MMRC, the wound care experienced nurses assessed the skin disorder of the patients as 'improved' in 17 (out of 18) cases, and the use of the MMRC effective (mean score of 6.6 out of 10) and feasible (mean score of 7.6 out of 10) as well.

Optimal skin care includes an alleviation of complaints, the prevention of relapses and the modification of the tactile and visual characteristics of the surface of the skin [24,25]. Nowadays, reparation of the skin barrier or prevention of barrier dysfunction is believed to be the cornerstone in the therapeutic management of eczema. Since the effects of moisturizers on skin barrier function have not yet been well documented, selection of a suitable moisturizer for the treatment of venous eczema is rather a matter of trial-and-error [26].

In other studies the measurement of the TEWL has been used to demonstrate an immediate increase of water in the stratum corneum and prove of the formation of water restricting fatty barrier layer of the skin surface, increasing its hydration [27]. The specific composition of the moisturizer has also been held responsible for the time period a patient remains free of relapses [27,28].

Medical Moisture Retention Cream (MMRC) is an oil in water emulsion with Aloe Vera gel as main ingredient. It contains both freshly processed pure Aruba Aloe Vera gel, oils and fatty ingredients. Hoeksema et al. performed an *in vitro* study to investigate the occlusive and hydrating properties of MMRC. Their scar-like model introduced in healthy volunteers was ideally suited to mimic the two main properties of abnormal scarring i.e. an increased TEWL and a decreased hydration state of the stratum corneum. Hoeksema et al. concluded that MMRC *in vitro* is able to repair the skin barrier and to create a balanced degree of occlusion and hydration, bringing back the TEWL to values slightly above the level of normal skin [22].

Vuylsteke revealed that the higher the average C-class (C3-C6), according to the CEAP) classification, the more symptoms patients show [29,30]. Although sleep disturbance (80%), pain (74%), and lower limb swelling (67%) have been frequently expressed in the presence of a venous eczema [31], in this case studies 16 patients (out of 18) did not express pain, and experienced no 'night rest' problems, 'mood' disturbances or any hampering of their 'social participation'. The absence of these signs and symptoms in these case studies may be the result of the inclusion criteria, including patients who had a maximum TIS score of 3.

In the management of venous eczema, topical steroids are normally used to decrease the intensity of skin effects and also to reduce the number of exacerbations [21]. This has also been supported by 1 patient in this case series. Indeed, the local treatment with triamcinolone acetonide 0.1% cream applied once a day, for two weeks long, did disappear the signs and symptoms of the patient who showed a much more scaly skin just after one week of application of MMRC.

But basically, the use of topical steroids should be avoided because of the possibility of sensitizing the skin (32) and the possibility of causing systemic side effects e.g. on bone density, glaucoma and growth [33,34]. The most effective therapy for venous eczema has not been clearly defined yet. The possibility of introducing side effects as result of the application of topical steroids has led to a request for reasonable and safer alternatives, to treat patients effectively and safely as well. The application of MMRC fits in this philosophy.

Case series focus on the clinical course of events in terms of patient's response to therapy, represent real-life care and provide a rationale for future high-quality well designed, large scale randomized, and placebo-controlled trials to document therapeutic effects on disease severity, biophysical parameters, quality of life, and patient acceptability. Case series are non-comparative because they lack a control arm. Therefore, treatment outcomes in the selected cases series cannot be compared with those that did not receive treatment. Randomized Controlled Trials are necessary not only to compare the efficacy and feasibility of MMRC with other kind of moisturizers, but also to examine whether MMRC is able to delay the time to relapse.

Conclusion

In a case series of 18 patients suffering from a moderate venous eczema, the use of MMRC appeared to be effective and feasible. Complaints of a dry, itchy, scaly, sometimes crusty and erythematous skin fainted after a few weeks of use, twice a day. Except for 2 patients, the 'night rest', 'mood' and 'social participation' of the other 16 patients improved in 4 weeks' time. Because of this positive result, it can be advised that it is relevant to conduct future Randomized Controlled Trials to compare the efficacy and feasibility of MMRC with the application of other hydrating creams/ointments and to examine whether relapses of eczema and also the prescription of steroids can be delayed.

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