

## Effectiveness of LPG® treatment in morphea

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### ABSTRACT

**Background** The LPG® technique, also known as Endermology® treatment, is a noninvasive technique consisting of a tissue mobilization process in which a skin fold is created between two rollers, stretching the underlying tissue and mobilizing the fold. The LPG® technique is very effective in treating scars. Because the lesions of morphea or circumscribed scleroderma are similar to atrophic scars, it seemed reasonable to treat them with a method proven helpful for scars.

**Materials and methods** We treated 17 lesions of 10 patients (four males and six females) with the diagnosis of morphea ranging in age from 17 to 78 years (mean age 55 years) and investigated and documented the evolution of their lesions and changes in their quality of life.

**Results** In all patients there was a large improvement in the clinical appearance of the lesions, the induration and the pain. Elasticity was particularly increased, not only based on clinical findings but also as documented with objective assessment. The acceptability of the treatment was good and the patients reported an improved quality of life.

**Conclusion** The LPG® technique (Endermology®) is an adjunctive treatment for morphea. It cannot eliminate the disease but can relieve the pain, soften the skin and improve the quality of life for these patients.

**Key words:** morphea, LPG®, Endermology®, scleroderma

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### Introduction

The LPG® technique (LPG Systems, Technoparc de la plaine BP35, 30 rue du Dr Abel, 26902 Valence cedex 09, France), also known as Endermology® treatment, is a noninvasive technique consisting of a tissue mobilization process between two rollers, creating a skin fold, stretching the underlying tissue and mobilizing the fold. Several studies, both animal and human, have been performed evaluating the method of action and the efficacy of the LPG® technique in various settings. The treatment appears to most clearly affect tissue elasticity<sup>1–4</sup> and is very effective in treating scars.<sup>5–7</sup>

Because morphea lesions are similar to atrophic scars, it seemed logical to treat them like scars. No reliable curative therapy is known for this progressive disease, although some published reports suggest that D-penicillamine, penicillin, topical corticosteroids or ultraviolet A1 (UVA1) phototherapy may be efficacious. Using the LPG® technique, as it was shown to be helpful for burn scars, we treated 10 patients with morphea to investigate and document the evolution of their lesions and their quality of life.

### Materials and methods

We treated 17 lesions in 10 patients (four males and six females) with the diagnosis of morphea ranging in age from 17 to 78 years (mean age 55 years). The duration of their disease was in each case longer than 1 year and the patients had already been treated with penicillin and/or UVA1 without significant results. Their disease was stable and the laboratory values were within normal limits.

Ten of the lesions were located on the extremities (seven were located on the legs, three on the arms). Seven lesions were located elsewhere (three on the back, two in the groin and one each on the chest and neck). The patients were treated with the preinstalled LPG® programme for scars about once a week during 13 weeks on average. They received no other therapy during this treatment period.

### Evaluation

The results were divided into two groups: subjective and objective.

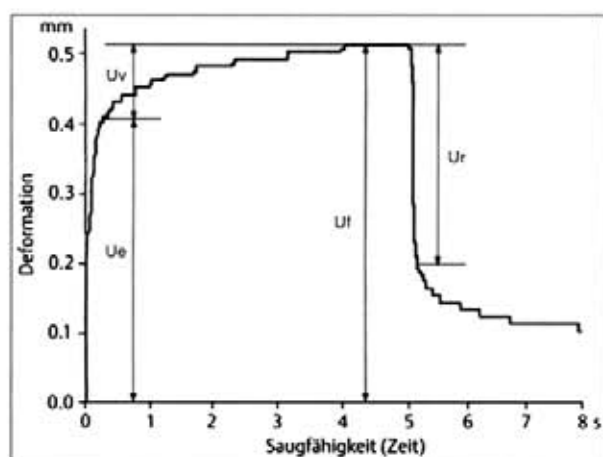


fig. 1 Computerized Cutometer® curve from normal skin (Saugfähigkeit = suction, Zeit = time).

The *subjective evaluations*, such as pain, softness, improvement in appearance of lesion and quality of life, were assessed with questionnaires from patients and a single physiotherapist, by palpation, and by the rating of both an experienced dermatologist and the same physiotherapist. The quality of life reflected the individual impression of the patient, and was not derived from a sophisticated questionnaire. These subjective evaluations were made before and at the end of the treatment.

For *objective evaluations* we determined the changes in the skin elasticity and viscosity using a Cutometer® (Courage + Khazaka, Cologne, Germany). Sonography examinations (20 MHz) were performed at the beginning of the study, but the margins of the sclerotic lesions were so ill-defined or sometimes even not visible that we did not use this method in all further examinations. Histopathological examinations were not performed.

The Cutometer® is a device in which a probe exerts suction on the skin, elevating a small area and then releasing it immediately. By calculating the responses to different suction or tension levels on a computer, the elasticity and viscosity of the skin can be quantified. The mathematical curve produced by the computer is shown in fig. 1. From these values  $U_v/U_e$  is the viscous component of the skin and  $U_r/U_f$  is the biological elasticity. We used the following parameters:  $R_0 = U_f$ ;  $R_6 = U_v/U_e$  (viscosity); and  $R_7 = U_r/U_f$  (elasticity).

## Results

### Subjective results (fig. 2)

#### Induration

The induration was estimated by the therapist and the dermatologist using a score ranging from 0 = not existing, 1 = minimal, 2 = moderate and 3 = strong. The mean values fell during treatment from 2.41 to 1.41, that is 1 point better or 40% improvement.

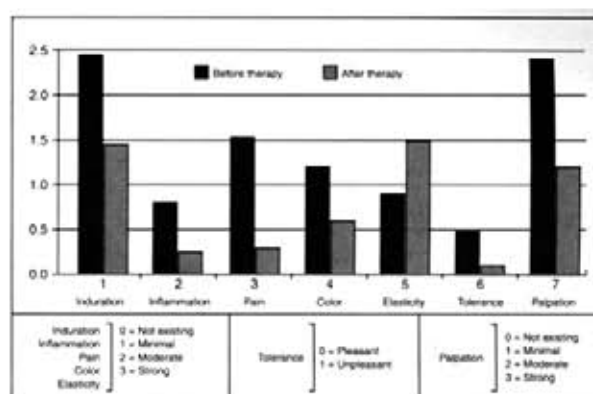


fig. 2 Subjective assessments.

#### Inflammation

The inflammation was estimated based on the visual redness using the same scores as for induration. The mean values fell during treatment from 0.88 to 0.24, that is approximately a 70% improvement.

#### Pain

The patients scored their pain, once again using the same scoring system. The mean values fell during treatment from 1.65 to 0.41, that is more than 1 point better or about 75% improvement.

#### Colour of the skin (figs 3 and 4)

Hyper- and hypopigmentation were estimated with the same scoring system. The mean values fell during treatment from 1.18 to 0.76. This was the weakest change in all the results, but dyschromias need a longer period of time to fade.

#### Elasticity

The elasticity was estimated during massaging. The mean values increased during treatment from 1.0 to 1.59. This clear improvement of 60% could also be documented with the objective assessment using the R7 values (fig. 6).



fig. 3 Lesion on the left arm before treatment.

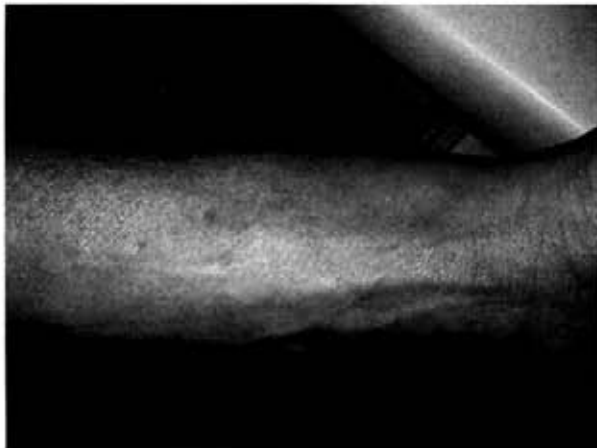


fig. 4 Lesion on the left arm after 3 months of treatment.

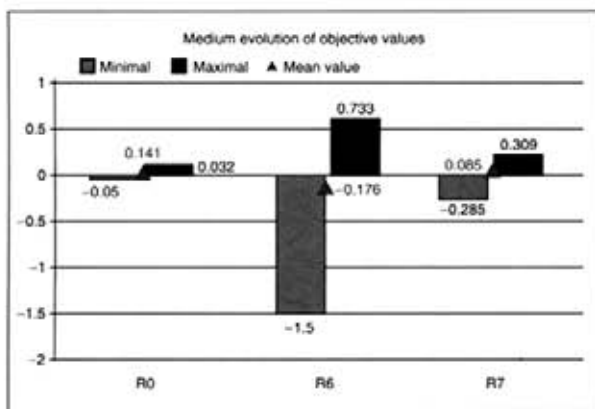


fig. 5 Other subjective results.

#### Tolerance

Tolerance was scored as 0 = massage unpleasant and 1 = massage pleasant. In eight lesions the tolerance changed from unpleasant to pleasant, in three lesions the tolerance was unpleasant before and after treatment and in six lesions the massage was pleasant before and after the treatment time. All patients, including those who found the massage unpleasant, were willing to continue the treatment with the LPG device.

#### Palpation

Palpation was carried out by the therapist and the dermatologist using the scores: 3 = very firm, 2 = firm, 1 = soft, 0 = normal. The mean values fell during treatment from 2.41 to 1.88. This is an improvement of more than 1 point or 20%. This improvement could also be confirmed in the objective assessment using the R6 values (fig. 6).

#### Other subjective results (fig. 5)

These scores were marked by the patient and the physiotherapist uninfluenced by the patient on a scale, ranging from -10 (very weak) to +10 (excellent).

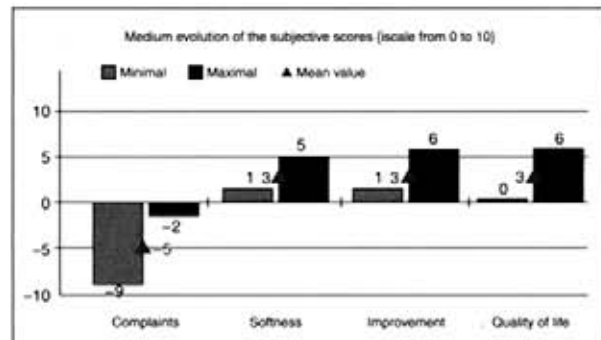


fig. 6 Objective values.

*Complaints* (such as pain, tightness): the values fell 5 points, a clear improvement.

*Softness of the lesions*: the values increased 3 points, once again a positive response.

*Clinical impression*: the values increased 3 points, confirming an improvement.

*Quality of life*: the values increased by 3 points.

#### Objective values obtained with the Cutometer® (fig. 6)

*R0 = the overall mobility of the skin*: the values increased slightly, but not significantly, during treatment.

*R6 = viscosity of the lesion*: the values fell during treatment.

*R7 = elasticity of the lesion*: the values increased slightly during treatment.

In all patients the viscosity decreased and the elasticity increased, probably due to the drainage of the tissue fluid out of the morphea lesion. If this drainage process also removes inflammatory agents in the tissue fluid, it could be that morphea will stop and not progress.

## Conclusion

In all patients there was a large overall improvement in the lesions as well as a reduction in induration and pain. Elasticity was particularly increased, as shown not only by the clinical data but also by the objective assessment (R7 value). The tolerance of the treatment was good and the quality of life improved. All patients were willing to continue the treatment with the LPG® device. They were pleased that for the first time, their disease was being actively treated. They were very grateful for this approach and the positive results. The physiotherapist also preferred this type of active treatment with the resultant patient satisfaction.

In conclusion, the LPG® technique is an excellent form of treatment for morphea and it should also be tried in other types of scleroderma. It cannot cure this disease, but can relieve the pain, soften the skin and therefore improve the quality of life for these patients.

Because of our good experiences during the study, we now use the LPG® technique for all patients with scleroderma, regardless of concomitant topical or systemic therapy. The initial results are as good as those we achieved in this study.

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