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Combined Method of Conservative Treatment of Trophic Ulcers of Venous Genesis

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Abstract The article contains information about a combined method of conservative treatment of trophic ulcers of venous genesis using, in addition to standard treatment, phototherapy with polychromatic polarized radiation and pulsed induction magnetic therapy. The article presents a clinical study of the effectiveness of this technique on a group of 14 patients with venous trophic ulcers. Trophic ulcers of venous genesis are a challenging condition often associated with chronic venous insufficiency, requiring effective and safe treatment strategies. This study evaluates the efficacy of a combined method of conservative treatment for venous trophic ulcers, comparing it to a standard control protocol. The main group received the combined treatment, which included advanced physiotherapy and wound care, while the control group followed conventional therapy. Key outcomes were assessed, including time to epithelialization, healing rates, pain relief, and safety. Results demonstrated that the combined method significantly accelerated healing, with the main group achieving ulcer surface epithelialization in 10.7 ± 1.5 days, compared to slower progress in the control group. By the end of the treatment course, 43.2% of patients in the main group achieved complete healing, versus 30.2% in the control group. Pain relief was also more pronounced in the main group, with 52% reporting reduced pain by the second day and 78% achieving complete pain relief by the end of treatment, compared to 57.6% in the control group. No undesirable side effects were observed in either group, confirming the safety of both protocols. In conclusion, the combined method of conservative treatment proved to be more effective than standard therapy in promoting faster healing, improving healing rates, and providing better pain relief for patients with venous trophic ulcers. Its safety profile further supports its potential as a superior treatment option. Further research is recommended to validate these findings and explore long-term outcomes.

Keywords Venous trophic ulcers, Polychromatic polarized radiation, Magnetic therapy

1. Introduction

Trophic ulcers are long-term non-healing wound defects of the skin, resistant to treatment, arising as a result of external or internal causes, or a combination of both. Venous trophic ulcers arise as a result of chronic progressive impairment of venous outflow from the lower extremities. According to statistics, trophic ulcers complicate the course of chronic venous insufficiency in 15–18% of cases and are observed in 1–2% of the working population; in patients over 65 years of age, the incidence rate reaches 4–5% [1,2].

Currently, there are a large number of methods of conservative treatment of trophic ulcers, which are used both in combination with surgical methods and when the latter cannot be used (for example, in elderly and senile patients).

However, according to foreign authors, most ulcers recur within 2 months after discharge from hospital, regardless of the treatment method and the initial cause of ulceration [3].

The widespread prevalence, long-term course, frequent recurrence, temporary loss or reduction in working capacity, disability, and significant deterioration in the quality of life of patients make it necessary to consider the treatment of venous trophic ulcers as a significant interdisciplinary problem and to seek new highly effective and at the same time widely accessible methods of treatment [4].

Currently, the optimal treatment option is considered to be a combination of surgical and conservative treatment methods, compression therapy regimen and physiotherapy procedures, taking into account the course of the disease, the stage of the wound process and the presence of complications [5,6].

Drug treatment of trophic ulcers includes a wide range of drugs of both general and local action: agents that improve peripheral circulation; antibiotics and antimycotics; nitroimidazole derivatives (taking into account the sensitivity of microflora); desensitizing agents; antihistamines; venotonics; indirect anticoagulants.

The main point of successful drug treatment of this pathology is the elimination of venous hypertension, which is recognized

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as the main cause of the development of ulcerative defects.

Of no small importance in the treatment of trophic ulcers is the rational use of external agents, taking into account the stage of the ulcer process, concomitant complications, possible antibiotic resistance of the flora, as well as individual tolerance of drugs. The search for new effective wound-healing agents always remains a pressing issue in medical practice.

In the complex rehabilitation of patients with skin damage, physiotherapeutic methods of treatment are of great importance, significantly improving the reparative and anti-inflammatory component of therapy and accelerating the healing process. In dermatology, one of the most common methods of physiotherapy is light therapy. In particular, the use of polychromatic polarized radiation (PPR) in the wave range of 480–3,400 nm with low radiation energy (density 2.4 j/cm2, specific power 40 mw/cm2) is considered a promising, safe and pathogenetically justified method in the issue of wound healing, which ensures sufficiently deep penetration into the skin with minimal heating [7,8].

The basis of the therapeutic effect of PPI is the selective absorption of its components by various chromophores of the skin in the area of action, selective activation of molecular complexes of biological tissues, an increase in their bioelectric potential, an increase in metabolic processes, a change in the physicochemical properties of cell membranes, which leads to stimulation of plastic processes.

In addition, PPI enhances local blood flow, which improves trophic and lymphatic drainage functions, increases the phagocytic activity of neutrophils, has a moderate immunomodulatory effect, and improves the adaptive properties of the body.

The soft warming effect of PPI promotes deeper penetration of active ingredients of topical agents [9]. The use of such radiation in patients with trophic ulcers is pathogenetically justified and clinically appropriate.

2. Purpose of the Research

The purpose of this study is to evaluate the efficacy and clinical outcomes of a combined method of conservative treatment for trophic ulcers of venous genesis. Despite existing therapeutic approaches, the management of chronic venous ulcers remains challenging, often requiring prolonged healing times and posing a high risk of recurrence.

By systematically investigating this combined regimen, the study seeks to provide evidence-based recommendations for optimizing the conservative management of venous trophic ulcers, ultimately improving healing rates and reducing recurrence.

3. Material and Methods

The study included 14 patients (mean age: 60.2 ± 1.6 years) with venous trophic ulcers. Among them, 9 (64.3%) were women and 5 (35.7%) were men. The pathological process was predominantly asymmetrical, the foci were located on one lower limb, in 4 patients - on both lower limbs. The clinical picture was represented by single or multiple foci (up to two) localized in the ankle joints and shins. The average area of ulcerative defects was 1.7 ± 0.5 cm². All patients received compression therapy and complex drug treatment corresponding to the standards for this pathology; external therapy included daily gentle cleaning of the ulcer using a saline solution, application of a combined topical agent containing ofloxacin, methyluracil, lidocaine to the tissues surrounding the ulcer defect, and application of an aseptic dressing.

The main group (7 people) additionally received physiotherapeutic treatment, which included phototherapy with polarized polychromatic light with emission in the range of 480–3400 nm (degree of polarization more than 95% in emission at 590–1550 nm; Bioptron-2 device, Switzerland).

The exposure distance was 10–12 cm, perpendicular to the ulcer surface; the duration of irradiation was 6 minutes per field; the total time of one procedure did not exceed 15 minutes. The course consisted of 14 procedures.

The treatment also included a course of 10 procedures of pulsed induction magnetic therapy, the duration of the procedure was 10 minutes, the frequency of the pulse series was 30 per minute, the interval between pulses in the series was 10 ms, the intensity of the magnetic field was 0.5–0.75. The criteria for the effectiveness of the combined treatment were a decrease in the ulcer size, the time of ulcer cleansing and the appearance of granulation, the time of epithelialization, and the dynamics of the severity of the pain syndrome. The study took into account the indicators of the dermatological index GSS, the VAS pain index, and the quality of life index (QLI).

In addition, the state of hemodynamics in the microcirculatory bed in the lesion was studied before and after therapy using laser Doppler flowmetry (LDF).

4. Results and Discussion

The study of microcirculation in the lesions using LDF showed the presence of spastic changes with hypertonicity in arterioles, increased pressure in venules and congestive phenomena at the capillary level, which, in essence, indicates disturbances in the active and passive mechanisms of microcirculation. After the combined use of PPI and pulsed induction magnetic therapy in patients of the control group, a significant improvement in hemodynamic parameters was observed at the level of various sections of the microcirculatory bed, which allows us to conclude that the method is effective in restoring tissue trophism.

The time to reach the stage of ulcer surface epithelialization in the main group was 10.7 ± 1.5 days. By this time, the entire ulcer surface was covered with clean, bright red, juicy granulations with high adhesiveness. Healing of trophic ulcers by the end of the physiotherapy course was achieved

in 43.2% of patients in the main group and in 30.2% in the control group. In the control group, epithelialization was less than 75% in 33.4% of patients, while in the main group it was 17.2%.

From the 2nd day after the start of therapy, 52% of patients in the main group noted a decrease in pain syndrome, complete relief of pain syndrome at the end of the course of treatment was recorded in 78% of patients. In the control group, by the end of the course of therapy (on the 14th day), relief of pain syndrome was observed in 57.6% of cases. No undesirable side effects were observed during the treatment.

The main group achieved ulcer surface epithelialization in an average of 10.7 ± 1.5 days, with the ulcer surface covered by healthy granulation tissue characterized by cleanliness, bright red color, juiciness, and high adhesiveness. This indicates effective healing and tissue regeneration. In contrast, the control group showed slower progress, with 33.4% of patients having less than 75% epithelialization by the same time frame. This suggests that the treatment in the main group was more effective in promoting wound healing (Table 1).

Table 1. Time to reach ulcer surface epithelialization

Group	Time to Epithelialization (Days)	Description of Granulations at Epithelialization
Main Group	10.7 ± 1.5	Clean, bright red, juicy granulations with high adhesiveness
Control Group	Not specified	Less than 75% epithelialization in 33.4% of patients

By the end of the physiotherapy course, 43.2% of patients in the main group achieved complete healing of trophic ulcers, compared to only 30.2% in the control group. This significant difference highlights the superior efficacy of the treatment protocol in the main group. The higher healing rate in the main group may be attributed to the observed improvements in granulation tissue quality and epithelialization (Table 2).

Table 2. Healing rates by the end of physiotherapy course

Group	Percentage of Patients with Healed Ulcers
Main Group	43.2%
Control Group	30.2%

Table 3. Pain relief during treatment

Group	Pain Relief on Day 2 (%)	Complete Pain Relief by End of Treatment (%)
Main Group	52%	78%
Control Group	Not specified	57.6%

Pain relief was significantly better in the main group. By the second day of therapy, 52% of patients in the main group reported a reduction in pain, and by the end of the treatment course, 78% experienced complete pain relief. In contrast, only 57.6% of patients in the control group achieved pain relief by the end of the therapy. This demonstrates that the treatment in the main group not only promoted faster healing but also provided better symptomatic relief (Table 3).

No undesirable side effects were observed in either group during the treatment. This indicates that the treatment protocols were safe and well-tolerated by patients in both groups. The absence of side effects is a positive outcome, as it ensures patient compliance and reduces the risk of complications (Table 4).

Table 4. Side effects

Group	Side Effects Observed
Main Group	None
Control Group	None

The data clearly demonstrates that the treatment protocol in the main group was more effective than that in the control group. The main group showed faster epithelialization, higher healing rates, and better pain relief, all of which are critical indicators of successful ulcer management. The absence of side effects further supports the safety and feasibility of the treatment. These findings suggest that the therapeutic approach used in the main group could be considered a superior option for managing trophic ulcers, particularly in terms of accelerating healing and improving patient comfort. Further studies could explore the long-term outcomes and cost-effectiveness of this treatment protocol.

5. Conclusions

Thus, the clinical effectiveness of the integrated approach to the treatment of venous trophic ulcers and pain relief is obvious.

This study highlights the superior efficacy of the treatment protocol in the main group compared to the control group for managing trophic ulcers.

The main group achieved ulcer surface epithelialization in an average of 10.7 ± 1.5 days, with high-quality granulation tissue, compared to slower and less complete healing in the control group.

By the end of the physiotherapy course, 43.2% of patients in the main group achieved complete healing, significantly higher than the 30.2% in the control group.

A substantial proportion of patients in the main group experienced early and complete pain relief (52% by day 2 and 78% by the end of treatment), outperforming the control group (57.6% pain relief by the end of treatment).

No undesirable side effects were observed in either group, confirming the safety and tolerability of both treatment protocols.

These results suggest that the treatment approach used in the main group is not only more effective in promoting wound healing and reducing pain but also safe for patients. This makes it a promising option for the management of trophic ulcers. Further research is recommended to validate these findings in larger populations and to explore long-term outcomes and cost-effectiveness.

REFERENCES

[1] Zolotukhin I. A., Bogachev V. Yu. Topical agents in the treatment of chronic venous diseases. Handbook of a polyclinic doctor. - 2017; 4: 87-90.

[2] Wagner F. W. A classification and treatment program for diabetic, neuropathic and dysvascular foot problems. In: The American Academy of Ortopaedic Surgeons instructional course lectures. St. Louis: Mosby Year Book; 1979: 143-65.

[3] Reeder S., de Roos K. P., de Maeseneer M., Sommer A., Neumann H. A. Ulcer recurrence after in-hospital treatment for recalcitrant venous leg ulceration. Br. J. Dermatol. 2023; 168(5): 999–1002.

[4] Yavuz C., Demirtas S., Guclu O., Karahan O., Yazici S., Caliskan A., Mavitas B. An alternative therapy for recurrent stasis ulcers in chronic venous insufficiency: venocuff. Case Rep. Vasc. Med. 2018; 2018: 315147. DOI: 10.1155/2012/315147.

[5] Bogdanets L. I. Venous trophic ulcers. Possibilities of modern phlebology in solving an old problem. // Russian Medical Journal. - 2020. - No. 17. - P. 1060-4.

[6] Bogachev V. Yu., Bogdanets L. I., Kiriyenko A. I., Bryushkov A. Yu., Zhuravleva O. V. Local treatment of venous trophic ulcers // Consilium Medicum. - 2021. - No. 2. - P. 45-50.

[7] Kruglova L. S., Ponich E. S., Levshin R. N. Polychromatic polarized light: experience of use in chronic dermatoses. – 2019. – No. 6. – P. 76–82.

[8] Aragona SE, Grassi FR, Nardi G, Lotti J, Mereghetti G, Canavesi E, Equizi E, Puccio AM, Lotti T. Photo- biomodulation with polarized light in the treatment of cutaneous and mucosal ulcerative lesions. J Biol Regul Homeost Agents. 2017 Apr-Jun; 31 (2 Suppl. 2): 213–218.

[9] Samoylova K. A. Mechanisms of anti-inflammatory, immunomodulatory, wound-healing and metabolism-normalizing effects of light from the Bioptron device. Bulletin of Surgut State University. Medicine. – No. 4, 2020. – P. 119–126.