

Case report:**Hypertensive ulcer of lower extremity (Martorell's syndrome): clinical case with the treatment improvement***Duzhiy I¹, Popadynets V², Nikolaienko A³, Lyndin M⁴, Sikora V⁵***Abstract**

Introduction. Martorell's syndrome (MS) is a rare disease associated with chronic progressive hypertension which complicates ulcer defects on the extremities. It requests individual approach to treatment with antihypertensive medications, which help to reduce pathogenesis of the ulceration development. Therefore the aim of this study was to find new treatment methods of this disease. **Case presentation.** A 83-year-old female Ukrainian patient presented with an ulcer on the right calf, which was extremely painful at night. After all examination it was diagnosed: stage 2 hypertension, high risk, Martorell's syndrome, right lower limb trophic ulcer of the hypertonic genesis. For the treatment of MS we used the combination therapy, which included tissue suturing on the whole area of the ulcer and auto-dermoplasty with PRP applications. After that was noted intense regenerative processes and recovery of the patient. **Conclusions.** Chronic leg ulcers are rarely caused by Martorell's syndrome. It requires the complex approach to the treatment under obligatory antihypertensive therapy with its further prolongation. The complex therapy improved by the platelet-rich auto plasma activates the therapeutic effect, which results in intensive healing of the ulcer and faster improvement in pain relief. The platelet-rich auto plasma may become an economic method of treatment the ulcers of any genesis.

Keywords: Martorell's syndrome; hypertensive ulcer; chronic leg ulcers.

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Introduction

Although medication of the majority of somatic diseases is being improved, treatment of chronic leg ulcers remains a stubborn problem. According to the literature, about 0.5% of the adult population in the western countries still suffers from this pathology, and there is no favorable dynamics. Blood supply disorders are among prevailing reasons for the leg ulcers ¹.

Martorell's syndrome (MS)(also known as a hypertensive ischemic leg ulcer, or hypertonic lower leg ulcers), firstly described in 1945, is a rare disease associated with progressive extremity ulcers. This

nosology occurs in no more than 5% of the total lower extremity ulcers. But in fact this percentage is probably higher regarding underdiagnosed etiology of the trophic changes ².

Severe systemic arterial hypertension is the main etiologic factor provoking lower extremity ulceration related to MS ("a disease caused by another disease"). The development of the disease is provoked by skin damages ³. Early signs of the disease are reddish-blue papules or exanthemas gradually changing into the ulcer. Slowly progressive ulcerations are not deep, with weak granulations and slight discharge. The stigma of MS is the increasing pain, becoming

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extremely severe at night ⁴. Most patients are traditionally diagnosed with “trophic ulcer” and treated by standard medications, which leads to ambiguous results ⁵.

The majority of authors agree that the main pathogenetic factor in MS is an angiospasm and a stenosis of hemo-microcirculatory vessels, causing endothelial proliferation and subendothelial hyalinosis in hypertrophied arterioles ⁶. Traditional treatment of the chronic leg ulcers still includes a necrectomy, a tight bandage, hyperbaric oxygenation, a dermanaplasty along with medications (antibiotics, analgesics etc.)⁷.

Case presentation

A 83-year-old female Ukrainian patient presented with an ulcer on the right calf, which was extremely painful at night. The early signs of the disease appeared 4 years ago, when an insect sting resulted in redness and severe itching. After some days the area of exanthema became black, a painful ulcer appeared with a scab over it. The patient has had hypertension for 17 years (with arterial pressure varied between 150/110–200/120 mm Hg). The systemic antihypertensive therapy was not used. The treatment was mostly local. Medications taken previously improved the general condition of the patient, and the ulcer became less painful and cleaner. Response to the multiple auto-dermoplasty of the leg ulcer was unsatisfactory.

Upon examination the patient's condition was stable with some complains for arterial pressure of 180/110 mm Hg. The posterior tibial artery and dorsalis pedis artery pulse was palpable, no varix presented.

The lower third of the right calf showed deep ulceration with severe serous and purulent secretion, necrosis layers and granulation tissue on borders. The ulcer had an irregular shape, soft borders and was painful upon palpation. The skin around the ulcer was hyperemic and swollen with local hyperthermia (*Figure 1*).



Figure:1. Right lower extremity of the patient with Martorell's syndrome. Ulceration on the lower third of the right calf.

Blood and urine investigation revealed a normal picture, blood glucose level of 5.0 mmol/l. The oscilloscope and Doppler studies revealed good flow in the lower limb vessels.

Results of the tests and examination helped to diagnose: stage 2 hypertension, high risk, Martorell's syndrome, right lower limb trophic ulcer of the hypertonic genesis. Antihypertensive medications were “Enap-H” 10mg/twice daily, “Atenolol” 25 mg/twice daily.

MS combination therapy was applied. Deep tissue silk suturing (4-0) on the whole area of the ulcer was performed under local anesthesia (by Kniazhev's method). After that auto-dermoplasty with the anterior abdominal wall skin grafts sized 2 x 1.5 cm was applied on the cleaned ulcer area (*Figure 2*).



Figure 2. Right lower extremity of the patient with Martorell's syndrome. Ulceration after an operation.

After an operation the local treatment was improved by the platelet-rich auto plasma (PRAP) application. The blood of the patient (60 ml/each bandage) was taken immediately before the manipulation and centrifuged at 1000 rpm for 10 minutes. Thus the blood was turned into 2 layers: the lower layer of red cells and the upper yellowish layer of platelets and other formation elements. The upper layer was taken with a sterile syringe in separate sterile tubes and additionally centrifuged at 1500 rpm for 15 minutes. The received PRAP was activated by 10% calcium chloride and applied to the wound. The procedures were performed every second day.

The sutures were removed 12 days after. Application of PRAP lasted 20 days (10 bandages).

The combination therapy resulted in improvement of the patient's general condition with marked better sleep and pain relief. Thus, analgesics were discontinued. After 3 weeks, the blood pressure became normal (125-140/90-80 mm Hg).

After 3 weeks, the lesion became cleaner and partly epithelialized. After 6 weeks, the ulcer had complete epithelialization (*Figure 3*).



Figure 3. Right lower extremity of the patient with Martorell's syndrome. Results after 6 weeks of treatment

The woman was discharged after improvement of the condition and she continued to take antihypertensive medications. Control examinations after 6 and 12 months showed no skin defects and slight soft scars. The patient was instructed to continue treatment with antihypertensive medication and to have periodic visits with the surgeon.

Discussion

MS is a rare disease associated with chronic progressive hypertension. It requests individual approach to treatment with antihypertensive medications, which help to reduce pathogenesis of the ulceration development^{3,6,7}.

We used the combination therapy for MS, which included tissue suturing on the whole area of the ulcer and auto-dermoplasty with PRAP applications (under the lasting antihypertensive therapy). The healing effect exceeded our expectations: fast improvement in pain relief, intensive epidermization of the ulcer. It should be mentioned that we have already treated MS previously, although no PRAP applications used. Complete healing was presented only after 10 weeks with prolonged painful lesion.

Thus, the patient treated with improved methods became pain free much earlier than those treated with Kniazhev's method alone.

PRAP application is a simple and economic approach to the treatment of the ulcers with no contraindications. A large amount of promoting substance (platelet, vascular, epidermal etc.) provokes intensive epidermization of the ulcer and improved blood supply. From the other hand, the presence of immunoglobulin and a lot of cytokines foster cleaning of the lesion, prevent its infection; activate immune anti-inflammatory local response of the body⁸. Under the auto-dermoplasty, all these measures result in intensive regenerative processes and recovery of the patient.

All the above-mentioned shows that this economic approach is an effective solution in MS treatment, which leads to positive results within the short term. Moreover, we recommend using it in treatment of chronic ulcers of any genesis (excluding tumor genesis), which we practice ourselves and achieve positive results.

Conclusions

Chronic leg ulcers are rarely caused by Martorell's syndrome. It requires the complex approach to the treatment under obligatory antihypertensive therapy with its further prolongation.

The complex therapy improved by the platelet-rich auto plasma activates the therapeutic effect, which results in intensive healing of the ulcer and faster improvement in pain relief.

The platelet-rich auto plasma may become an economic method of treatment the ulcers of any genesis.

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