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- Title:** SCENAR and burn patients. Mechanism of action in terms of the functional systems theory.
- Key words:** SCENAR-therapy, skin burns, polyparametric signal, functional system

Annotation: The article studies the effectiveness of different methods of SCENAR-therapy in 96 male patients at the age of 18 to 80 with heat injury. During the research, SCENAR was used applying 3 different methods described in the article, in three groups of patients as both combined therapy and monotherapy. Parameters of oxidative-antioxidative blood systems were studied; general clinical examinations, planimetry, and photo registration of burn wounds were performed before and after the treatment. The author suggests a hypothesis on SCENAR's performance in heat injuries. He hypothesizes that the effectiveness of different methods of SCENAR-therapy is implemented through polyparametric signal which allows the brain to start a system of non-specific activation and makes the functional system of dermal recovering become complete and closed, respectively functioning. SCENAR-therapy also has a local multifunctional effect.

SCENAR AND BURN PATIENTS. MECHANISM OF ACTION IN TERMS OF THE FUNCTIONAL SYSTEMS THEORY

Importance of the matter. Skin as an organ developed from the same germinal layer as the brain and acts as its continuation and receptor screen which connects us with and detaches from the outside world.

Dermal functions are very different: mechanical protective function, receptor (pain, sense of touch, temperature etc), thermoregulatory, respiratory, external secretory (sweat and oil glands), chromogenetic, endocrine, immune, and excretory. Skin has energetic functions which are insufficiently explored but widely used by reflexologists in practice. Biologically active dots, interdot spaces, and spaces over the skin take part in the performance of these functions.

In terms of integral positions, the skin is a "peripheral brain" and the most intellectual body's membrane. All the events in the body reflect as different symptoms on the skin, and vice versa! This is why, neural, humoral, and probably energetic and holographic mechanisms were created by the nature. A mechanism of self-regeneration is also genetically programmed in the skin.

The damage of the cutaneous covering caused by diseases and traumas results in deprivation of many functions. The loss of skin due to burn traumas seems to be the most dramatic one. A burn, as a mighty stress, is combined with pain, loss of plasma, contamination, and intoxication.

The analysis of the modern therapeutic methods and the materials of conferences and symposia show that methods of sanogenetic activation of body's own adaptive abilities are rarely used. We believe that the method of SCENAR-therapy could successfully take its place in this niche (SCENAR – Self-Controlled Neuroadaptive Regulation).

Research objectives – to study the effectiveness of different methods of SCENAR-therapy in patients with heat injuries. To suggest a hypothesis of SCENAR-effect in heat injury.

Materials and methods of research

The research was made in the Heat Injure Centre of Rostov-on-Don, Burn Centre at the Research Institute of Emergency Medical Aid “I.I. Djaneridze” (St. Petersburg) and Burn Centre of Saratov.

The research was made from 2001 to 2006, and 96 male patients at the age from 18 to 80 were examined. Parameters of oxidative-antioxidative blood systems were researched, general clinical examinations, planimetry and photo registration were performed before and after the treatment.

The general scheme of SCENAR-therapy was as follows: burn surfaces and edges of the wounds were not processed with SCENAR. The treatment was performed as a combined and in some cases as an independent method. Individually and subjectively measured modes were applied. The remaining intact skin was processed using 3 different methods in 3 groups of patients.

Method 1. (Face and back which were not burn-damaged). “3 paths and 6 points” were altered every second day with the neck and collar zone, plus skin zones symmetrical to the burn wound were processed if possible [1].

Method 2. (Intact palms and plantae). Electrodes – spread, sized 3x10 cm: each manipulation was combined with processing of dermal zones located in the area of the palms (thenar, hypothenar) and the feet (the zone under the pollex in the area of regioplantarispedis) by 10 minutes each; final processing – the dermal projection of the liver – 10 minutes.

Method 3. (Affected or/and unaffected palms and plantae) Electrodes – spread, sized 3x10 cm: each manipulation was combined with processing of dermal zones located in the area of the outer medium surface of the shank, medium inside part of the forearm by 10 minutes each; final processing – dermal projection of the liver or the zone symmetrical to the burn – 10 minutes.

The course of the SCENAR-therapy consisted of 10-15 procedures every day.

Results and discussion

During the use of all SCENAR-therapy methods, improvement of clinical blood value was stated, the anti-oxidative potential (with a reliable increase of

superoxide dismutase and catalysis of erythrocytes, and with decrease of medium mass molecular concentration) restored. Enhance of granulation tissue growth and boundary epithelialization was stated in singes. A manifested enhance of wound cicatrization due to its rapid cleansing was also stated.

Facts of initiated recovering process in patients with serious concomitant diseases, and the torpent, areactive course of the burn disease are an important clinical observation. During the experiment with SCENAR-therapy, a decrease of the genotoxicity of the mutagenesis in burn wounds and positive effect on proliferous tissue activity was observed [2].

A manifested analgesic effect, prolongation and potentiation of the effect of narcotic analgesics with decrease of the dose were stated [6].

It is important to note that SCENAR-therapy is a comfortable sanogenetic method of treatment. There is no need to process the burn surface or the surfaces around the burn, which is almost impossible with bandages and necrectomy [4].

To explain the effect of SCENAR-therapy in different methods of treatment, we suggest a hypothesis fitting one of the forms of the systematic approach. This is P.K.Anokhin's functional systems theory [3,5].

Significant damage in dermal functional system (as an organ) is stated in cases of burn. This means diminution of afference, deprivation of information about the outer environment, impossibility of proper thermal exchange regulation, changes in tactile and pain sensitivity, damage in energy exchange between the body and the outer environment, decrease of the protective function, appearance of "gates" through which protein and electrolytes are lost, infection and intoxication.

Apart form this, a big wound surface causes supertension of cerebral antinociceptive system to decrease input of information from the burn wounds tissues. According to our hypothesis, a functional "denervation" of all the skin happens, and its functional rejection develops. The body and the brain stop "seeing" it. The functional system breaks down. Retarded regeneration follows, as well as soft and areactive course of the burn disease.

In this situation SCENAR acts as a system-forming **receptor** factor. The device generates bipolar high-voltage impulses without a constant component. The impulses change depending on the dermal condition and its corresponding internal organs and tissues on the grounds of biotechnological feedback.

A specific for SCENAR-therapy effect of dermal electrostatic vibration (return acoustic effect) is also stated. For the body, this is a permanently new, structurally changed by itself effective signal. The return afference to the brain from SCENAR is marked by numerous parameters.

Apart from an electric stimulus in itself, SCENAR-therapy includes pain, thermal and tactile excitation in its effective complex.

It is necessary to note that local mechanisms of regeneration startup exist. They function in dermal denervation, too, for example, in spinal patients. Local dermal processing around the wound would probably be successful.

The architecture of dermal functional system is a cyclic closed self-regulated organization. Its main point is the positive adaptive result: a permanent recovery of the lost elements and performance of its specific functions. Deviations from the result are perceived by the receptors. In burn wounds they do not exist, they are destroyed.

Thus, SCENAR eliminates afference diminution, sends signals to the nerve centres about the remaining unaffected skin, gives non-coded unrecognized information through its polyparametric signal. This allows the brain to start a system of non-specific activation, and gives a targeted signal through specific zones (Su-Jock method) and through biologically active points, and gives a local multifunctional effect. SCENAR-therapy makes the functional system of dermal restoration become close, hence active.

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