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Article Type: Short Commentary

Volume 2 Issue 3 - 2024

SCIBASE Journals

SciBase Critical Care and Emergency Medicine

Two Important Approaches in the Field of Emergency Medicine

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Article Information

Received: Aug 22, 2024

Accepted: Sep 26, 2024

Published: Oct 03, 2024

SciBase Critical Care & Emergency Medicine - scibasejournals.org

Citation: Chernyak V, Nevstruev V, Zabulonov Y, Krasnoholovets V. Two Important Approaches in the Field of Emergency Medicine. SciBase Crit Care Emerg Med. 2024; 2(3): 1013.

Abstract

We describe two of our initiatives that have been successfully applied to the treatment of patients, and which may be particularly successful in the case of emergency medicine. They are water with a positive oxidation reduction potential and magnetic laser therapy.

Keywords: Emergency medicine; Water; Redox potential; Laser therapy.

Introduction

In this article, we describe our two different initiatives that doctors use to treat patients. The first is associated with the use of specially processed water, which changes its oxidation reduction potential (redox potential), and the second is associated with laser therapy.

Processed water

It is a matter of fact that in terms of electrochemistry, water is characterized by three parameters. They are: pH, conductivity (or resistance), and redox potential. The most interesting for us is the redox potential, which from a physical point of view determines the electrical balance of the internal water environment. If water contains an excess of electrons, its redox potential becomes negative. But if some electrons are removed from water, then such water acquires a positive redox potential.

Our R&D group designed a device (Figure 1), which is able to make water with a negative redox potential up to -450 mV or positive redox-potential up to +800 mV.

Figure 1: Device “WaterLife” that produces water with plus and minus redox potential.

It was found that water with a redox potential from -350 to -450 mV and lower has a good effect on all body systems. In particular, Figure 2 illustrates two blood samples – before drinking water and after drinking 1 glass of water with a redox potential of about -400 mV. It can be seen that erythrocytes, which have been initially stuck together, after drinking water with the negative redox potential, diverge and become free floating, as it should be. Such water is a natural biostimulant, which perfectly restores the body's immune system, provides antioxidant protection for the body, heals the entire mucous membrane (which automatically kills parasites), is a source of vital energy, makes better metabolism, improves overall well-being, eliminates dandruff, refines hair structure, etc.

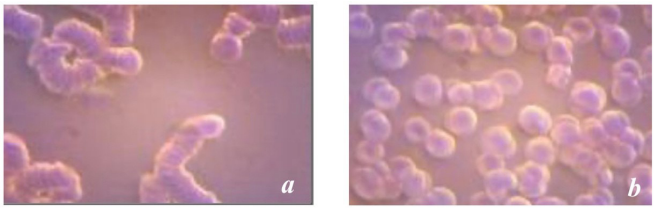

Figure 2: Photographs of blood samples before drinking water **(a)** and after drinking a glass of water with a negative redox potential **(b)**.

However, water with a negative redox potential quickly loses its biochemical and medicinal properties, since it is an active unstable system. If stored in a closed container in a dark place, it can be stored for a few days only.

In principle, such properties of water with a negative redox potential are already know.

On the other hand, the use of water with a positive redox potential in medicine has not yet been sufficiently studied.

It seems the first serious research on water with a positive redox potential was done 20 years ago by Suslow [1] who illustrated that in water with a value of redox potential from +650 to +700 mV, free-floating bacteria of decay and spoilage, as well as pathogenic bacteria, such as *E. coli* O157:H7 or *Salmonella*, die within 30 seconds. So, water with a positive redox potential can be called dead water.

Produced by our device (Figure 1) dead water is an acidic solution, which also has strong bactericidal properties. Together with physicians we have tested water with a value of redox potential from +800 to +1000 mV for:

Disinfection of bed clothes, bandages and other medical materials, dishes, as well as premises;

Treatment of the room where the patient is located, to prevent re-infection and infection of relatives;

Treatment of bed linen and bed if insects have appeared in the house;

Gangling the throat, rinsing teeth, washing the nose and ears preventing flu and acute respiratory infections; lowering blood pressure;

With the help of dead water, they calm the nerves, get rid of insomnia, reduce pain in the joints of the arms and legs, destroy fungus, treat stomatitis, dissolve stones in the bladder.

Dead water, or water with a high positive redox potential, when stored in closed containers retains its properties for a long time, at least several weeks.

The listed properties of water with a positive redox potential make it possible to consider it as an important composition in emergency medicine in which such water can be considered as the best disinfectant. The water can be used for washing various wounds, lacerations, cuts, open fractures, etc. as a very powerful disinfectant. Such water evaporates quickly and has no side effects.

Laser therapy

In recent years, significant progress in the field of both applied and fundamental knowledge of laser medicine has been achieved [2-5]. Research in the direction of a systemic approach and multifunctional application of laser therapy in clinical and spa practice has been particularly successful. Zonal laser therapy, laser puncture, magnetic laser therapy and laser scanning beam therapy in neurology, cardiology, rheumatology and many other sections of clinical medicine have demonstrated certain advantages over traditional methods of treatment [2,3]. Figures 3 and 4 demonstrate our modern laser devices; they grew out of the first model produced in 1987, which was made to treat people exposed to radiation caused by the accident at the Chornobyl nuclear power plant. Totally, about 300 laser devices have been made. In 2004 one of them was installed in a clinic/hospital of St. Mary's in Las Vegas in order to rehabilitate the elderly.

Figure 3: Multifunctional 8-channal laser device.

Figure 4: Multifunctional 8-channal laser device.

Figure 5 and 6 illustrate a laser therapy session (in 2019), which is conducted by our therapeutic laser system for external and internal, contact and non-contact exposure with red, IR semiconductor lasers, including those combined with a permanent magnetic field. In particular, lightening the blood arteries on two hands for half an hour leads to the creation of up to 0.5 liters of fresh young blood in the patient.

Figure 5: Laser scanning of the abdominal area of the body.

Figure 6: Treatment of the artery and abdominal area.

Figure 7: Now in Ukraine, during the war started by wild Muscovy, we observe a large number of wounded with massive traumatic body injuries, and the most severe consequences of combat injuries are seen in wounded with damage to the main vessels.

Now in Ukraine, during the war started by wild Muscovy, we observe a large number of wounded with massive traumatic body injuries (Figure 7), and the most severe consequences of combat injuries are seen in wounded with damage to the main vessels.

Statistical data on damage to arteries during combat operations in modern wars are shown in Table 1.

Table 1: Frequency of arterial injuries during combat actions (%).

Artery	Vietnam (USA)	Afghanistan (USSR)	Georgia (Republic of Georgia)	North Caucasus (Muscovite Federation)
Subclavian	2.9	3.0	2.1	1.3
Inguinal	6.5	3.3	6.1	1.3
Brachial	22.3	18.5	19.2	24.3
Forearm	7.0	8.9	31.3	3.8
Brachial	1.2	2.0	1.8	3.8
Femoral	25.2	27.7	22.2	26.9
Popliteal	14.0	12.5	6.1	20.8
Lower leg	3.5	20.5	13.1	12.8

The diagram shown in Figure 8 gives statistics of damage to blood vessels, nerves, bones and body parts of Ukrainian military personnel as a result of lacerations received from Muscovite weapons.

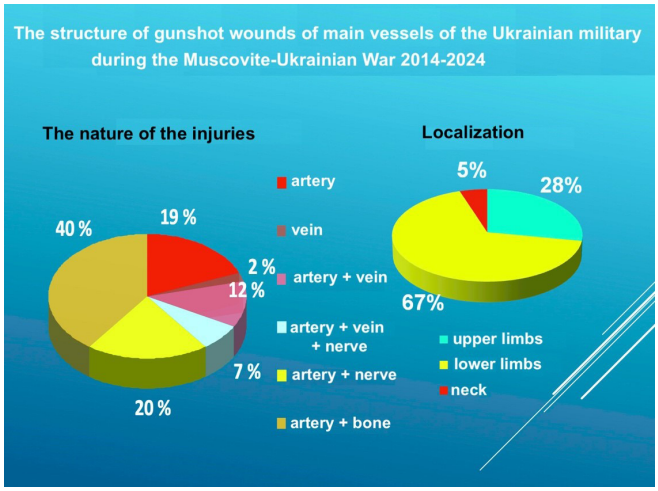

Figure 8: Structure of gunshot wounds of Ukrainian soldiers during the invasion of wild Muscovy on Ukraine.

Magnetic laser therapy has a complex and multi-vector influence on the body and leads to the emergence of a significant number of effects, the main manifestation of which is anti-inflammatory, analgesic action and stimulation of reparative processes.

Anti-inflammatory effect

Activation of superoxide dismutase and catalase;

Activation of microcirculation;

Change in the level of prostaglandins;

Immunomodulating effect.

Reduction of lipid peroxidation

Equalization of osmotic pressure;

Reduction of tissue swelling.

Analgesic action

Activation of neuron metabolism;

Increase in the level of endorphins;

Increasing the threshold of pain sensitivity.

Stimulation of reparative processes

Accumulation of ATP;

Stimulation of cell metabolism;

Increased proliferation of fibroblasts;

Protein and collagen synthesis.

The enzyme catalase is a specific acceptor of radiation from the laser device. An increase in catalase activity within certain limits has a positive effect on the antioxidant system. Under the influence of low-intensity laser radiation in the red range, the tissues also activate the superoxide dismutase enzyme, which, like the catalase enzyme, has a maximum absorption in the red part of the spectrum. All this leads to the normalization of lipid peroxidation.

Under the influence of the red spectrum of radiation, the processes of microcirculation, activation of collagen and fibrillogenesis with rapid epithelization of the wound defect are improved. The activation of mitotic processes is caused by an increase in energy exchange in the cells of the surface of the wound and the marginal epithelium under the influence of laser irradiation of the red spectrum (0.63 μ). In the near-IR range, the photon energy fluctuates within the limits that make it possible to disrupt the vibrational processes in the molecules of matter and activate the electronic excitation of atoms. So, in the mechanism of action, the biological activity of IR radiation is associated with photochemical transformations, the long-range correlation due to coupling through an inerton field [5] and a significant increase in thermal vibrations of the molecules of substances irradiated by the laser beam.

We have observed an activation of the DNA-RNA-protein system, biosynthetic and redox processes in the main enzymatic systems. Magnetic laser exposure causes an increase in the formation of macroenergetics (ATP), mitotic activity of cells, absorption of oxygen by tissues, lowers the threshold of receptor sensitivity, reduces the duration of inflammatory processes, interstitial edema and tissue tension, increases the speed of blood flow, increases the number of collaterals, has an immunomodulatory effect, activates the transport of substances through vascular wall. Thus, the data of clinical observations and experimental studies showed that the therapeutic effect of the magnetic laser therapy is more pronounced than with separate or their consistent application.

General principles of multifunctional magnetic laser therapy including important values of received radiation dose and light frequency were described in detail in [2,3]. Treatment of serious injuries using magnetic laser therapy, applying certain innovations, shows that the effect of laser radiation generated by the innovative device significantly improves perfusion blood flow in the affected limbs, accelerates the filling and epithelization of wounds and trophic ulcers, and reduces the level of inflammatory and pain syndromes (Figure 9).

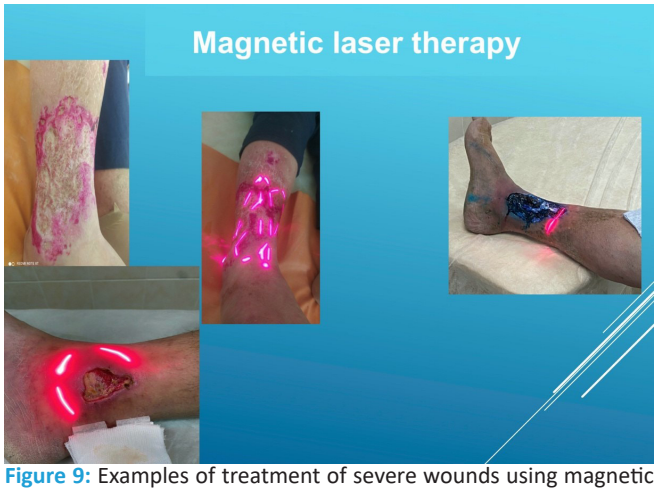

Figure 9: Examples of treatment of severe wounds using magnetic laser therapy.

Damaged vessels must be urgently restored, because otherwise damaged tissues will die and/or be amputated. That is why we have developed a method of electric welding of blood vessels. The obtained results of the use of circular electric welding seams allow us to assume the possibility of using the considered developments in the clinic due to their significant advantages over mechanical and manual techniques.

Discussion

Thus we have demonstrated the two approaches that can be very successfully used in medical practice, especially in emergence cases. The use of water with a high positive redox potential and laser therapy in the frontline zone during military operations are of great importance.

In fact, water with a value of redox potential +700 to +1000 mV can be considered as the best disinfectant that can be used to treat wounds, for example in the form of a spray. This type of wound treatment prevents the wounds from rotting and saves them from gangrene. Such preliminary treatment of a wound at the front line can be carried out even for several days in a row until the wounded person is evacuated to the hospital.

Magnetic laser therapy can be prosperously applied in clinics and military hospitals in the treatment of severe injuries to the body with a high probability of almost complete recovery of the seriously injured person.

In addition, portable laser therapy devices need to be used on the front lines during combat operations. Indeed, illuminating the wound with a beam of light generated by a magnetic laser device for 2-5 minutes stops the bleeding and causes instant granulation of the open wound. Such an emergency action essentially saves the life of a wounded soldier.

However, today, wounded Ukrainian military personnel are discharged in large numbers, mainly because of numerous cases of suppuration of wounds and gangrene, which eventually leads to amputation. Besides, the Ukrainian army is suffering heavy losses in manpower, since many cases of mortality are due to the loss of blood of the wounded on the way from the front line to the hospital. But in most of the mentioned cases, the Ukrainian military could have been saved if the military medics in the war zone had such means of helping the wounded as water with a high positive redox potential and a portable magnetic laser device.

Conclusion

The two proposed approaches are a substantial addition to the already existing methods of providing emergency medical care. We strictly insist that devices for the production of water with a high positive redox potential, as well as such water itself, and also magneto laser devices should occupy an honorable place in emergency medicine.

These methods should also find widespread use among the NATO military. We would be happy to participate in a joint project on the development and implementation of the described approaches in the NATO armed forces. Moreover, we will be glad to consider investment proposals from any serious democratically oriented potential partners.

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