ABSTRACT WORK

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THE APPLICATION OF HYPERBARIC OXYGEN THERAPY IN THE TREATMENT OF WOUNDS
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Introduction: Hyperbaric medicine has two main branches of activity: a) one dedicated to the professional activity of divers, aeronauts and people working in compressed air, the prevailing approach being a concern with occupational health; b) referring to the clinical applications of hyperbaric oxygen therapy (HBO).

HBO consists of the inhalation of pure oxygen with atmospheric pressure increased two to three times above its normal value, the patient being inside a hyperbaric chamber. During the sessions the amount of oxygen dissolved in the tissues increases by 10 to 20 times.\textsuperscript{1,2,3,4}

The inhalation of 100\% of oxygen in spontaneous breathing or through mechanical ventilators at atmospheric pressure is not classified as HBO, nor is exposure of the limbs to oxygen by means of bags or tents, even if pressurized, since the person is at atmospheric pressure.

The treatment is made in several sessions, where pressure levels, duration, intervals and total number of applications are variable in accordance with the illnesses.\textsuperscript{1,2,3,4}

The indications for HBO are countless and are determined by several international protocols.

Material and Method: Before beginning the therapy the patient's case history should be examined and he should undergo a complete clinical examination, with particular attention to the ear drum and lung system. He should be informed about the safety measures such as: use of supplied appropriate clothing, to remove any personal objects that may originate electric sparks, because the oxygen is highly inflammable.

In HBO the patient should be inside the hyperbaric chamber. These can be multipatient that contains several people simultaneously, besides the medical and /or specialized nurse; this chamber is pressurized and depressurised with compressed air, and in this situation the oxygen is breathed through masks or special hoods. The monopatient chambers just allows the accommodation of the one patient, it is pressurized directly with pure oxygen and does not need special devices for the inhalation of this gas.

There are pre-established limits of HBO exposure in terms of pressure and duration, because neurological, pulmonary and pneumatic sinus (paranasal, frontal sinus, etc) and inner ear effects exist.

The indications for HBO are: 1. Gas clots; 2. Decompression sickness; 3. Traumatic air clot, 4. Carbon monoxide or smoke intoxication; 5. Cyanide or cyanide derivatives poisoning; 6. Clostridial gas gangrene; 7. Fournier syndrome; 8. Other necrotic infections; 9. Traumatic acute ischaemias: crush lesion, compartmental syndrome, reimplantation of amputated extremities; 10. Limbs or grafts that are damaged or at risk; 11. Acute vasculites of allergic, medicinal aetiology or caused by biological toxins (arachnids,

**Results:** In hyperbaric conditions the action of the oxygen possesses some especially interesting physiological mechanisms: 1. Anti-oedematogenic effect, facilitating venous return; 2. Microbicide or microbiostatic action by inhibiting the biosynthesis of amino acids, the transport through the bacterial membrane and the synthesis and degradation of the bacterial DNA; 3. Oxidative biochemical action removing toxic substances; 4. Synergic effect with other drugs, such as systemic antibiotics; 5. Regenerative effect facilitating neoangiogenesis and the formation of collagen.

**Conclusion:** HBO accelerates the formation of the granulation tissue and helps in the control of the infection. Its results are evident in the treatment of extensive necrotic fasciities and the syndrome of Fournier.1,2,3,4

The great challenge has been to research and to systematize protocols that demonstrate scientifically the clinical potential of this unquestionable therapeutic resource.1,2,3,4

**Bibliographical References:**