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Hyperbaric Oxygen treatment (HBOt) – doctors point of view

Hyperbaric Oxygen treatment is a medical intervention, where the patient breathes 100% oxygen while inside a pressurized chamber. The hyperbaric pressure is usually 2,5 – 2,8 ATA (2,5-2,8 x normal sea level ambient atmosphere absolute pressure) corresponding to diving to 15 msw (=meters of sea water) and 18 msw, respectively.

Rational:

- high pressure compresses body gas bubbles smaller
- small bubbles are more soluble to body fluids (e.g. plasma up to 6%)
- tissue oxygenation is improved and blood oxygen partial pressure is enhanced x10-14
- elimination of unwanted gas bubbles (e.g. nitrogen in decompression sickness) is obtained with controlled decompression
- High tissue oxygen promotes wound healing, neovascularization and controls infection

HBO indications:

Internationally approved and recommended indications (Underwater Hyperbaric Medical Society [UHMS]2016):

1. HBO is essential and principal treatment modality (alternative treatment non-existent):
 - decompression sickness (“divers disease”)
 - air and gas embolism
2. HBO as adjunct to surgical and pharmacologic interventions:
 - severe, symptomatic carbon monoxide intoxication
 - gas gangrene, necrotizing fasciitis and other necrotizing soft tissue infections (e.g. deep neck infections, mediastinitis)
 - treatment resistant problem wounds, e.g. chronic diabetic and other ischemic limb wounds
 - crush injuries and open fractures

- post-radiotherapy osteoradionecrosis of the jaw, dental operations (pre- and postoperative)
 - Radiotherapy-induced cystitis and proctitis
 - Sudden deafness/ noise-induced hearing loss
 - Central nervous system abscess (brain abscess, spinal epidural abscess)
 - Central retinal artery occlusion
 - Skin graft flaps; in particular head and neck
3. HBO is presumably ineffective:
- sclerosis multiplex
 - tinnitus
 - stroke
 - sport injuries

HBO contraindications:

- untreated pneumothorax
- certain medications (disulfiram, doxorubicin, cisplatin, bleomycin)
- severe claustrophobia
- upper airway infections with severe excretions
- convulsions

HBO complications:

- barotrauma (ear, sinuses etc)
- oxygen toxicity
- lung injury
- temporary myopia

Indications are illustrated with real case discussions