

Hyperbaric Medical Center

1. Staffs

Center Chief and Assistant Professor

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2. Purpose of Education

Hyperbaric oxygen therapy (HBO), which can dissolve oxygen in serum in population to atomic pressure and transport oxygen to ischemic tissue, is an established therapy for treatment of several conditions, including decompression illness, carbon monoxide poisoning, acute anterior disturbance, and peripheral ischemic disease. The mechanism of HBO can be described as hyperoxygenation in ischemic soft tissues, reduction of edema, stimulation of fibroblast proliferation and differentiation, increased collagen formation and cross-linking, angiogenesis, and improved preservation of energy metabolism.

This curious treatment has clinically many kinds of efficacy, however, the mechanism of the effect has not been fully understood, and many researchers in the world still attempt to reveal the mechanism of the effect of HBO.

This HBO can stimulate the interest of medical students, basic researchers, and clinical doctors, and this hyperbaric medical center can provide opportunities to study hyperbaric oxygen therapy field.

3. Research Subjects

- 1) Diving medicine
- 2) Treatment of soft tissue injure related with sports activities
- 3) Oxidative stress
- 4) Hyperbaric oxygen therapy

4. Clinical Services

Hyperbaric Medical Center in Tokyo Medical and Dental University hospital is the center institute of hyperbaric oxygen therapy and research in Japan, and one of the largest hyperbaric oxygen chamber in the world is set up in Hyperbaric Medical Center, which can contain the maximum number of 16 persons.

As described above, HBO is applied for several conditions, including decompression illness, carbon monoxide poisoning, acute anterior disturbance, and peripheral ischemic disease. In 2007, 7970 times hyperbaric oxygen therapy (HBO) in 958 patients were performed in our university hospital, which is the most patients number in one institute in a year in Japan. In addition, for the purpose of rapid recovery, we now perform HBO aggressively for soft tissue injury related with sports activities including compartment syndrome, ankle sprain, knee ligament injury

5. Publication

Original articles

1. Tohyama H, Yasuda K, Minami A, Majima T, Iwasaki N, Muneta T, Sekiya I, Yagishita K, Takahashi S, Kurokouchi K, Uchio Y, Iwasa J, Deie M, Adachi N, Sugawara K, Ochi M. Atelocollagen-associated autologous chondrocyte implantation for the repair of chondral defects of the knee: a prospective multicenter clinical trial in Japan. *J Orthop Sci.* 2009 Sep;14(5):579-88, 2009.