CONTENTS

Papers from the five continents!

INVITED LECTURES

The Development of Diving Medicine in Europe.  
The Role of Diving Doctors  
David Elliott (United Kingdom)  

Past and Present Use of Hyperbaric Oxigen in Acute Myocardial Ischemia: a Review  
George Hart (United States)  

Hyperbaric Medicine and the Cochrane Collaboration: Hope or Despair?  
Mike Bennett (Australia)  

1.- ENT DISORDERS / BREATH HOLD DIVING

Middle Ear Ventilatory Function and Barotrauma  
Avi Shupak (Israel)  

Inner Ear Decompression Sickness  
Christoph Klingmann (Germany)  

Does Slow-Compression Technique of Hyperbaric Oxygen Therapy Decrease the Incidence of Middle Ear Barotrauma?  
Vahidova D, Sen P, Papesch M, Zein-Sanchez P, Mueller P. (United Kingdom)  

Cardiovascular Responses to Apnea During Dynamic Exercise and Breath-Hold Underwater Swimming  
Uwe Hoffmann, Tobias Dräger (Germany)  

Inner Ear Barotrauma: a Therapeutic Proposal (Case Report)  
Marco Romagnoli, Marta Frigo, Werner Garavello, Renato Maria Gaini (Italy)  

Laboratory Test to Assess the Muscular Work Capacity in Breath-Hold Divers During Apnoea  
Carmen Vaz, Montserrat Pavon, Jose Naranjo, Ramon A. Centeno (Spain)
2. HOSPITAL BASED CENTRES OF HYPERBARIC MEDICINE

The Hyperbaric Therapy Unit of CRIS. A Summary of a 50 Years
Jordi Desola, Joan Sala, Angel Garcia, Josep Bohé (Spain)

Anaerobic Sepsis and HBO: 30 Years Experience and Results
Danica Vujnovic (Yugoslavia)

Hyperbaric Centre of Charity Hospital in Cartagena:
Overview in a Daily Basis
Antonio Viqueira (Spain)

Clinical Hyperbaric Facility Accreditation: Quality Improvement in Action
Tom Workman (United States)

Pressure Relief Systems in Hyperbaric Environment
Kris Peelaers, Sven Van Poucke, Jurgen Galicia, Luc Beaucourt (Belgium)

German Health Care System Accepts and Rejects Some Indications for Hospital Based HBO Treatment Following An EBM-Based HTA Process
Wilhelm Welslau, Ulrich van Laak (Germany)

Critical Patients in a Hyperbaric Medical Center
The CRIS–UTH Experience
J. Sala-Sanjaume, J. Desola, A. Garcia-Sanpedro, J. Ll. Garcia (Spain)

Optimising Internal Information Exchange Inside Hyperbaric Treatment Centres
Y. Neirynck, P. Germonpre (Belgium)

Initial and Continuous Education and Training for Hyperbaric Centre Personnel
A. Schwarz, P. Arkey, V. Campanaro, D. Damiens, R. Houman, A. Kanstinger, B. Kehner, M. van der Tol (Germany)

Comparison of Incident Rates During Intensive Care Versus Non-Intensive Care HBO Sessions A Prospective One Month Observational Study in Eight European Centres
Jacek Kot, Michal Hajek, Robert Houman, Huberta Klemen, Armin Kemmer, Holger Kirschner, Pasquale Longobardi, Christian Mortensen, Juha Perttila (Poland)

3. DIVING RESEARCH

Effect of Nitric Oxide on Circulating Bubbles after Simulated Submarine Escape
Mikael Gennser, Lesley Blogg (Sweden)

Reversal Effect of NMDA on the Decreased Striatal Dopamine Release Produced by Nitrogen Narcosis in Rats
Cécile Lavoute, Michel Weiss, Jean-Claude Rostain (France)

A Demand Controlled Self Mixing Mechanical Constant PO2 Rebreather
A New Concept and Initial Testing
Oskar Frånberg, Robert Wigert, Nielas Larsson, Roger Lundkvist, Björn Johanssone, Mikael Gennser (Sweden)

Effects of Beard Growth on Purge Frequency with the MBS-2000 Closed-Circuit Oxygen Rebreather
David Fothergill (United States)

Flow Measuring Diving Computer for Semi Closed Rebreathers
Arne Sieber (Austria)

Pressure Limitation for Gas Micronuclei Elimination by Hyperbaric Oxygen in the Prawn
Yehuda Arieli, Ksenya Katsenelson, Ran Arieli (Israel)

Cognitive Response and Psychological Profile During 24 H SCUBA Diving Test
Gerardo Bosco, Natalie D'Alessandro, Vincenzo Zanon, Angelo Landolfi, Remo Bettini, Piergiorgio Data (Italy)

The Use of a Deep Stop During Decompression of Agar Gel Plates Influences the Number, Diameter and Total Gas Volume of Post Decompression Gas Bubbles
Alessandro Marroni, Peter Bennett, Frans Cronjé, Costantino Balestra, Pasquale Longobardi, Ramiro Cali Corleo, Peter Germonpre, Massimo Pieri, Maurizio Didone (Italy)

A Multiple Gas Crevise Model of Bubble Growth
Michael Chappell, Stephen Payne (United Kingdom)

The Effects of Expert Error on the Accuracy of Automated Bubble Classifiers
Stephen Payne, Michael Chappell (United Kingdom)
Sonar Activity May Disrupt Behavioral Performance in Deep Diving Cetaceans
Adolfo Talpalar, Yoram Grossman (Israel)

Computerised Ultrasonic Detection of Air Embolism
SM Egi, K. Tufan, A. Ademoglu, S. Aydin, E. Kurtaran (United States)

4.- BASIC RESEARCH - OXYGEN TOXICITY

Extreme Hyperoxia and Severe Endurance Training Show Different Patterns of Oxidative Stress
Andreas Koch, Nicolle Bader, Katrin Ohlthman, Wataru Kähler, Hans-Lesko Torff, Miklós Mályusz (Germany)

Neuronal and Endothelial Nitric Oxide are Involved in Hyperbaric Pulmonary Oxygen Toxicity
Dmitriy Atochin, Ivan Demchenko, Paul Huang, Claude Plantadosi (United States)

Lymphocyte Adaptations to Oxidative Stress Induced by SCUBA Diving
Joan M. Barle, M. Ferrer, A. Sureda, P. Romaguea, P. Tauler, J.A. Tur, A. Pons (Spain)

5.- HYPERBARIc OXYGEN THERAPY - I

Hyperbaric Oxygen Therapy in Early Maxillofacial Surgery over Irradiated Tissues. A Prospective Study of 42 Cases.
Mario Mateos Micas, Javier Rodriguez, Gabriel Forteza, Jordi Desola (Spain)

Hyperbaric Oxygen Therapy for Crush Injuries of the Extremities Experience of Belgrade CHM Institute
Dusko Micevic, Tomislav Jovanovic, Marko Bumbasirevic, Svetomir Savic (Yugoslavia)

Hyperbaric Oxygen Therapy in the Treatment of Chronic Artherosclerotic Disease
Guarino R., Monastra L., Cipollaro C., Mascolo L., Luongo M., Luongo C.

Mortality and Morbidity From Carbon Monoxide Intoxication in Latvia During 2002-2004 and the Effectiveness of HBO Treatment at 182.4-202.7 kPa for 60 Minutes

6.- DIVING PHYSIOLOGY

No effect of Warm (35-40°C) Breathing Gas on Shivering Thermogenesis During Cold (16°C) Water Immersion
Arvid Hope, Gunnar Knudsen, Harald Sundland, Svein Bjordal (Norway)

Respiratory Parameters and Body Fat Percentage in Different Groups of Diving and Non-Diving Population
Milica Sinobad, Marija Markovic (Yugoslavia)

Changes in Pulmonary Function after Two Months Period of Intensive Sport Diving
Dragana Ivkovic, Predrag Rebic, Vesna Bosnjak Petrovic, Bozica Suzic Todorovic (Yugoslavia)

Specific Performance Tests for Diving
Tobias Dräger, Uwe Hoffmann (Germany)

Prolonged Total Body Immersion in Cold Water Experimentation
C. Robinet, F.M. Galland, M. Hugon, A. Boussuges, A.V. Destrueelle, Y. Jammes, D. Leiffen, B. Melin, J. Regnard (France)

Hypoxia - a Trigger for Spleen Contraction?
Matt Richardson, Robert de Bruijn, Erika Schagatay (Sweden)

7.- PATHOPHYSIOLOGY OF DYSBARIC INJURIES

Lung Squeeze in SCUBA Diving: An Underestimated Trouble
Marco Brauzzi, Giovanni Sbrana, Paolo Tansini, Laura De Fina (Italy)

A 2-Hours Pre-Dive Aerobic Exercise Decreases Bubble Formation after Diving
J.E. Blatteau, E. Grempp, J.M. Pontier, C. Robinet, F.M. Galland (France)
The Combination of Decompression-Sickness plus Intrahoracic Hyperpressive Syndrome plus Near Drowning ("The Diving Tragedy") - Reflections and Concerns 181
Jordi Desola, Joan Sala (Spain)

Diving Related Injuries Treated in the Unit of Hyperbaric Medicine (Antwerp, Belgium) from 2000 Until 2005: Relation Between Diving Related Injuries and in Water Skills During Dive Training 188
Jurgen Galicia, Sven Van Poucke, Kris Peelaers, Luc Beaucourt (Belgium)

Retrospective Study on Disbaric Disorders in Sardinia 190
Paolo Castaldi, Grazia Mura, Cesare Iesu, Sergio Basciu, Antonio Valdes, Stefano Mancosu, Antonio Masu, Carlo Randaccio (Italy)

Decompression Illness and Enzymes. A Retrospective Study in Sport Divers 192
Aldo Lozano, Gisele Coutin-Marie, Willma Padilla, Victor Morales (Mexico)

Decompression Illness with Entrapment Neuropathy 194
Seiichiro Togawa, Nobuo Yamami, Harumi Nakayama, Yoshihiro Mano, Masaharu Shibayama (Japan)

Prevalence of Exostoses Among Divers of the Bay of Biscay 196
Juan Videgain (Spain)

Determination of Neurological Sequelae by Disbaric Accidents in a Group of Divers of Chiloe, Chile 198
Jorge Calderon (Chile)

Dysbaric Osteonecrosis in Compressed Air Workers 200
Mahito Kawashima (Japan)

Regional Helicopter for Emergency Medical Service. First Aid for Diving Casualties From 2002 to 2004 202
Giovanni Sbrana, Marco Brauzzi, Paolo Tanasi, Laura De Fina (Italy)

New Strategies for Cancer Treatments Using Hyperbaric Oxygenation: Radiotherapy, Chemotherapy and Treatment for Brain Radionecrosis 207
Kiyotaka Kobishi (Japan)

Neuroprotective Anti-Apoptosis Effect of Hyperbaric Oxygen Treatment in Secondary Brain Damage 213
Eilam Palzur, Eugene Vlodavsky, Ran Arieli, Jean F Soustiel (Israel)

Hyperbaric Oxygen Therapy in Lepra Reactions. 215
Patrick Desylva, Jandhyala Sridhar, John M

Effect of Hyperbaric Oxygenation on Brain Hemodynamic and Mitochondrial Activity in Vivo 222
Elhanan Meirovithz, Judith Sonn, Gennady Rogatsky, Avraham Mayesvky (Israel)

Hyperbaric Oxygen Therapy Reduces Neuroinflammation and Expression of Matrix Metalloproteinase-9 in the Rat Model of Traumatic Brain Injury 224
Eilam Palzur, Eugene Vlodavsky, Jean F Soustiel (Israel)

Implications of Hyperbaric Oxygen Therapy on Peripheral-Type Benzodiazepine Receptors in Traumatic Brain Injury 226
Eilam Palzur, Eugene Vlodavsky, Jean F Soustiel (Israel)

Combined Treatment of Acupuncture, Steroid, and Hyperbaric Oxygen for Sudden Deafness: A Clinical Experience of 32 Cases 228
Chang-Kuang Lee, Hui-Chich Lee, Lu-Peng Chang, Si-Tien Lu, Si-Yin Yu, Yu-Lung Huang (Taiwan)

Usefulness of HBO Therapy in Restenosis after Coronary Stenting 230
Ljiljana Mihaljevic, Slobodan Mihaljevic, Iyan Juric, Kruno Sporcic (Croatia)

Role of HBO in High Voltage Electrical Burns 232
V. Vazquez, E.C. Sanchez, A. Chavez, R. Uribe, J. Albornoz

9.- HYPERBARIC OXYGEN THERAPY - III

Effects of Hyperbaric Oxygen Therapy in Children with Cerebral Palsy 235
Authors: Surg Cdr Sheila S Mathai, Dr Pankaj Bansal, Surg Cdr Bahrav Singh, Surp Capt S Nagpal, Surg Cmdr MJ John, Surg Lt Cdr Hitesh Aggarwal, Dr Veena Bhart c

Bleomycin Exposure and Hyperbaric Oxygen Therapy: a Case Series 243
Klaus Torp, Michael Ott, Martha Sue Carraway, Richard Moon, Claude Pantadosi (United States)

HBO in Patients with Tinnitus - Influence of Psychological Factors? 247
Christian Proubsly (Austria)
Hyperbaric Oxygen Therapy And The Cochrane Collaboration – Hope Or Despair?

Bennett MH.

Senior Lecturer in Anaesthesia and Hyperbaric Medicine, Faculty of Medicine, University of NSW and Senior Staff Specialist, Department of Diving and Hyperbaric Medicine, Prince of Wales Hospital, Sydney.

INTRODUCTION:

Hyperbaric oxygen therapy (HBO) has been defined in a surprising number of ways. For the purposes of this address, I shall define HBO as:

"the therapeutic administration of oxygen at pressures greater than one atmosphere absolute (1 ATA)."

Among physicians trained in the western tradition, HBO is a relatively poorly understood therapeutic modality. Often consigned to a basket including alternative therapies with no apparent physiologic basis, HBO remains on the fringe of accepted medical practice despite 50 years of clinical experience. In Australia and New Zealand there are only 12 comprehensive hyperbaric facilities located within hospitals, although there are a number of small, free-standing facilities that tend to concentrate on a narrow spectrum of disease.

One recurrent criticism that has been made of this field is that treatment is based on little or no good clinical evidence. The recently improved awareness of the importance of evidence for all medical interventions has highlighted this perception. Hyperbaric practitioners are divided about the appropriate response to this criticism. While some confine themselves to clinical practice and the generation of informal clinical evidence in the form of case series and individual reports, others have attempted to prosecute more formal, high level clinical studies, while others still have stepped up the efforts to understand the basic mechanisms involved.

It has been similarly difficult to justify our choice of treatment tables and duration. Hyperbaric physicians regard oxygen as a drug, much like any other. It follows then, that for any particular condition there should exist a sub-therapeutic dose, a therapeutic dose range and a toxic dose. Treatment tables should designed to reflect this reality. Total oxygen doses to produce these effects are likely to vary between individuals, but it is equally likely that there is a target tissue $P_{O_2}$ that will produce a predictable effect – analogous to a target concentration of a pharmaceutical agent. For each putative condition therefore, it should be possible to devise a regimen that achieves the most efficacious dose with an acceptable safety profile. In HBO, of course, this dose is described in a pressure and time profile for each individual exposure, as well as a total dose over time.
New Strategies for Cancer Treatments Using Hyperbaric Oxygenation: Radiotherapy, Chemotherapy and Treatment for Brain Radionecrosis

Kiyotaka Kohshi, MD
Division of Hyperbaric Medicine & Department of Neurosurgery, University Hospital of Occupational and Environmental Health, Japan
1-1 Iseigaoka, Yahatanishi-ku, Kitakyushu 807-8555, Japan

SUMMARY

We have applied hyperbaric oxygen (HBO) therapy for the treatment of cancer, especially for malignant brain tumors. Based on the result of persistence of high oxygen pressure in tissues after HBO therapy, we have performed HBO exposure preceding radiotherapy. Recently a few clinical reports have shown prolonged survivals of patients with high-grade gliomas, despite small non-randomized series. We confirmed that this new approach improved radiation response in a tumor model with hypoxic cells. In addition, some types of chemotherapeutic agents showed enhancement by HBO in experimental studies. A recent clinical trial shows that HBO enhances the therapeutic effects of carboplatin, a platinum complex, for the patients with recurrent high-grade gliomas. In the treatment of radiation-induced brain injury after radiosurgery, some investigators note that HBO therapy is effective for the treatment of this condition. Moreover, our preliminary clinical trial suggests that HBO therapy after radiosurgery protects the progression of radiation injury. HBO therapy is becoming an important strategy in the field of oncology.

PREFACE

Hyperbaric oxygen (HBO) therapy, which is mainly used for the treatments of hypoxic tissue damage, has also therapeutic effects of enhancement of tissue damage. One of them is cancer treatment such as radiotherapy and/or chemotherapy. The presence of hypoxic tumor cells is widely regarded as one of the major reasons for failure to control the malignant tumors with radiotherapy and/or chemotherapy [1,2]. To control the hypoxic cells is the most important approach to cancer treatments. Since HBO therapy improves oxygen supply to hypoxic cells, a pilot study of radiotherapy combined with HBO was published in 1950’s [3]. Then some clinical trials were performed, and this adjunctive treatment was effective for a few types of cancer. However, the previous combined method, radiotherapy during HBO exposure, was hazardous to patients and was a complex technique, and as a result HBO therapy has not been routinely adopted with radiotherapy to treat cancers [3].

Neuroprotective Anti-Apoptosis Effect of Hyperbaric Oxygen Treatment in Secondary Brain Damage

Eilam Palzur a M.Sc., Eugene Vlodavsky b M.D., Ran Arieli c Ph.D., Jean F. Soustiel a M.D.

(‘) Division of Neurosurgery and Acute Brain Injury Research Laboratory and Department of Pathology.
(‘) Rambam Medical Center, Faculty of Medicine, The Technion, Haifa, Israel.
(‘) Israel Naval Medical Institute, Israel Defense Forces Medical Corps, Haifa, Israel.

Traumatic brain injury (TBI) is a major health problem in all developed countries, with cerebral contusions being the most common consequence of TBI. Recent evidence has clearly demonstrated that TBI may give rise to the development of the delayed secondary brain damage and that the apoptotic cell death is involved in the secondary brain damage.

The goal of the present study is to evaluate the expression of apoptosis-related proteins of bcl-2 family (bcl-2, bcl-xl, and bax) in the traumatic penumbra area in correlation with the extent of apoptosis in the rat model of dynamic cortical deformation (DCD), treated by HBOT. Four groups of 5 Sprague-Dawley rats each were included in this study. The study protocol was as follows: group 1-DCD, group 2-DCD and HBOT; group 3-DCD and perioperative hypoxia; group 4-DCD, perioperative hypoxia and HBOT. The bcl-2 family of proto-oncogenes was revealed by Immunohistochemical staining for bcl-2, bcl-xL and bax. The expression of bcl-2 in the penumbra area was lower in the animals, which underwent hypoxemia before the treatment, than in non-hypoxemic rats. The decrease in the expression of bcl-2 includes both the intensity of staining and its extent (the area). After the HBOT we observed statistically significant increase in the intensity and the extent of bcl-2 expression in both groups of animals (hypoxemic and non-hypoxemic) with hypoxemic animals showing still lower expression, but the difference was not significant.

The changes in the expression of bcl-xl were generally parallel to those of bcl-2, but differences between the groups were not statistically significant.

Bax protein expression increase insignificantly after postraumatic hypoxemia. After the HBOT there was some decrease in bax staining intensity and extent, but the measurement revealed marked variability of staining pattern and the differences between the groups were statistically significant (p>0.1).

Our results provide more evidence of the importance of apoptotic mechanisms in delayed cell death in traumatic penumbra area of brain injury. We also demonstrate the
Neuronal and Endothelial Nitric Oxide are involved in Hyperbaric Pulmonary Oxygen Toxicity

Atochin D-N, Demchenko I-T, Huang P-L, Piantadosi C-A

(a) Cardiovascular Research Center, Massachusetts General Hospital, Boston, MA 02129.
(b) Duke University Center for Hyperbaric Medicine and Environmental Physiology, Durham, NC 27710

BACKGROUND

Hyperbaric oxygen (HBO2) produces O2 toxicity involving primarily two organs: the brain and the lungs. CNS O2 toxicity is manifested by the appearance of electrical discharges on EEG, tremor, jerks and tonic-clonic convulsions [1]. The lung’s susceptibility to O2 toxicity differs from that of the brain not only in dose threshold but in the manner of damage. At 0.6 to 1 ATA, the lung’s responses are characterized by pulmonary inflammation, which has been attributed to PO2-dependent reactive oxygen and nitrogen species (ROS and RNS) generation that overwhelms biological anti-oxidant defenses and injures the lung. Prolonged exposure to 100% O2 damages lung epithelium and capillary endothelium diffusely and causes excessive inflammatory cell infiltration and interstitial and intra-alveolar edema [2]. The adult rat, exposed continuously to 100% O2, dies of respiratory failure after about three days [3]. HBO2, however, accelerates pulmonary O2 toxicity and greatly shortens this survival interval, to just about six hours, at 3 ATA [4].

The mechanisms that cause such dramatic shortening of survival in hyperbaric pulmonary O2 toxicity are poorly understood. In a preliminary study we have shown that HBO2-induced lung injury is attenuated after non-specific inhibition of both neuronal and endothelial NO synthases (NOS) with L-NAME [5]. The current study was designed to examine specific roles for neuronal or endothelial NOS in the development of pulmonary HBO2 toxicity.

METHODS

Adult wild type (WT) mice and mice deficient in extracellular SOD (EC-SOD-/-), glutathione peroxidase (GPx-/-), neuronal NOS (nNOS-/-), endothelial NOS (eNOS-/-) and inducible NOS (iNOS-/-) were exposed to HBO2 at 2.5 ATA for 6 hours. Immediately after exposure, bronchoalveolar lavage (BAL) was performed to determine total cell count (macrophages, neutrophils, lymphocytes), lactate dehydrogenase (LDH) activity and total protein content in BAL fluid as indicators of lung injury and alveolar-capillary permeability.
Hyperbaric Medicine Practice in China
Present and Future Prospective and Development

Gao Chunjin
Chairman of Chinese Association of Hyperbaric Oxygen Medicine

HBO medicine research has been developing rapidly in China, though it started later than in Europe and America. In 1964, Professor Li Wenren built China's first medical hyperbaric chamber in Fuzhou, Fujian Province, and practiced open-heart-surgery successfully in it.

October 1992 marked the start of a new era of HBO medicine in China, when Chinese Association of Hyperbaric Oxygen Medicine (CAHOM) was established in Lanzhou City. Professor Li Wenren was the first Chairman of the association, who held the post from 1992 to 1995. In 1993, the 11th International Congress on Hyperbaric Medicine was held in Fuzhou, Fujian Province, and Professor Li Wenren was the executive chairman of the meeting.

Since 2001, Professor Gao Chunjin has been the fourth Chairman of the association. In 2001, CAHOM won the sponsorship of the 16th International Conference on Diving and Hyperbaric Medicine.

At present, CAHOM has established branches in every province in China. Many medical universities in China now offer subjects on HBO medicine to produce HBO talents with high academic degree. In 1992, an academic journal on HBO---Journal of Hyperbaric Oxygen Medicine---was firstly published in China. In 2001, the journal merged with Chinese Journal of Nautical Medicine and was renamed “Chinese Journal of Nautical Medicine and Hyperbaric Medicine”. Meanwhile, a professional website on HBO medicine information was set up, which greatly promoted the informatization of HBO medicine in China. www.chinaehbo.org.cn

Until now, CAHOM has organized 13 annual academic meetings on HBO medicine. On these meetings, HBO professionals from around the country gathered together to exchange their ideas on clinical experience, scientific research, new development in HBO theory and technology.

Since 1995, CAHOM has sponsored 14 training programs on new development of HBO medicine, 43 training programs for maintenance and operation personnel of HBO chamber and 70 training programs for medical staff of HBO medicine. So far, more than 10000 HBO medical professionals and technicians have attended these training programs. With more than 40 years of development, presently China has a total of 3892 HBO Chambers and more than 21000 HBO professionals in HBO departments around the country.

China’s clinical and experimental study in HBO medicine has gained certain position in world HBO medical community. Rough statistics show that many diseases involving most clinical subjects have been treated with HBO therapy (HBO) in China.

**Indication of HBO Therapy**

1. Acute carbon monoxide poisoning
2. Delayed encephalopathy after acute CO poisoning
3. Harmful gas poisoning
4. Head injury
5. Ischemic cerebrovascular disease
6. Sudden deafness
7. Trauma
8. Burn
9. Avascular necrosis of the femoral head
10. Diabetic foot
11. Gas gangrene, tetanus and other anaerobic infection
12. Decompression sickness
13. Gas embolism
14. Osteomyelitis
15. Radiation injury
16. Aseptic osteonecrosis
17. Anesthesia accident CPR
18. Phlebitis
19. Tibia Osteonecrosis

**Experimental Study**

Experimental research of HBO medicine has also developed rapidly in China. Many hospitals and institutes applied molecular biological, immunological and other techniques...
Proceedings of the Fifteenth International Congress on
Hyperbaric Medicine

A 300 pages book with more than 50 colour charts.
Full text of the Invited lectures, Oral communications, Posters,
and full page colour reproduction of posters like they were exhibited in the Conference.
Statistics of delegates, attendants, countries, committees, exhibitors, and sponsors.
Download a sample with the list of contents and some examples from :
<http://www.sub-help.com> or ask it at <sub-help@comb.es>

Order it now !

Retail price : 60 € (Euro)
Registered attendants will benefit from a 10% discount
See other discounts in the order form
ORDER FORM

Retail price: 60 € (Euro)

Registered attendants will benefit from a 10% Discount.

Name of the attendant exactly like he/she was registered in the Conference:

---------------------------------------------------------------

Shipping and Handling:
Spain: 5 €
Europe: 15 €
Rest of the world: 24 €
(Cost per unit. Especial conditions for multiple orders)

Family name: .............................................................. Name: ..............................................................
Company: ................................................................................................................................. N.I.F.: ..............................................................
Invoicing Address: ....................................................................................................................
ZIP: .............................................................. City: .............................................................. Country: ..............................................................
Phone: .............................................................. FAX: .............................................................. E-mail: ..............................................................
Sending Address (if different from above): ................................................................................
ZIP: .............................................................. City: .............................................................. Country: ..............................................................

No. of units .............................................................. Discount .............................................................. %
Price per unit .............................................................. €
Subtotal .............................................................. €
Shipping and handling .............................................................. €

TOTAL DUE .............................................................. €

PAYMENT:

☐ Banc Transfer to SUB-HELP
Caja de Ahorros del Mediterráneo
IBAN: ES73-2090-6871-86-0041615871
SWIFT: CAAMES2A

☐ VISA-Mastercard

☐ American Express
Credit card number: ..............................................................
Expiry date: ............ / ............
Name of the card holder: ..............................................................

Signature: ..............................................................

Send this order to:
SUB-HELP - E-Mail: sub-help@comb.es - FAX: +34-934-503-736 - Apartado de correos 4033 - E-08080 BARCELONA

Other Discounts:

<table>
<thead>
<tr>
<th>Number of units</th>
<th>% Discount</th>
<th>Price per unit (Euro)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>5-9</td>
<td>5</td>
<td>57</td>
</tr>
<tr>
<td>10-24</td>
<td>10</td>
<td>54</td>
</tr>
<tr>
<td>25-49</td>
<td>15</td>
<td>51</td>
</tr>
<tr>
<td>50-75</td>
<td>20</td>
<td>48</td>
</tr>
<tr>
<td>75-99</td>
<td>25</td>
<td>45</td>
</tr>
<tr>
<td>more than &gt; 100</td>
<td>30</td>
<td>42</td>
</tr>
</tbody>
</table>

Distributors, book-shops Consult