LETTERS

To the Editor:

The article by W. C. Miller et al. on a hyperbaric environment in chronic pulmonary hypoxemia (J Hyper Med 1987; 2(4):211–214) is interesting, and again suggests a possible approach to a major health problem. The data indicate that the emphysetic patient requiring HBO for other reasons could be safely treated with hyperbaric oxygen at a lowered pressure.

In 1969, Yonda et al. presented data on pulmonary volumes in emphysetic and normal individuals subjected to increased oxygen pressures (1). Yonda showed that it is possible to safely compress and decompress the emphysetic patient if slower compression procedures are adhered to.

In 1979 Pallotta published a series of 50 emphysetic (chronic postbronchitic disease) patients who responded well to oxygen under pressures of 2 to 3 ATA 1 h/d (2). His physiologic and clinical data indicated encouraging results both in the acute stage and in reducing the progression of the disease. There were only minimal side effects and no evidence of oxygen toxicity in his series. This type of therapy is continued in southern Italy and is now being started in Sicily.

Proper timing of slow compression to and decompression from appropriate pressures should allay the fears of ruptured blebs. Oxygen toxicity has not been a problem in emphysema when this drug was used properly at greater than ambient pressures.

Few therapeutic measures are available to the patient with chronic obstructive pulmonary disease (emphysema). Therefore, the work of Miller, Pallotta, and Yonda should encourage further investigation into the possible benefits of increased tissue tensions in this disease by way of HBO.

RICHARD A. NEUBAUER, M.D.
Clinical Baromedical Center
Lauderdale-by-the-Sea, FL
and
SHELDON GOTTLIEB, PH.D.
Department of Biological Sciences
University of South Alabama
Mobile, AL

References

1. Yonda RL, Motley HL, Smart RH. Effects of pressure upon lung volumes of pulmonary emphysema patients and upon normal individuals. In: Borema I, Brummelkamp WH, Meijne NG, eds. Clinical applications of hyperbaric medicine. Amsterdam: Elsevier, 1964:336–345.
2. Pallotta R. Med subacquea ed iperbaric. Min Med 1976; 67(30):1948–1958.

Editorial Comment

I agree with the above comments of Drs. Neubauer and Gottlieb, but I feel that the three quoted publications have widely differing scopes and must be accepted only in their context. The paper by Miller et al. fills a physiologic gap and shows how arterial saturations improve with modest increments of pressure in patients chronically desaturated. The paper by Yonda addresses the issue of safe (slower) changes of environmental pressures in patients with emphysema. The work of Pallotta proposes the use of HBO to *improve* the quality of life in emphysema. Pallotta's work is not without challenge in this area because additional therapeutic measures were used in his series. Still his patients were exposed to 2 to 3 ATA. The work by Miller et al. advocates minimal pressure changes only to *restore arterial saturation,* and probably should not be classified as *hyperbaric* oxygenation in a classic sense. Additional comments from the readership are welcome.

ENRICO M. CAMPORESI, M.D.
Editor-in-Chief

To the editor:

We read with great interest the editorial, Management of critically ill patients in the hyperbaric environment, in the *Journal of Hyperbaric Medicine,* Vol. 2, No. 4 (1987). Of particular interest to us was your comment (in reference to the report by VanRynen et al.) that evolving technology "will undoubtedly improve our ability to care for [life–support–dependent] patients in a monoplace chamber" (p. 197).

At Dräger, we have steadily increased the intensive–care and life–support capabilities of our monoplace chambers since the introduction of our first prototype chamber in 1964. The procedures mentioned by VanRynen et al. are already provided for as an integral part of the Dräger HTK 1200 monoplace chamber. The Dräger HTK 1200 was introduced in 1980 and is currently in use in more than a dozen countries worldwide for the hyperbaric treatment of patients requiring extreme life–support measures.

These measures include:

- ECG
- EEG (up to 24 channels)
- direct (venous and arterial) blood pressure monitoring
- indirect blood pressure monitoring
- monitoring of temperature, heart rate, and respiratory rate
- ventilation (tidal volume and rate stable regardless of chamber pressure, continuously adjustable by outside personnel)
- automatic continuous suction (2 units in the chamber)
- infusions (by infusion pump)
- transfusions.

We share your concern for the ever–increasing need to treat patients with life–support needs in hyperbaric chambers. We will continue to develop new systems to meet the needs of these patients and of hyperbaric physicians worldwide.

HORST J. WEYNANS
Executive Manager
and
NICHOLAS STROUT
Product Manager
Dragerwerk AG
Werk Drucklammertechnik
Lübeck–Travemünde
Federal Republic of Germany

To the editor:

The article by Kindwall et al. (1) was timely and rational, and the historical perspective of the U.S. Navy Table 6A was indeed interesting. However, I would like to make several comments about the two articles from Kindwall's group (1, 2). Kindwall et al. provide a method of providing monoplace chamber air breaks but do not provide precise information about patients treated with this technique. We propose using a demand regulator and nose clip to ensure that the patient receives air during the air break. We ensured that a volunteer breathed air during the air breaks by monitoring expired gas composition.

Raleigh(2) assumes the patient will be breathing air in the mask system he describes. He is probably correct but it deserves to be pointed out that masks can leak, especially around the face seal, particularly a potential problem if the patient is fatigued, which is likely with an extended table 6. Sheffield et al. (3) have reported mask-to-face leaking and offer solutions to the problem. The system we use (demand regulator) has less chance of that occurring and also enables end tidal gas to be sampled and analyzed to prove that air is being inspired. The mask system does not allow for that if operated in the face-flow manner. These may be rather minor points, but Raleigh's article leads one to believe that the patient breathes air from the mask, which may not be true.

We too have demonstrated quite similar curves for chamber oxygen concentration with chamber gas supply switched to air and back to oxygen. The size of the patient and treatment pressure have most to do with the rapidity of gas composition change. Even by installing another gas supply to the ventilator port and adding additional gas flow (90 psig wide open) we could not enhance chamber gas washout appreciably. We agree with Raleigh's con-

clusion about changing the chamber supply to air not being a practical method for providing air breaks. Furthermore, Reimers, Inc., offers a system that utilizes a headtend (Sea Long Medical Systems, Inc., 1983 S. Park, Louisville, KY 40219–4754) similar to the system used by multiplace chambers, with an overboard dump system that also allows for air breaks (Oxygen delivery station, model ODSI-S-GSP, Reimers Engineering, Inc., 6314-K, Grand Ave. Alexandria, VA 22310).

One final comment is that the discussion by Raleigh is rather superficial and appropriate references are suggested. I am not trying to be overly critical. I think this information is very important to be disseminated to the hyperbaric community, but it is equally crucial that accepted articles be carefully and critically scrutinized before publication, which is vital for hyperbaric medicine to become widely accepted by the "traditional" medical and surgical specialties.

LINDELL K. WEAVER, M.D.
Medical Co-Director
Hyperbaric Medicine and Critical Care
LDS Hospital
Salt Lake City, UT

References

1. Kindwall EP, Goldmann RW, Thombs PA. Use of monoplace vs. multiplace chamber in the treatment of diving diseases. J Hyper Med 1988; 3(1):5–10.
2. Raleigh GW. Airbreaks in the Sechrist model 2500-B monoplace hyperbaric chamber. J Hyper Med 1988; 3(1):11–14.
3. Sheffield PJ, Stork RL, Morgan TR. Efficient oxygen mask for patients undergoing hyperbaric oxygen therapy. Aviat Space Environ Med 1977; 48(2):132–137.