HYPERBARIC OXYGENATION

By

S. VADALKAR

ROBERT Boyle, the English physicist was first to show that a vital material in the air *i.e.*, O_2 was necessary for maintaining life.

Triger—a Frenchman—in 1841 developed first caisson for underwater construction work.

Pravaz, a Hungarian surgeon performed surgery under mild degree of hyperpressure in 1843.

Wangensteen and Lovelace in 1941 proposed medical application for hyperpressure, considered possible benefits of treating patients with bowel obstruction in a pressure vessel. Experimental studies with dogs were published in 1954 by Cross.

Dr. Ite Boerema of Amsterdam in 1955 began using high pressure oxygen to combat gas gangrene and inhibited gas gangrene microbes by flooding them with oxygen. He ushered an era of hyperbaric phenomena in which, todate, infants with congenital heart defects, patients with tetanus, massive blood clots in the lungs, severe heart attack and cancer are being treated in pressurized chambers.

Open heart surgery, kidney and lung transplants in human and in animals are in experimental stages but successive. The staff—*i.e.*, doctors, nurses, technicians, surgeons as well as patients might suffer from "oxygen ebullience" a kind of euphoria resulting from excessive oxygen and "the bends" or "caissons disease" following a standard dive, variable decompression periods are necessary to avoid serious or even lethal effects. Despite the hazards, the potentials of hyperbaric medicines are as fascinating and impelling as those of outer space.

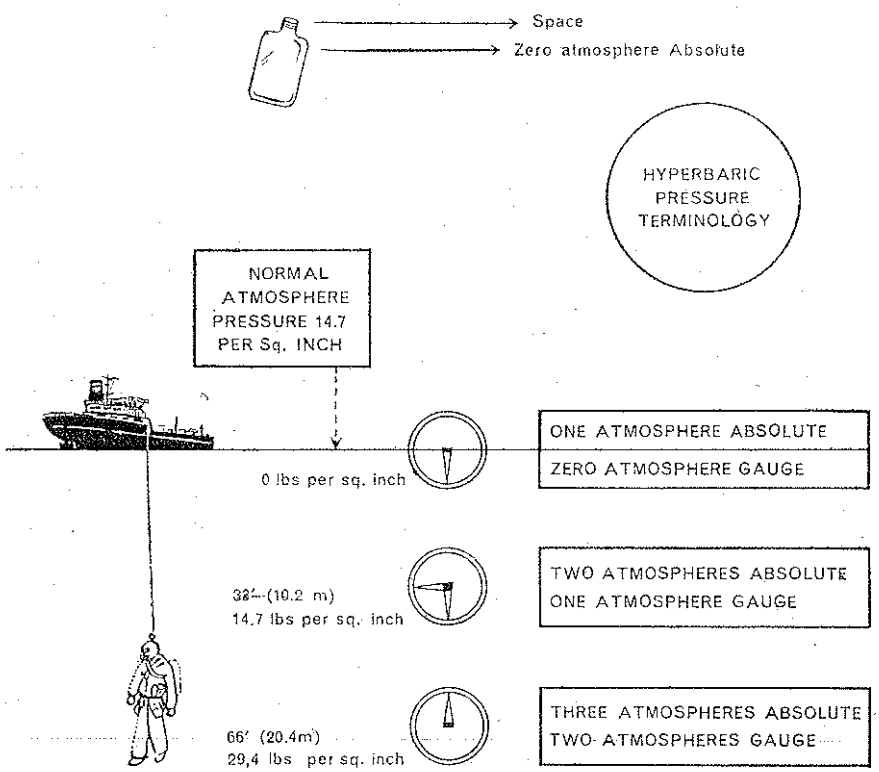

Chart shows equivalent in pressure and pounds per square inch of atmospheres absolute. Technical procedures are being undertaken for patients at seven and eight atmospheres.

Hyperbaric oxygenation reduced to its simplest explanation, involves placing a patient in a pressure chamber and subjecting him to several times normal pressure by means of air compression. The patient is then given pure oxygen to breathe through a demand regulator oxygen mask. At three atmosphere absolute, the patient's blood carries 15 times the oxygen than it normally does ; thus the patient's system becomes drenched with oxygen at a time when oxygen deficiency may be critical.

The surgical area creates pressure of four atmosphere absolute while the other three can create atmosphere up to seven absolute. If the pressure gauge measures three atmosphere absolute, it means the pressure in the chamber is equal to that at 66 feet beneath the surface of the water. There is one atmosphere absolute in the air we all breathe, three means one absolute atmosphere (normal) and two created by artificial means.

T.V. monitors and controls on the outside of the chamber allow the engineers to keep close observation and control of conditions inside the chamber and to record information on control panels.

Air is completely conditioned with temperature and humidity automatically controlled. The automatic pressure control system allows for a very fast pressurization by bringing the pressure up to 3 atmospheres 15 minutes or less in surgical chambers.

An ingenious and imaginative method of increasing the quantity of oxygen delivered to the cells has been achieved with hyperbaric oxygenation. This technique, still in the experimental stages of development gives promise of being a major therapeutic advance and a rewarding investigative tool.

The ability to transport oxygen

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