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About us

The Kent Multiple Sclerosis Therapy Centre is an independent local charity.

We provide a wide range of information, support and therapies aimed at improving symptom management and quality of life for people with MS and their carers throughout South and East Kent and the surrounding areas.

Our core therapies include: Physiotherapy, Gym and Group Excercise, Hydrotherapy, Hyperbaric Oxygen Therapy, Counselling and Nutritional Advice.

Within our brand-new purpose built centre we also offer a much wider range of complementary therapies such as Yoga, Reflexology, Indian Head Massage, Body Massage, Hot Stones Massage, Hand Massage, Acupuncture, Hypnotherapy and Facial Reflexology.

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High Dosage Oxygen Treatment

Overcoming the Limitation of Barometric Pressure

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Scottish History

John Scott Haldane's article on the Therapeutic Administration of Oxygen published in the British Medical Journal in 1917 established him as the father of oxygen treatment. He identified the need to give more oxygen to ensure that **sufficient oxygen actually reaches the tissues**, not just for metabolism but also for repair of injury or disease. He devised the first apparatus to administer 100% oxygen and pointed out that the dosage depends on the **barometric pressure**. In more recent times, very high levels of oxygen have come into routine use in the aerospace and diving industries.[1]

Haemoglobin Saturation

Oxygen is widely used to ensure haemoglobin saturation, which now has the status of a clinical constant, but **severe tissue hypoxia may persist even when full saturation has been achieved**. As only the unbound oxygen dissolved in plasma diffuses into tissue, it is necessary to significantly increase the plasma concentration to correct severe tissue hypoxia.

Plasma Oxygen Concentration

For a given percentage of oxygen inspired, the **plasma oxygen concentration is directly proportional to the barometric pressure** and so depends on the weather and altitude. The use of a pressure chamber removes these limitations and can allow the plasma tension to be safely increased by a factor of twenty – from a typical value of 95mm Hg at sea level to over 2000mm Hg. At this concentration **life can be sustained without blood**.[2]

Hypoxia and Free Radicals

The discovery of oxygen-mediated free radical damage appears to counter the suggestion that high levels of oxygen can be beneficial. However, as free radicals actually derive from changes produced by severe hypoxia and the rapid correction of the deficiency, a high dosage of oxygen is protective. For example, the viability of an amputated limb can be **extended up to 12 hours** for re-implantation surgery.[3]

High Dosage Oxygen for Acute Hypoxia

High dosages of oxygen can be life-saving in asphyxiation, such as near-hanging and carbon monoxide poisoning. In vitro evidence, from cultured human brain tissue removed at necropsy, has shown that **brain cells are still viable for many hours after circulatory arrest**.[4] A high dosage of oxygen may improve the outcome when cardiac resuscitation is delayed by preventing leucocyte-mediated reperfusion injury. Increasing the plasma oxygen concentration is also valuable in ischaemia because the diffusion of oxygen from collateral vessels is maximised, the volume of tissue necrosis can be limited in stroke or myocardial infarction.

Intermittent Oxygen Treatment

The rationale for a course of high dosage oxygen treatments of, for example, an hour a day is less obvious but the object of intermittently raising the concentration of oxygen delivered to hypoxic tissue as in chronic wounds is simply to achieve more normal oxygen values.[5] This reduces oedema, facilitates capillary neogenesis and provides more oxygen for phagocytosis and microbial killing.[6] In vitro research has shown that the effect of a single hyperbaric treatment may last for up to three days.[7] The effects of the hyperbaric session therefore extend well beyond the time in the chamber.

Controlled Studies

It is obviously not possible to exclude some oxygen from a control group and so controlled trials have evaluated air breathing against oxygen breathing under hyperbaric conditions. Successful studies include head injury,[8] myocordial infarction,[9] chronic multiple sclerosis,[10] cognitive disorders,[11] cerebral palsy,[12] burns[13] and leg ulcers.[14] However, objective methods are now available to detect hypoxia for example, Magnetic Resonance Spectrocopy and monitor the benefit of oxygen administration in acute conditions in real time.