The Management of the Cancer Patient by Radiation Therapy with Hyperbaric Oxygen

Comments on the Prevention and Treatment of Complications

O.		Wildermuth
----	--	------------

From the Tumor Institute of the Swedish Hospital, Seattle

At the present time, we conclude from our experience to date that the complications of hybaroxic radiotherapy seen in the area of treatment – in the normal tissues as well as the tumor – are entirely dependent upon the radiation dose, except in a small group of instances when normally non-vascularized tissue is present in the radiation field. Manipulations of radiation dosage have been considered necessary for various reasons, to be reviewed. The avascular tissues that may appear in the field of radiation are cartilage, the lens of the eye, the cornea, etc. Since their normal existence is maintained by diffusion from the surface where contact with the body vascularity is maintained, it is obvious that a new response to radiation beyond

6 Oncologia, Vol. 20, No. 1 (1966)

66

First Annual San Francisco Cancer Symposium

the traditional one is to be expected. There is a second group of complications that are the result of hyperbaric oxygen and are separable into those of pressure and oxygen. Those that are the result of pressure are no different than those presented in many of the classic works dating back to the turn of the century, while those from oxygen under pressure are less well understood and described. One of greatest concern and most dramatic in onset is the complication of convulsions. Three instances will be reviewed. The increased dyspnea of the severely emphysematous patient in hyperbaric oxygen will be noted, as will the most common complication of all – air otitis as a result of pressure changes alone. Its management will be discussed. The most common cause of failure to accept hyperbaric oxygen in radiation therapy is anxiety and fear, without the specificity required to establish a diagnosis of claustrophobia. Our experience with this problem will be discussed, along with its solution.

From the St. Thomas' Hospital, London

Long Term Effects of Hyperbaric Oxygen and Irradiation on Non-Neoplastic Tissues

By I. Churchill-Davidson

The combined use of hyperbaric oxygen (3–4 atmospheres absolute pressure, i.e. 29.4–44.1 lb./sq.in. gauge pressure) with X-irradiation causes an increased incidence of laryngeal cartilage necrosis 6–9 months after treatment, but this complication has been overcome by a reduction in radiation dose without impairing tumour cure rate. There is no apparent increase in damage to cartilage in other sites.

In other normal tissues there appears to be slightly increased damage to skin, mucosa and possibly lung, but these are not enough to prevent one taking full advantage of the enhancement in tumour response to be obtained by the use of hyperbaric oxygen.

From the Radiobiological Research Unit, Cancer Institute Board, Melbourne, Victoria

Increased Radiosensitivity of Skin in Humans Irradiated in 4 ATA Oxygen Pressure pressure. By H. A. S. van den Brenk