Lung metastatic load limitation with hyperbaric oxygen.

Haroon AT, Patel M, Al-Mehdi AB.

Source

Department of Pharmacology, University of South Alabama College of Medicine, Mobile, AL 36688, USA.

Abstract

Despite some theoretical concern about cancer-enhancing effects of hyperbaric oxygen (HBO2) therapy, it is frequently administered to cancer patients. We evaluated the growth of murine breast cancer cells in the lung after hyperbaric oxygen treatment in an experimental metastasis assay. Young nu/nu mice were injected intravenously with 3 x 10(3) 4T1-GFP tumor cells per g body weight followed by lung isolation, perfusion, and intact organ epifluorescence microscopy 1 to 37 days after injection. A group of animals (n=32) was exposed once daily for 5 days a week to 45 min of 2.8 ATA hyperbaric oxygen (HBO2) in a research animal HBO2 chamber. Control animals (n=31) were not subjected to HBO2 treatment, but received similar intravenous administration of 3 x 10(3) 4T1-GFP tumor cells. Single tumor cells and colonies were counted in the subpleural vessels in areas of about 0.5 cm2 of lung surface. HBO2 treatment did not lead to an increase in the number of the large or small colonies in the lungs. Rather, a significant reduction in the number of the large colonies was observed at 1 and 16 to 21-day periods of measurements after hyperbaric treatment. However, most importantly, there was a significant decrease in large colony size in the HBO2 group during all periods of observation. The results indicate that HBO2 is not prometastatic for breast cancer cells; rather it restricts the growth of large tumor cell colonies.

PMID: 17520859
[PubMed - indexed for MEDLINE]