



Recent Results in Cancer Research

Fortschritte der Krebsforschung

Progrès dans les recherches sur le cancer

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Laser Cancer Research

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Introduction

The basic goal of laser research in cancer is to define its value and limitation in cancer research and therapy. This form of radiation, as with other types of radiation, must proceed along the same line and tedious road which x-ray radiation, for example, has followed for so many years. It is hoped that the knowledge of past experiences with x-ray will keep this new flashing darling of the physics laboratory from repeating the same mistakes.

In the field of cancer research, the laser is applied as a type of micro-surgical instrument of great precision for use in investigation in chemistry, cytology, cytogenetics, spectroscopy, and in the treatment of animal experimental cancer. The effect on cancer in animals is produced by absorption of this tremendous high energy and high peak power on both spontaneous and induced tumors. Similar results are produced in cancer of man. Now an effort is made to assess its role in combined programs together with other forms of radiation and of local and systemic cancer chemotherapy agents.

In studies of cancer of man, research in laser is directed to detailed studies of the absorption by different tumors of different types of laser radiation, the immediate and long term effects of the coagulation necrosis induced by the laser and its role as adjunct or synergist to x-ray radiation and cancer chemotherapy agents. Finally, an effort is made now in man to study the effect of the laser on the immunobiology of the cancer.

Experiments on man must be done relatively early in the stage of development of this new complex, sophisticated, and expensive instrumentation, for the optical systems of the tissues of man and also his immunologic mechanisms differ from these in animals.

In brief, it is a tedious painstaking job with continued and necessary cooperation of physicists, engineers, instrument designers, biologists, all working

together with the oncologist. For man, the laser must be moved out of the laboratory into the operating room. At present, its true position in the cancer therapy program is not yet known. The greatest attention is being directed to melanoma because of the tremendous energy adsorption capabilities of this heavily pigmented tumor. The next area of interest is in uncommon and common tumors of blood vessels. Here, too, the color factor influences to a significant degree the absorption of the laser. Multiple accessible malignancies are treated also by the laser chiefly to compare the effect here with other modalities of therapy. Finally, as a type of therapy of desperation, lasers are used in the treatment of metastatic lesions.

This then, is the brief introduction to the study of the current status of laser cancer research. Intense, difficult and cooperative research of the next few years will determine the role of the laser, an „optical knife“, as an investigative or therapeutic instrument.

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