

BOOK REVIEWS

VASCULARIZATION, OXYGEN TENSION, AND RADIOCURABILITY IN CANCER OF THE CERVIX. By Per Kolstad. 152 pages, 59 illustrations, and 25 tables. Universitetsforlaget, Oslo 1963. Price: 45 N. Kr.

This work describes an experimental clinical investigation into the oxygenation of malignant tumours located in the portio uteri. A total of 410 patients were studied and among these 325 had cancer of the cervix, 109 in stage 0 and 216 in stages I to IV, 3 had cancer of the corpus, and 1 had cancer of the vulva. The control material consisted of 30 cases of benign lesions in the portio and 51 cases of dysplasia of varying severity. The oxygenation of the tissues was studied by three different methods: (1) colpophotographic determination of the intercapillary distance, (2) spectrophotometric determination of the oxygen tension (pO_2) in blood, and (3) polarographic determination of the oxygen tension (pO_2) in tissue.

1. The superficial subepithelial capillaries running perpendicularly or obliquely towards the surface may be studied in the colposcope. In normal subjects, the distance between the vessels varies from 50 to 250 μm , with the average around 100 μm . An intercapillary distance $> 250 \mu m$ was noted in 53 % of the carcinomas in situ. A distance $> 350 \mu m$ was measured in 50 % of the patients with stage I cancer of the cervix, in 68.2 % in stage II, and 72.7 % in stages II to IV. A statistically significant difference could only be established, however, by comparing stage I with stages II to IV. With intercapillary distances greater than 350 μm a rapid increase in the number of cases of superficial necrosis was noted.

2. Blood was obtained from the uterine arteries and veins and from the external and internal iliac arteries and veins during laparotomies and extraperitoneal lymphadenectomies. In addition, blood from the portio and from portio tumours was examined. The blood was collected from incisions (10 to 20 mm long and 2 to 4 mm deep), and samples were taken both after the patients had inhaled 25 % O_2 and during inhalation of 100 % O_2 . A distinct cyclic variation, higher pO_2 values between the menstrual periods (oestrogenic dependence), was observed in patients with normal menstruation. Blood from tumour tissue showed reduced pO_2 values in late stages of the disease. A significantly lower pO_2 value was noted even in the pre-invasive stage of cervical cancer as compared with the values in the control series. Tumours showing a definitely reduced pO_2 value were more often encountered in the more advanced stages of the disease. Inhalation of 100 % O_2 resulted in a rapid, sharp increase in pO_2 in the control cases, in a less marked increase in cases with pre-invasive cancer, and in an insignificant increase or none at all in cases with invasive cancer.

3. The results were largely in accord with those obtained in the studies on pO_2 in the blood.

A statistically significant correlation was established between the presence of a tumour area with a capillary distance $> 350 \mu m$, and local recurrence within one year, in 107 cases of squamous-cell cancer in the portio, stages I to IV. The pO_2 in blood from a tumour with recurrence within one year was also lower, but the difference was not statistically significant. No increase in the pO_2 in tissue on inhalation of 100 % O_2 was seen in one or several tumour areas in 4 out of 6 cases with local recurrence within one year, as compared with a corresponding figure of 2 out of 18 cases without recurrence during the same observation period.

To sum up, it may be considered established that in cancer of the cervix uteri there exists a definite correlation between inadequate vascularization of tumour tissue and radioresistance. The presence of hypoxic-anoxic foci in a tumour is of prognostic significance but need not necessarily mean that the tumour is not radiocurable.

John Erik Johnsson

CANCER LEUCÉMIE ET RADIOBIOLOGIE, COLLOQUE FRANCO-SOVIETIQUE. 180 pages. Gauthier-Villars, Paris 1962. Price: 30 NF.

Most of the papers from these proceedings of a joint meeting of renowned French and Soviet scientists deal with radiation lesions of normal tissues that may arise from therapeutic exposure and the means of avoiding them. ZEDGUENIDZE considers the risk to normal tissues in the radiation therapy of malignant tumors of the thoracic region. GRICOUROFF discusses the possibility that cancer may occasionally be caused by radiotherapy; 14 clinical cases are described. KOZLOVA has tabulated several years experience of radiation lesions and DUPLAN is concerned particularly with certain similarities that exist between human leukaemias of the myeloid type and those that are radiation-induced in mice.

MATHE has collected data on human subjects who received whole body irradiation in substantial amounts, whether accidental or in connection with therapy, with particular regard to the question whether bone marrow transplantation aids recovery. BOGDASSAROV et coll. report on the value of bone marrow transplantation to minimize haemopoietic damage. The repair of radiation lesions is also the subject of papers by STRELIN, and by ROUSSANOV et coll.; the latter have tried chemical compounds, such as bathyl alcohol.

Immunologic problems in connection with irradiation and transplantation of various tissues are dealt with in detail in an interesting paper by AMIEL; both well substantiated experimental work and possible human implications are discussed. JAMMET presents a general survey on exposure to radioisotopes under diverse conditions, ranging from the peaceful medical use to the problems connected with nuclear weapon tests.

The book contains much of interest for those in the field of radiation therapy.

A. Forssberg

RADIATION EFFECTS IN PHYSICS, CHEMISTRY AND BIOLOGY. Editors: Michael Ebert and Alma Howard. 510 pages, 192 illustrations and 72 tables. North-Holland Publishing Company, Amsterdam 1963. Price: 50 guilders.

Virtually the entire fields of radiation biology and the adjacent fields of physics and chemistry are covered in these proceedings of the Second International Congress of Radiation Research at Harrogate, Great Britain, 1962. The book gives the reader an up to date survey of our present knowledge.

The number of contributions at meetings such as these tend to increase as to make it almost impossible to follow the proceedings. A rapporteur system was therefore introduced by the congress committee. Papers within a certain field were handed over in advance to an expert who made a general presentation upon which the discussion was based. This appeared to work very well; in particular, ample time was given for the discussions which so often are reduced to a few questions and answers.

The surveys of the rapporteurs, although necessarily condensed, are all excellent and the wealth of material is impressive. The book can be highly recommended to individual workers, institutions and libraries.

A. Forssberg