

# TREATMENT OF EARLY AND ADVANCED HODGKIN'S DISEASE BY RADIOTHERAPY

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It is imperative that every patient with Hodgkin's disease receive a thorough and meticulous diagnostic evaluation of the extent of the disease in order to provide reliable evidence concerning sites of involvement, both for purposes of staging and for the planning of treatment. The staging classification utilized in the following discussion is the four-stage classification proposed for international adoption at the recent conferences in Paris and in Rye, New York (1).

Treatment with curative intent, for which intensive megavoltage radiotherapy is the treatment of choice, is indicated for all patients with Stage I or Stage II Hodgkin's disease, with or without systemic symptoms, except where such treatment is precluded by the poor general condition of the patient or by extensive previous treatment. A study is currently in progress to establish whether intensive radiotherapy with curative intent is also indicated for patients with Stage III Hodgkin's disease and for selected patients with certain variants of Stage IV disease. For the remaining patients with Stage IV disease, palliative therapy is indicated, and will be described separately by Dr. Vera Peters and others.

**Tumor Dose for Intensive Radiotherapy of Hodgkin's Disease.** Recent studies (2) indicate that the recurrence rate per treated field decreases rapidly with increasing dose, reaching a minimum at about 4,000 rads, delivered in approximately four weeks, at which dose level the recurrence rate is only about 2 to 4 per cent. This dose is therefore taken as a good estimate of the tumoricidal dose for Hodgkin's disease.

**Field Size and Shape.** Microscopic disease is often present in other nodes in a chain in which one or two nodes are palpable. Accordingly, it is important to treat lymph node chains in their entirety and to treat contiguous lymph node chains with uninterrupted, shaped fields. A "mantle" technique (3) has been devised for megavoltage radiotherapy of the cervical, supraclavicular, infraclavicular, axillary, mediastinal, and hilar lymph node chains in continuity bilaterally in single shaped anterior and posterior parallel opposed fields. Lead blocks are shaped to the individual contours of each patient, to provide adequate protection for the lung fields, the cervical spinal cord, and the larynx. An optical technique for defining the contours of the lead protective blocks for both lungs

\* Resumo da apresentação, escrito pelo autor.



has recently been described in detail by my colleagues, Earle and Bagshaw (4). This technique is so simple that it permits the ready modification of the lead blocks from time to time in the management of patients with massive initial mediastinal involvement. In such instances, it is desirable to deliver only a small fraction of the total dose, usually 1,000 to 1,500 rads, to a very wide field, sometimes including the entire lung. Treatment is then interrupted for one to two weeks or occasionally longer to permit the mediastinal mass to regress maximally. Lung shields can then be introduced, and treatment resumed and carried to a total of 4,000 rads. It is good practice to include the entire cardiac contour in the initial field in order to eradicate possible pericardial extensions of disease. However, the field size should be reduced after the first 1,500 to 2,000 rads have been delivered so that the entire cardiac volume does not receive the full dose of 4,000 rads. With the optical technique, such changes in the shaping of irregular fields with megavoltage are readily accomplished.

Although the mantle technique was originally developed for use with a 6 MeV linear accelerator, slight modifications of the technique make it readily adaptable to telecobalt apparatus and other megavoltage equipment. A treatment distance of 100 cm is adequate for most women and children, but men, particularly those of large dimensions, may require treatment at a longer distance (130 cm with our 6 MeV linear accelerator). It is imperative that megavoltage energies be utilized for treatment with curative intent, since comparable doses to fields of this magnitude with conventional kilovoltage X rays would yield intolerably severe skin reactions.

In the abdomen, megavoltage beams of rectangular or truncated pyramidal shape are arranged to cover the paraaortic lymph node distribution, taking care to minimize irradiation to the kidneys. A triangular extension at the left upper aspect of the field covers the splenic region. In the pelvis, the iliac, inguinal, and femoral chains may

readily be treated in continuity with an inverted Y-shaped field. The persistent opacification of lymph nodes after lymphangiography greatly facilitates the accurate delineation of abdominal and pelvic fields, making it possible to minimize bone marrow and parenchymal damage, while providing appropriate field distributions for the lymph node chains themselves.

**Tolerance.** Extended-field megavoltage radiotherapy to doses of 4,000 rads is remarkably well tolerated. Cutaneous reactions are minimal or absent, and the subsequent cosmetic results are invariably excellent. Mild to moderate pharyngitis or esophagitis is occasionally seen, but disappears soon after completion of treatment to the abdominal or pelvic fields, usually with prompt relief by appropriate medication. Paramediastinal pneumonitis is seen radiographically in about one half of the patients, but only about one third have any symptoms, usually limited to a mild, dry, irritative cough and occasionally slight shortness of breath, which is self-limited in nature. Tolerance of the bone marrow to these extended fields of treatment is also remarkably good, with white blood counts usually remaining above 2,000 and platelet counts above 50,000-100,000 throughout the entire course of treatment.

**End Results.** Long-term end results by stage will be presented. With optimal technique, about 80 per cent of all Stage I and Stage II cases, including those with constitutional symptoms, can be offered apparently permanent cure (5). Moreover, on the basis of four-year follow up data, it would appear that control of Stage III disease by intensive megavoltage radiotherapy can also be achieved. Our current data suggest that about two thirds of Stage III-A and one third of Stage III-B cases will remain free of disease (6). It is therefore concluded that modern techniques of intensive extended-field megavoltage radiotherapy constitute the treatment of choice for Stages I and II and possibly also for Stages III Hodgkin's disease.

## REFERENCES

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