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Three-Dimensional Radiation Treatment
Technological Innovations and Clinical Results

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Radiation therapy is in the process of continual change, fueled by advances in computer technology, but also aided by the contributions of several disciplines such as physics, mathematics, radiological diagnostics, neurosurgery, and mechanical and electrical engineering. Based on the 3D imaging techniques CT and MRI, a complete change from the 2D consideration of the radiotherapy problem has taken place, leading to 3D treatment planning and to completely new treatment delivery systems. A 3D approach allows for a dramatic rethinking of the following central therapy issues: positioning, targeting, and dose and risk calculation. Major advances have been made in recent years in conformal or stereotactic techniques, in dosimetry, the target volume concept as well as clinical studies.

The advances are reflected in the papers collected here from the international symposium ‘3-D Radiation Treatment: Technological Innovations and Clinical Results’ held in Munich in March 1999. The reports present the newest technical developments and clinical applications. New conformal and stereotactic technologies are discussed. Clinical results are presented in the treatment of lung cancer, prostate cancer, and brain tumors. The role of growth factors and cytokines in the pathogenesis of radiation injury is examined as are mechanisms in the development of normal tissue damage and their significance for understanding tolerated radiation dose. Included are reports on endovascular brachytherapy and new tools of 3D brachytherapy.

This timely book will be of particular interest to radiation oncologists and related clinical practitioners, biologists and physicists.
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