Radiotherapy/Chemotherapy Interactions in Cancer Therapy

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Radiotherapy/Chemotherapy Interactions in Cancer Therapy

Potential Benefits and Hazards in the Clinic

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Essentials of Radiotherapy / Chemotherapy Interaction

Tannock, I.F. (Toronto): The Potential for Therapeutic Gain from Combined-Modality Treatment 1
Fu, K.K. (San Francisco, Calif): Interactions of Chemotherapeutic Agents and Radiation 16
Kallman, R.F.; Bedarida, G.; Rapacchietta, D. (Stanford, Calif.): Experimental Studies on Schedule Dependence in the Treatment of Cancer with Combinations of Chemotherapy and Radiotherapy 31
Phillips, Th.L. (San Francisco, Calif.): Effects of Chemotherapy and Irradiation on Normal Tissues 45

Clinical Results of Radiotherapy/Chemotherapy Treatment

Vokes, E.E. (Chicago, 111.): Concomitant Chemoradiotherapy as Investigational Therapy for Locoregionally Advanced Head and Neck Cancer 55
Vokes, E.E. (Chicago, 111.): Investigation Chemotherapy in Multimodality Therapy of Non-Small Cell Lung Cancer 64
Livingston, R.B. (Seattle, Wash.): Radiation-Chemotherapy Interactions in Limited Small Cell Lung Cancer 72
John, M.; Flam, M. (San Francisco, Calif.): Curative Treatment Approaches for Esophageal Cancer 83
Fowble, B. (Philadelphia, Pa.): Interaction of Chemotherapy and Radiation in the Treatment of Nonmetastatic Breast Cancer 95
Rich, T.A. (Houston, Tex.): Chemoradiation for Gastrointestinal Cancer 115
Cummings, B.J. (Toronto): Anal Canal Carcinomas 131

Contents VIII

Sikic, B.I. (Stanford, Calif): Combined Chemotherapy and Radiotherapy for Advanced-Stage Carcinomas of the Cervix 153
Fryer, C.J.H. (Vancouver): Paediatric Oncology: The Optimal Model for Evaluating Radiation-Chemotherapy Interactions 162
Hoppe, R.T. (Stanford, Calif): Combined-Modality Therapy for the Treatment of Hodgkin's Disease 172
Rotman, M.; Aziz, H.; Rosenthal, C.J. (Brooklyn, N.Y.): Concomitant Infusion Chemotherapy and Irradiation 181
Preface

In our modern world of oncology, there are almost limitless ways to integrate multiple treatment modalities into a therapeutic strategy. In radiation therapy alone, the selection of a treatment time-dose schedule is a fundamental determinant of therapeutic success. Newer innovations in time-dose scheduling - such as the use of multiple treatments per day - promise greater success, and alone were the subject of a recent volume in this series. The use of chemotherapy brings with it equal complexity in terms of the selection of agents and their relative timing. Without question, the combination of radiotherapy and chemotherapy creates a vast new dimension of both complexity and opportunity. To explore these important possibilities, many of the world's foremost authorities on radiotherapy/chemotherapy interaction gathered for the 26th Annual San Francisco Cancer Symposium - to present their pioneering work and to give broad insight into our clinical experience to date. We publish their scientific presentations in this text.

The ultimate goal in any integration of cancer modalities must be therapeutic gain. The effect of combined therapy must be greater on malignant than on normal tissues. For this reason, any evaluation of the success of combined therapy must evaluate normal tissue responses as carefully as tumor responses. (Both may be enhanced by the combined therapy; it may be only the relative change that is of concern - if the normal tissue enhancement can be corrected by reducing the radiotherapy dose). In combining chemotherapy with radiotherapy, therapeutic gain may result when there is a specific tumor sensitization of radiotherapeutic effect by the chemotherapy. Or there may be simply an additive effect of the two modalities, both of which are independently more toxic in malignant tissues. Finally, there may be a toxicity independence - an additive effect on tumors without overlapping toxicities in normal tissues. All are realistic clinical possibilities based upon laboratory evidence to date, as is illuminated for us by Drs. Tannock, Fu, Kallman and Phillips in the first chapters of our volume.

Achieving these possibilities in the clinic has been a challenging goal. Determination of objective end-points, especially in terms of judging normal tissue effects; selection of chemotherapeutic agents and their dosing and timing; often subtle effects of chemotherapy/radiotherapy timing;
response differences in the different normal tissues involved and variations in tumor response give enormous complexity to the task. Yet the prospect of being able to magnify the benefits of radiotherapy by the addition of chemotherapy, well-founded on laboratory evidence, offers a dynamic way to potentially advance our therapeutic strengths. In the clinical chapters, our distinguished contributors describe the potential benefits and hazards of radiotherapy/chemotherapy interaction in the important pursuit of local tumor control.

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