BOOK REVIEW


According to the Preface, the book *Human Radiation Injury* was initially conceived as a reference source for radiation oncologists. However, the editors subsequently decided to take on the daunting task of creating the book for an audience comprised of radiation oncologists as well as “all involved in the study and use of ionizing radiation” and “those involved in policy making affecting medical, industrial or military uses of ionizing radiation.” While their intentions should be applauded, it is difficult to imagine that anyone could be successful in creating a single book that could address the needs of such a wide audience that, by definition, will consist of M.D.s and/or Ph.D.s and others with very diverse backgrounds in the radiation sciences, working in academic clinical or basic science departments as well as the private sector.

Deceptively thin in appearance, the book contains 560 pages of text and references, with 45 chapters broken up into four sections. The first section provides overviews of radiation physics and chemistry and the molecular and cellular mechanisms by which radiation injury to normal tissues may be mediated. The pathology of radiation injury after single and fractionated exposures is also addressed. The second section is devoted to coverage of consequences of total-body irradiation. The effects of radiation on each of the specific organ and tissue systems are addressed in individual chapters within Section III. Section IV contains only a single chapter that addresses the management of late radiation injury. Access to a companion website with fully searchable text and an image bank is granted with the purchase of the book.

Although most of the chapters of the first section are well-written and will be favorably received by those seeking a refresher in radiation physics and biology, much of the material in the chapter on animal models of radiation injury is also presented in subsequent chapters. The chapter entitled “Pathology of Radiation Injury” will be particularly appreciated by those with limited knowledge of clinical terminology.

Some readers may question the motivation of the editors for including some of the material in Section II. Some chapters arguably could have been excluded from the book due to lack of relevance of much of the content to the focus of the book, or else pertinent sections could easily (and probably should) have been incorporated into other chapters. One such example is Chapter 12, entitled “Response to Radiological and Nuclear Terrorism.” Authored by two leaders in the field and extremely comprehensive and well-written, it is focused predominantly on preparedness and planning activities within the Department of Health and Human Services for radiation event responses; some material is presented on medical management of radiation injury, but much of it can either be found in or surmised from other chapters. Similarly, the rationale for inclusion of Chapter 13, entitled “Radiation Effects of Space Travel” and with a heavy emphasis on risk models and animal data, is not clear, despite the fact that it is a thorough and easy-to-understand review of effects of space radiation and implications for long-term manned missions. With the possible exception of cataracts, it can be debated as to how many persons have suffered, or ever will suffer, injuries that might be encountered from exposure to the mix of particles found in the space radiation environment (at low doses and dose rates, during lunar and eventually Mars missions). However, because the use of protons and HZE particles (such as carbon) is generating increased interest in the field of radiation oncology, a discussion of normal tissue injury after exposure to these particles would fit nicely in the book if integrated with data presented in other chapters. Admittedly, more coverage of protons and heavy ions would be welcome in subsequent editions as their role in therapy becomes more clear. Highlights of Section II include Chapters 7 and 8, which address oncogenesis after high or low exposures, and long-term health effects of radiation in atomic bomb survivors, respectively, although much of the information could have been consolidated in a single chapter.

In the opinion of this reviewer, the strength of the book is the third section. The editors deserve a great deal of credit for recruiting leading experts to write most of the individual chapters on their favorite disease or normal tissue sites. The chapters usually begin with a brief introduction of the anatomy of the featured organ. An accompanying figure is often included. The ends of the chapters usually contain a “Conclusion” or “Summary” section or a brief discussion of future directions. Information is also usually provided on management of normal tissue toxicity with respect to the particular organ or tissue being covered, making Section IV somewhat obsolete. Most of the chapters describe the therapeutic role of radiation in particular malignancies, what might be expected after patients receive standard