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2.3 Conclusions; References; Chapter 3 Radiofrequency Ablation in Cancer Therapy: Tuning in to in situ Tumor Vaccines; 3.1 Introduction; 3.2 RFA Techniques/Parameters and Tumor Cell Death; 3.2.1 Direct Effects; 3.2.2 Indirect Effects; 3.3 Release of Immune-Mediating Factors and 'Immunogenic' Cell Death; 3.3.1 Release of Tumor-Antigens; 3.3.2 Release of Immune Stimulating Mediators
3.4 Induction of Immune Responses by RFA: The Tumor Microenvironment
3.4.1 Antigen Presentation after Radio Frequency Ablation; 3.4.2 Immunity after Radiofrequency Ablation; 3.4.3 Regulation after Radiofrequency Ablation; 3.5 RFA Combinational Strategies; 3.5.1 Tumor Cytotoxicity; 3.5.2 Immunotherapy; 3.5.2.1 Stimulation of Antigen Presentation; 3.5.2.2 Stimulation of T Cell Reactivity; 3.6 Conclusions and Future Perspective; References; Chapter 4 High Intensity Focused Ultrasound (HIFU) Ablation; 4.1 History of HIFU Tumor Ablation; 4.2 Physical Principles of HIFU Ablation
4.3 Technical Aspects of HIFU Ablation
4.4 Direct Thermal and Non-thermal Effects on the Tumor; 4.5 Thermal Effects on Tumor Vasculature; 4.6 Indirect Effects on the Tumor; 4.7 HIFU-Induced Antitumor Immune Response; 4.8 Conclusions; References; Chapter 5 The Interrelationship Between Cryoablation, the Immune Response and the Tumor Microenvironment: Stimulatory and Suppressive Effects; 5.1 Introduction; 5.2 Clinical Use of Cryoablation in Cancer; 5.3 Anecdotal Evidence of Immune Response to Cryoablation; 5.4 How Does Cryoablation Kill Tumors?; 5.4.1 Direct Cellular Injury
5.4.2 Indirect Cellular Injury

Sommario/riassunto

The growing knowledge on tumor-immune response interactions and on the tumor microenvironment did not translate so far into better control of cancer by anti-tumor vaccination. The percentage of patients who benefited from vaccination strategies is still too small to justify their general use. It is the aim of this book to present an alternative to the conventional approach of developing injected tumor vaccines to activate anti-tumor immunity, which will fight cancer. It is argued that in situ tumor ablation (destruction) that involves tumor antigen release; cross presentation and the release of danger associated molecular patterns (DAMPs) can make the tumor its own cellular vaccine. Tumor ablation methods using chemicals, radiation, photodynamic therapy, cryoablation, high-temperature, radiofrequency, high intensity focused ultrasound, and electric-based ablation have been developed for focal tumors. In this book experts will deal with two main topics: I. What are the principles of the various ablation modalities, and II. How each method affects the tumor cells and their microenvironment, and how these effects are responsible for the induction of specific anti-tumor immunity. The aims of this book are thus: 1. Familiarize the readers with various methods of in situ tumor ablation. 2. Review the literature and stimulate comparisons on the efficacy of different ablation methods for the treatment of tumors of different histotypes. 3. Review the literature on the effects of various ablation methods on systemic and local anti tumor immunity and on other manifestations of the interactions of tumors with their microenvironment. 4. Stimulate comparative studies on the immunostimulatory effects of different ablation modalities.
