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   Nota di contenuto    Chaptre 1. Brain and Spinal Cord Tumors Among the Life-Threatening Health Problems: An Introduction -- Chaptre 2. Epidemiology of Brain and Spinal Cord Tumors -- Chaptre 3. The Role of Neuro-inflammation and Innate Immunity in Pathophysiology of Brain and Spinal Cord Tumors -- Chaptre 4. The Role of Cellular Immunity and Adaptive Immunity in Pathophysiology of Brain and Spinal Cord Tumors -- Chaptre 5. Immunotherapy as a New Therapeutic Approach for Brain and Spinal Cord Tumors -- Chaptre 6. Cell of Origin of Brain and Spinal Cord Tumors -- Chaptre 7. The Role of Bioinformatics and Imaging Models in Tumorigenesis and Treatment Response of Brain and Spinal Cord Neoplasms -- Chaptre 8. The Role of Epigenetics in Brain and Spinal Cord Tumors -- Chaptre 9. Stem Cells and Targeted Gene Therapy in Brain and Spinal Cord Tumors -- Chaptre 10. Nutrition and Diet: A Double-Edged Sword in Development and Treatment of Brain Tumors -- Chaptre 11. The Role of Nanotechnology in Brain Tumors --

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| | Chaptre 12. The Role of Nanotechnology in Spinal Cord Tumors -- Chaptre 13. The Economic Burden of Malignant Brain Tumors. |
| Sommario/riassunto | Brain tumors comprise about 5–9% of all human neoplasms; and interestingly the central nervous system (CNS) neoplasms are ranked among the most prevalent neoplasms of childhood as well. Besides to the morphologic and histopathologic characteristics, and as each pathologic states first starts with molecular alterations, each tumor may have its own story in the matter of activating tumorigenesis pathways and having specific molecular characteristics. Importantly, the molecular classification of tumors has been highly considered in the past few decades for taking the most appropriate therapeutic approach. On the other hand, the tumors shall have tumor-scape mechanisms preventing the immunologic system to eliminate its invasion. The failure of innate and acquired immune system to defeat tumorigenesis mechanisms would consequently result in tumor development. Interestingly, the neuro-immunologic mechanism plays a role in development of psychiatric manifestations of brain tumors as well. Taking all these to account, the different arms of innate immunity, acquired immunity, and genetics have been approached to defeat development and/or progression of such tumors. Accordingly, the activation immunotherapeutic approaches focus on activating or strengthening the anti-tumor immunologic pathways in order to assist the weakened immune system to defeat the tumor (such as Dendritic cell vaccination, DNA vaccines, peptide vaccines, viral vector-based vaccines, monoclonal antibodies, and CAR T-cell therapy). In addition to immunologic components of brain and spinal cord tumors, numerous genes and genetic pathways have been recognized to take part in tumorigenesis. Taking these non-immune genetic pathways to account, some other therapeutic approaches such as stem cell therapy and gene therapy have been developed in the new era of cancer treatment. Moreover, and besides the biologic and medical aspects of these tumors, different physical/mathematical models have been proposed to either explain or predict tumor behavior. Such models would be advantageous in developing new therapeutic modalities in pre-clinical stages and enter new eras in cancer treatment. The first book of Human Brain and Spinal Cord Tumors, Neuro-immunology and Neuro-genetics, will mainly discuss the neuro-immunology and neurogenetic pathways associated with development of brain and spinal cord tumor. After a short introduction chapter, this book will focus on the role of innate and acquired immunity on development of these tumors and then the immunotherapeutic approaches to defeat these tumorigenesis mechanisms. This book will then focus on genetic aspects of brain and spinal cord tumors and bioinformatics models to describe the behavioral patterns of these tumors, as well as associated therapeutic approaches such as stem cell therapy and gene therapy. This volume of book could be useful for experts in basic sciences, mainly geneticists and immunologists, and also physicians of different specialties, mainly neurosurgeons, neurologists, neuropathologists and neuroradiologists. |