Pineal Region Tumors. Diagnosis and Treatment Options
Progress in Neurological Surgery

Vol. 23

Series Editor

L. Dade Lunsford  Pittsburgh, Pa.
Pineal Region Tumors
Diagnosis and Treatment Options

Volume Editors

Tatsuya Kobayashi  Nagoya
L. Dade Lunsford  Pittsburgh, Pa.

58 figures, 19 in color, and 28 tables, 2009
Contents

VII Series Editor’s Note
Lunsford, L.D. (Pittsburgh, Pa.)

IX Preface
Kobayashi, T. (Nagoya)

Introduction

1 Statistical Analysis of Pineal Tumors Based on the Data of Brain Tumor Registry of Japan
Shibui, S.; Nomura, K. (Tokyo)

Tumors of Pineal Cell Origin

12 Pathology of Pineal Parenchymal Tumors
Sato, K.; Kubota, T. (Fukui)

26 Occipital Transtentorial Approach and Combined Treatments for Pineal Parenchymal Tumors
Tsumanuma, I. (Niigata); Tanaka, R. (Tsubame); Fujii, Y. (Niigata)

44 Role of Stereotactic Radiosurgery in the Management of Pineal Parenchymal Tumors

Tumors of Germ Cell Origin

59 Pathology of Intracranial Germ Cell Tumors
Sato, K.; Takeuchi, H.; Kubota, T. (Fukui)

76 Pineal Germ Cell Tumors
Matsutani, M. (Saitama)

86 Strategy of Combined Treatment of Germ Cell Tumors
Sawamura, Y. (Sapporo/Tokyo)

96 Radiation Therapy for Intracranial Germ Cell Tumors
Aoyama, H. (Sapporo)

106 Stereotactic Radiosurgery for Pineal and Related Tumors
Mori, Y.; Kobayashi, T. (Nagoya); Hasegawa, T.; Yoshida, K.; Kida, Y. (Komaki)
119 Management of Central Nervous System Germinoma: Proposal for a Modern Strategy
Shibamoto, Y. (Nagoya)

130 Quality of Life of Extremely Long-Time Germinoma Survivors Mainly Treated with Radiotherapy

140 Author Index
141 Subject Index
Despite their relative rarity, tumors of the pineal region have remained of great interest to neurosurgeons, radiation, and medical oncologists. At many international meetings, controversy reigns as the merits and risks of various treatment strategies are debated. In Asia, the incidence of germ cell tumors seems much greater than the incidence seen in North American or European populations. Classification systems are occasionally confusing as tumors of the pineal region may arise from cells within the pineal parenchyma, from germ cell origin, from adjacent structures including the dorsal midbrain, from other midline structures, or from the tentorium. In this volume, the authors report various diagnostic and treatment strategies for tumors of the pineal region, emphasizing multimodality management in many patients. For some patients of the pineal region, the evaluation often needs to include pertinent serum or cerebrospinal fluid markers, which may be elevated in nongerminomatous germ cell tumors (a rather oxymoronic term developed by pathologists to confuse clinicians, I suppose). High-resolution magnetic resonance imaging is critical to assess the tumor and to follow the response to treatment. A variety of treatment modalities as well as various surgical approaches are discussed in this volume. We have asked many Asian colleagues to present their experience in this volume, in part because of the more frequent management of these tumors in the Asian population. I am sure that their findings are applicable to all patients and all centers that diagnose pineal region tumors.

L. Dade Lunsford, Pittsburgh, Pa., USA
Preface

The pineal region is an anatomic location where a wide variety of intracranial tumors occur. Germ cell tumors (GCTs) and pineal parenchymal tumors are the most frequently encountered. The frequency of pineal GCTs is higher in Asian countries, including Japan, while pineal parenchymal tumors are less frequently detected in Asia than in the United States and European countries.

Emeritus Prof. Naoki Kageyama, Nagoya University School of Medicine, my teacher and one of the pioneers of GCT studies in Japan, described ‘ectopic pinealoma’ as another name for suprasellar germinomas in 1961. Many original studies of intracranial GCTs by Japanese investigators have contributed to the evolution of the treatment for pineal region tumors.

The current volume of Progress in Neurological Surgery takes advantage of the knowledge of Japanese experts on pineal tumors, with special emphasis on epidemiology, pathological diagnosis, and surgical, radiotherapeutic, radiosurgical and chemotherapeutic management options. We hope that this volume will enhance the knowledge of our colleagues about the various manifestations and treatment options available in the modern era of neurosurgery.

Tatsuya Kobayashi, Nagoya