INTRODUCTION

Skull base meningioma treatment strategies

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IN this issue of *Neurosurgical Focus*, 13 articles have been selected from a variety of centers discussing the biology and medical and surgical management of skull base meningiomas.

The first article by Bi et al. discusses the current state of knowledge about the biology of high-grade meningioma and reviews chromosomal losses and gains that have been described, as well as methylation signatures and transcriptional factors related to prognosis. Following this, the current state of medical management for recurrent meningiomas is reviewed by Gupta et al.; currently underway are several active enrolling trials using novel agents. The need for proven effective agents following standard treatments is desperately needed. All of us hope that one of these trials will give us a result that shows objective tumor responses and prolonged control. Finally, in this first group of papers Magill et al. discuss the relationship between tumor size and the likelihood of atypia. Are large tumors more likely atypical or are tumors atypical because of their large size and local disturbances of the intratumoral microenvironment? A chicken-and-the-egg debate.

Preoperative embolization of large meningiomas is not a universally accepted practice. Yoon et al. provide a nice review of the current accepted indications for and methods of embolization, and they review the anatomy of the blood supply to the meninges based on the location of the lesion within the anterior, middle, and posterior cranial fossae. In their review of the existing literature on published outcomes, they recommend a conservative approach that favors complication avoidance over aggressive attempts to completely devascularize meningiomas preoperatively. Brandel et al. reviewed a national database over a 12-year period of all patients who underwent craniotomy for meningioma and noted that only 2.3% of the patients underwent preoperative embolization. They found that patients

with meningiomas who underwent preoperative embolization had higher rates of cerebral edema and nonroutine discharge, but not stroke or death.

Moving on to the series of clinical case studies in the current issue, we ordered papers by tumor location, grouping together the papers by Ottenhausen et al., Liu et al., and Magill et al. because they discuss olfactory and tuberculum meningiomas, and then following that grouping with 4 papers on middle/posterior fossa and pineal tumors and a final paper on outcomes in elderly patients. The authors of these clinical series have outlined decision-making algorithms and use lesion size, lesion location, cranial nerve function, and arterial relationships in either selecting the surgical approach or predicting outcomes. Many of the complex skull base approaches are nicely illustrated by additional videos.

Our hope is that several years from now another issue of *Neurosurgical Focus* will update us on many of the issues raised in this issue. We are eager to see the results of genetics predicting outcomes and directing therapies, as well as the results of using novel agents for successful treatment of recurrent meningiomas. As always, surgeons should continue to reevaluate what they are doing, why they are doing what they do, and how the evolution of technique influences surgical outcomes. Our thanks to our contributors and colleagues for making this issue possible.

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