INTRODUCTION

Intradural spinal tumors

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It has been 12 years since an issue of *Neurosurgical Focus* has focused on tumors of the spine. It was therefore with great enthusiasm that we invited authors to submit original research or review articles that explored new advances in the field of intradural spinal tumor surgery for this issue of *Neurosurgical Focus*. We were especially interested in presenting articles regarding specific techniques including clinical indications and outcomes as well as evaluations of current evidence regarding management of intradural spinal tumors. We were pleasantly overwhelmed with over 50 excellent submissions from all around the world. Unfortunately, space limitations precluded inclusion of all 50 manuscripts. This issue contains the best 18 original articles on the current state of the art in surgery for intradural spinal tumors.

Intradural spinal tumors occur with an annual incidence of approximately 2–4 per 100,000 and either manifest with symptoms or are diagnosed incidentally. For patients with intradural spinal tumor, the McCormick Scale is considered the standard outcome tool used by physicians. Bellut et al., from Switzerland, submitted their retrospective series that included a patient-rated outcome instrument, Core Outcome Measures Index (COMI). COMI measures axial and peripheral pain, function, well-being, quality of life, and work disability. The authors found that the benefit of COMI was that it was able to detect changes in outcome 3 months after surgery (before changes were apparent on the McCormick Scale) and during later postoperative follow-up.

Symptomatic patients are best treated with tumor excision, which traditionally has been performed via an open approach. Minimally invasive surgery (MIS) has become more popular due to its association with decreased blood loss, decreased postoperative narcotic use, and shorter

lengths of stay. While most articles in this issue reflect standard operative approaches and techniques, the articles by Turel et al., Zhu et al., Raygor et al., and Wong et al. describe innovative exposures and techniques, such as hemilaminectomy, interlaminar approaches, and minimally invasive exposures. The latter 2 series are some of the first studies to directly compare open surgery versus MIS for the treatment of intradural tumors and include important aspects of surgical technique and operative nuances. In their technical paper, Joaquim and Riew looked at the management of cervical spine deformity after resection of intradural tumors.

Contributions from Karsy et al., Tobin et al., and Payer et al. review the genetic basis of intradural tumors and discuss the natural history of and treatment dilemmas for intramedullary tumors and intramedullary metastases. Safaei et al. present a large series of patients with 221 spinal nerve sheath tumors; this paper is important from a neuro-oncologic genetic standpoint, offering useful information about tumor location, extent of resection, and neurofibromatosis status. On an even larger scale, via 18,297 patients across 774 hospitals of the National Inpatient Sample, Kalakoti et al. examined risk factors that are associated with unfavorable outcomes following resection of intradural spine tumors and hospital volume in the United States with respect to discharge disposition and hospital costs.

Ependymomas are the most common intramedullary tumor. The importance of tumor dissection and capsule integrity in myxopapillary ependymoma resection is discussed by Abdulaziz et al. This retrospective review from 2 academic institutions demonstrated a strong correlation between capsular violation and recurrence. In 2 related papers, Klekamp reports on patients treated over a 30-year period. In Part 1 (looking at intramedullary ependymo-

mas), the multivariable analysis showed that thoracic location, advanced age, long clinical history, tumor hemorrhage, and surgery on a recurrent tumor were risk factors for permanent morbidity. In Part 2, the author reviewed filum terminale ependymomas; these tumors represent a unique challenge to the spine surgeon, given the often times large size of the tumors and proximity to the cauda equina nerve roots.

Hemangioblastomas are benign intramedullary lesions that are best treated with resection. In the first of several papers on this subject, dos Santos et al. review the imaging, diagnosis, and role of embolization for vascular spinal cord tumors, presenting a good overview of the tumors, the imaging findings, and the various endovascular treatment modalities. Vetrano et al. report their use of a unique contrast-enhanced intraoperative ultrasound technique in a case of intramedullary cervicothoracic hemangioblastomas mimicking a diffuse infiltrative glioma. In a large

series of hemangioblastomas, Joaquim et al. report on the outcomes of surgical treatment for 16 patients treated during a 15-year period at a single institution; the article addresses a relatively rare diagnosis and provides the reader with a significant number of intraoperative images. In the final paper, Reitz et al. focus on vascular malformations, reporting on intramedullary spinal cavernomas in a series of 48 patients.

This month's issue of *Neurosurgical Focus* covers a wide range of topics carefully selected to be of interest and practical importance to our readership and particularly to neurosurgeons and spinal surgeons who treat intradural tumors. We wish to thank all the authors who submitted papers and to thank the editorial staff at the JNS Publishing Group for their hard work in preparing this issue focusing on intradural spinal tumors.

<http://thejns.org/doi/abs/10.3171/2015.5.FOCUS15254>