



Editorial



Advances in the Treatment of Spinal Metastasis: Commentary on “Spinal Metastases and the Evolving Role of Molecular Targeted Therapy, Chemotherapy, and Immunotherapy”

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See the article “Spinal Metastases and the Evolving Role of Molecular Targeted Therapy, Chemotherapy, and Immunotherapy” via <https://doi.org/10.14245/ns.2244290.145>.

Spinal metastasis is a common complication of systemic cancer progression, and recurrent or radiation-refractory disease remains a significant clinical challenge. Over the past two decades, an increased understanding of the biology of cancer has led to the development of new therapies. Spine surgeons should be knowledgeable about systemic cancer therapies, as it informs the planning of surgical interventions. While the impact of these therapies on the systemic and visceral response of cancer is well-documented, most clinical trials do not specifically record the response of spinal metastatic disease. Thus, more information on the response of spinal metastasis to new treatments is needed to inform surgical decision-making.

In their review, Fomchenko et al.¹ summarize the incidence and treatment options for spinal metastasis from primary non-small cell lung cancer, breast cancer, melanoma, renal cell carcinoma, prostate cancer, and thyroid cancers. Collectively, these primary cancers account for over 55% of all spine metastases diagnosed in the United States.² The authors are to be commended for their comprehensive review of the targeted molecular therapies, chemotherapies, and immunotherapies for these cancers. The review also provides the authors' own examples of patients with spinal metastatic disease who significantly responded to newer therapies, which resulted in avoidance of spinal surgery. These clinical cases demonstrate effective local control within the spine following treatment with chemotherapy, targeted therapy, immunotherapy, and radiotherapy. Awareness of these responses can help with timing and planning of surgical interventions, as well as allow development of an individualized treatment strategy for patients with spinal metastasis.

Long-term survival data show that patients with spinal metastases are living longer.² These survival gains reflect a combination of earlier detection and more efficacious medical therapy and radiation techniques.^{3,4} Surgery for spinal metastases can improve pain, deformity, and neurologic function,⁵ and an improved understanding of spinal metastatic disease leads to better surgical selection of patients with potential for long-term survival. Several algorithms exist to guide surgical decision-making including the NOMS (neurologic, oncologic, mechanical stability and systemic disease) framework, SINS (spinal instability neoplastic score) score and Tokuhashi score.^{6,7} However, these algorithms were constructed on



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data gathered more than a decade ago and do not account for newer genomic data. With the advent of genomic analysis, an increasing percentage of patients can be identified with a targetable mutation. The review by Fomchenko et al.¹ provides a comprehensive collation of targetable mutations including therapies for BRAF V600E mutations in melanoma (MEK inhibitors); T790M EGFR mutations in non-small cell lung cancer (crizotinib), VEGFR/AXL/cMet mutations in renal cell carcinoma (cabozantinib), and mutations in damage repair pathways in prostate cancer (PARP inhibitors). Surgeons should be aware of the molecular subtype of their patient's primary cancer and be cautious of using these older prognostic scoring systems, which might exclude patients from surgery based on predictions calculated using old data.

Overall, the management of spinal metastasis is complex and will continue to require a comprehensive multidisciplinary team to formulate an optimal treatment strategy. Although a robust response to the new targeted therapies has been observed in patients with spinal metastasis, the current literature is lacking on reporting of the safety, efficacy, and overall response rates. Future work is also needed to identify optimal surveillance strategies for repeat spinal imaging and appropriate follow-up by the spine surgeon. Further recognition of predictors of which patients will respond to treatment will continue to evolve as new molecular targets are identified and therapies are approved, and it is important for the spine surgeon to be aware of this prognostic data when counseling patients. The review by Fomchenko et al.¹ provides a comprehensive summary of current treatment options available for patients with spinal metas-

tasis that will serve as a useful reference for spinal surgeons.

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Title: Fatherhood
 Year: 1917
 Artist: Pablo Picasso
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