POSTER 61

Mortality after Surgical and Non-Surgical Management of Sarcoma Spine Metastasis. Meta-analysis and Literature Review

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Background:
Treatment algorithms for metastatic spine tumors have been relatively well established from the Neurologic, Oncologic, Mechanical, and Systemic (NOMS) framework and Spinal Instability Neoplastic score (SINS). However, spine metastases from sarcomas tend to be more radio-resistant and chemotherapy-resistant than metastatic carcinomas, therefore the treatment strategy for local tumor control and disease free survival could differ. It is unclear whether better local control of spine metastasis from sarcoma are obtained with surgical treatment or not, which type of surgery will be better for local tumor control (such as en-bloc type wide resection or intralesional resection), as well as clinical characteristics of sarcoma metastasis to the spine.

Questions/Purposes:
There has been no systematic review specifically focused on spine metastasis from sarcoma. The aim of this study is to assess the clinical findings and outcomes of the treatment for spine metastasis from sarcomas from a literature review and systematic analysis.

Patients and Methods:
We performed a systematic review by querying PubMed for literature evaluating spine metastasis from sarcomas. In total 451 papers were assessed. Eighteen articles in our search met inclusion and exclusion criteria. We included all patients older than 16 years of age with metastatic sarcomas to the spine. We included all articles published in the English language without any restriction for date of publication. We excluded all cases with primary sarcoma of spine, and benign aggressive tumors like Chordoma or Giant Cell Tumors. All patients with intramedullary spinal cord metastasis or isolated sacral metastasis were excluded as well. Articles with literature reviews, technical descriptions or diagnostic cases were removed during screening. We included all patients that had survival outcomes and follow up after diagnosis of spine metastasis, and unless reported, we excluded articles with missing primary sarcoma pathology, missing latest follow up and missing medical or surgical management. Our review was constructed in accordance with Preferred Reporting Items and Meta-Analyses (PRISMA) guidelines and protocol. The main outcome measure was survival time following medical and surgical management after diagnosis of metastatic sarcoma.

Results:
Sixty-four patients were included in the analysis. Twenty-seven (42%) were female, and the mean age was 46. The most common location for metastasis was the thoracic spine with myxoid liposarcoma being the most common primary tumor (58%) followed by leiomyosarcoma (23%). In terms of treatment, 36 patients underwent non-surgical (chemotherapy or radiation) and surgical treatments, 13 underwent surgery only, nine underwent non-surgical treatment only, while six did not receive any treatment. The mean time from primary sarcoma diagnosis to spinal metastasis was 46.9 months. The mortality rate, based on the given follow up period of each study, was 67.7%, with a mean survival time of 48 months. We found no statistically significant difference among the groups (medical only HR 1.01, 95% CI 0.25-4.12; surgery only HR 1.19, 95% CI 0.35-3.99; medical and surgical HR 1.00 95% CI 0.34-2.92). Also, we found no statistically significant difference between patients treated with decompression and fusion versus en bloc resection (HR 1.24, 95% CI 0.58-2.64).

Conclusions:
Myxoid liposarcoma and leiomyosarcoma were the most common primary sarcomas that metastasize to the spine with the thoracic spine being the most location for metastasis. We found no significant difference in survival time after patients with spine sarcoma metastasis received medical management alone, surgical management alone, or

combined medical and surgical management, and no significant difference and a trend towards decreased survival in patients who underwent wide en-bloc resection. Future studies with larger sample sizes should be conducted to explore additional outcome measures and delineate specific disease or patient specific factors that can guide our treatment algorithm for this challenging clinical presentation.

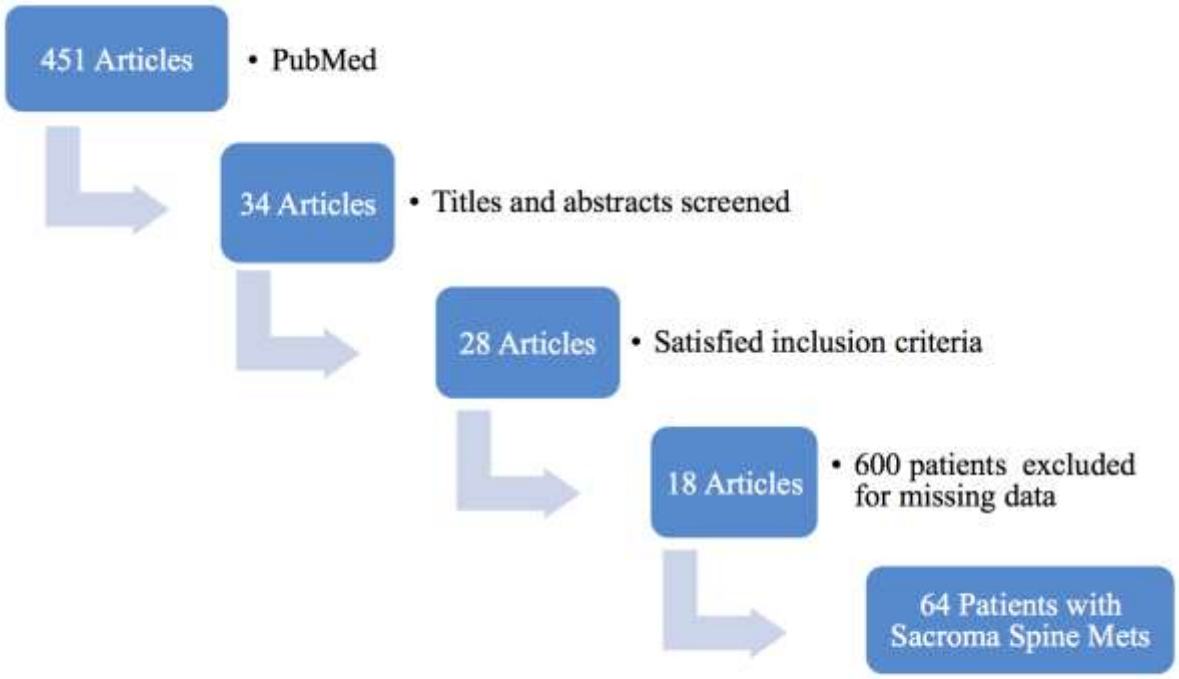

Figure 1. Flow chart illustrating the article screening process of the literature.

	None	Medical only (Radiation or Chemo)	Surgical Only	Medical and Surgical	Total
Total	6	9	13	36	64
Age	47.71 (16.5)	52.11 (14.1)	48.07 (10.1)	43.78 (14.42)	46.22 (13.87)
Female Gender	2	2	6	17	27
Location					
Cervical	0	1	1	1	3
Thoracic	1	1	6	16	24
Lumbar	0	2	4	10	16
Sacral	0	1	0	0	1
Multiple	6	4	2	9	21
Time from Diagnosis to Metastasis (Months)	*	*	87.3 (87.45; 0-204)	31.95 (40.75; 0-156)	46.9 (61.4; 0-204)
Survival from Treatment to Death (Months)	49 (32.5; 13-90)	42.4 (37.4; 15-105)	37.5 (43.35; 2-121)	53.2 (51.12; 1-168)	48.022 (45.87; 1-168)
Mortality	4	5	10	25	44

* Insufficient sample size

Table 2: Demographic and treatment data