

Outcomes for osteosarcoma in adults, 70 years of age and older: a retrospective comparative study at a single institution

Joseph Niland MS, Justin E. Bird MD, Liang Li**, Ph.D., Bryan Moon MD, Patrick Lin MD, Robert Satcher MD PhD, Valerae Lewis MD*

Joseph Niland, MS

E-mail: jeniland@mdanderson.org

Justin Bird, MD

E-mail: jebird@mdanderson.org

Li Liang, MD, PhD

E-mail: lliang1@mdanderson.org

Bryan S. Moon, MD

E-mail: bsmoon@mdanderson.org

Patrick Lin, MD

E-mail: plin@mdanderson.org

Robert Satcher, MD, PhD

E-mail: rsatcher@mdanderson.org

Valerae Lewis, MD

E-mail: volewis@mdanderson.org

*Department of Orthopaedic Oncology, University of Texas MD Anderson Cancer Center, Houston, TX

**Department of Pathology Administration, University of Texas MD Anderson Cancer Center, Houston, TX

Objectives: Currently, most research on outcomes for osteosarcoma (OS) focuses on patients around the age of adolescence. However, osteosarcoma has a bimodal distribution in incidence with peaks occurring during adolescence and the 6th decade of life (Beckingsale and Gerrand, 2010). Elderly patients (≥ 70 years of age) with OS have been found to have different disease characteristics and progression than younger age groups with OS. Elderly patients with OS are more likely to have primary tumor sites in the spine, pelvis, and rib and to have metastases at presentation (Okada, 2004). In addition, the type and frequency of treatments used for the elderly often differ from their younger counterpart.

Purpose: 1) To evaluate differences in survival between patients ≥ 70 yo with OS who received treatment with chemotherapy and surgery and those who received surgery alone.

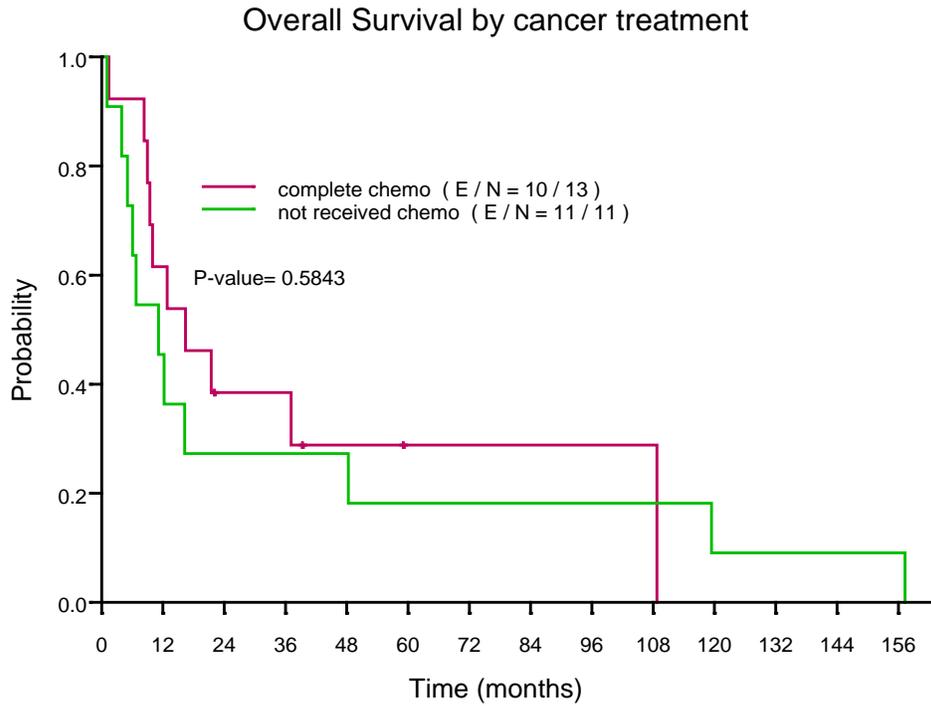
2) To evaluate differences in frequency of application of local versus systemic treatments among patients ≥ 70 yo with OS.

Materials and Methods: An IRB approved retrospective review of the orthopedic oncology database at MD Anderson was performed. Patients were selected based on age greater than or equal to 70 at diagnosis, confirmed diagnosis of conventional osteosarcoma, and treated at MD Anderson between 1990 and 2010. Descriptive statistics including mean, standard deviation, median, and range for continuous variables are provided. Frequency counts and percentages for categorical variables are provided. Kaplan-Meier method was used for overall survival analysis. Median overall survival time in months in 95% confidence interval was calculated. The Log-rank test was used to evaluate the difference in overall survival between patient groups. Statistical software SAS 9.1.3 (SAS, Cary, NC) and S-Plus 8.0 (TIBCO Software Inc., Palo Alto, CA) were used for all the analyses.

Results: Twenty-six patients were identified within the surgical database. Two of the twenty-six patients subsequently stopped treatment and were excluded from the survival analysis. 13/24 patients were offered some form of chemotherapy. 60% of patients received neoadjuvant chemotherapy while only 28% received adjuvant chemotherapy. Margins were negative in 20 cases (77%), positive in 4 (19%) and unknown in 1 case (3%). Median overall survival was 12.5 months (95%CI: 9.43, 48.3). Overall survival at 3 and 5 years for all patients was 33% (0.19, 0.59) and 23% (0.11, 0.5) respectively (Figure 1). There was no significant difference in survival time between those that received chemotherapy with surgery and those that received surgery alone (p-value 0.5843). Median LOS after surgery was 8 days.

Conclusions: 60% of patients ≥ 70 yo with conventional osteosarcoma underwent chemotherapy followed by surgical resection, whereas 40% underwent surgery alone. Survival was poor whether or not chemotherapy was completed, and we did not observe any statistically significant survival benefit associated with the use of chemotherapy in this limited retrospective comparative study.

Level of Evidence: IV



Variable	Level	N	Event	Median OS time in months(95%CI)	OS Rate at 3 Years(95%CI)	OS Rate at 5 Years(95%CI)	P-value
	All patients	24	21	12.53 (9.43 , 48.32)	0.33 (0.19 , 0.59)	0.23 (0.11 , 0.5)	
group	complete chemo	13	10	16.43 (9.43 , NA)	0.38 (0.19 , 0.76)	0.29 (0.12 , 0.7)	0.5843
	not received chemo	11	11	11.14 (6.04 , NA)	0.27 (0.1 , 0.72)	0.18 (0.05 , 0.64)	