



# Age and Tumor Location Predict Survival in Nonmetastatic Osteosarcoma in Upper Egypt

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## Abstract:

**Aim:** To assess survival outcome of pediatric patients with localized osteosarcoma of the extremities in Upper Egypt, identify factors of prognostic significance for survival, and to determine factors predictive of surgical methods employed in these patients, and developing a clinical model for risk prediction. **Patients and Methods:** A retrospective analysis of data assembled from medical records of 30 pediatric patients with a histologically verified nonmetastatic osteosarcoma of the extremities treated at South Egypt Cancer Institute with a unified chemotherapy protocol between January 2001 and December 2015 was carried out. Prognostic factors were determined using univariable and multivariable methods. A model for surgical outcomes in these patients based on the baseline clinical factors, and the parameters predictive of their tumor response to chemotherapy, was developed. **Results:** With a median follow-up of 63 months for the study population, the estimates for event-free survival and overall survival (OS) at 3 and 5 years were 69.5% and 79% and 65.2% and 65.3%, respectively. Age 16 years or above was independently associated with both worse metastasis-free survival (hazard ratio [HR]=6.05, 95% confidence interval [CI]: 1.43-25.6, P=0.015) and OS (HR=7.9, 95% CI: 1.71-36.2, P=0.008). In the multivariable analysis, a proximal location within the limb gained a statistical significance to be independently associated with worse OS (HR=2.4, 95% CI: 1.13-22.1, P=0.003). Poor response to chemotherapy was marginally associated with worse metastasis-free survival (HR=4.9, 95% CI: 1.02-23.8, P=0.047) only in the univariable analysis. The patients found to be more likely to undergo an amputation surgery (odds ratio=14.1, 95% CI: 1.34-149.4, P=0.028) were those in whom a tumor was poorly responding to chemotherapy. **Conclusion:** In Upper Egypt, despite the reasonable survival outcomes in nonmetastatic osteosarcoma, a relatively high limb amputation rate has been encountered. The development of a clinical prediction model for future planning of possible outcome improvement in these patients, however, is still feasible.

## Keywords:

Nonmetastatic Osteosarcoma, Pediatric Cancer, Prognostication, Limb Salvage, Prediction Model, Propensity Score

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