

Abstract

Studies have suggested surgical intervention is associated with an increased rate of metastasis, theorized to be related to the stress response from surgery. The objective of this study was to investigate the impact of regional vs. general anesthesia in sarcoma resection surgery on oncologic outcomes. 317 patients who underwent a surgical resection of a primary bone or soft tissue sarcoma at a single tertiary care referral center were identified for this study. Kapan Meier analysis did not show improved oncological outcomes in patients who received regional anesthesia

Introduction

Sarcoma Background

- Sarcoma is a heterogenous group of malignant neoplasms
- Surgery excision is the mainstay of treatment
- For post-surgical excision of soft tissue sarcoma overall 10 year survival was 72.9% and 10 year crude cumulative incidence of distant metastasis was 25%.¹

Perioperative Period is Associated with Increased Risk of New Metastasis:

- Physiological stress response during surgery is hypothesized to increase risk of metastasis
- Catecholamines, prostaglandins, and angiogenic factors as part of the surgery stress response²
- These factors promote metastasis by :
 - Acting directly on tumor cells and affecting cell proliferation, adhesion, cell locomotion, extracellular matrix invasion, and pro-angiogenic factor release³
 - Indirectly altering tumor microenvironment by suppressing anti-metastatic cell mediated immunity³

Regional Anesthesia is Hypothesized to Reduce Stress Response and Improve Oncological Outcomes

- In vivo rat study showed decreased metastasis with a regional block⁴
- Clinical studies have been inconclusive across various malignancies⁵
- The effect of regional anesthesia in Sarcoma has not been studied

Objective

The purpose of this study is to provide the first retrospective cohort study on the impact of anesthesia use in sarcoma excisional surgery on oncological outcomes

Methods

- DEDUCE was used to identify patients who underwent a surgical resection of a primary bone or soft tissue sarcoma at a single tertiary care referral center from 2007 – 2017.
- Patients were only included if Primary excision was performed by Duke Orthopaedic Oncologist
- Patients were excluded if they presented with metastatic disease at the time of surgery or if the primary tumor was outside the extremity
- The patient cohort was divided into 3 experimental groups based on the type of anesthesia they received during resection
 - Regional Only
 - General Only
 - General + Regional
- Oncological outcomes including Metastasis Free Survival, Overall Survival and Recurrence Free Survival were compared between the 3 groups

Kaplan Meier Curve

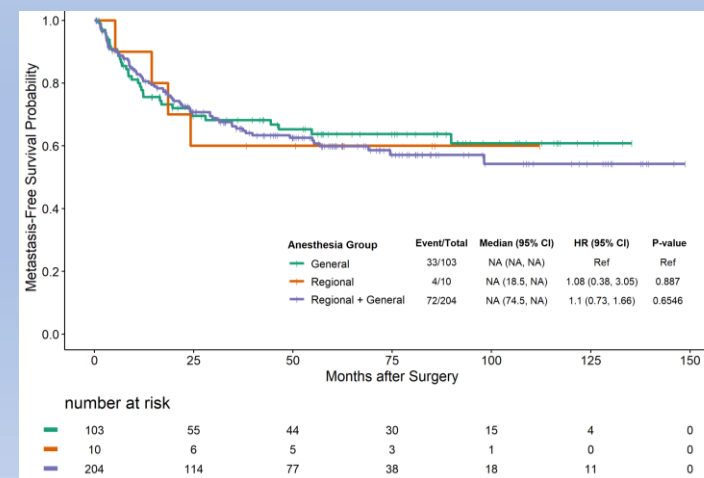


Figure 1: Kapan Meier Curve comparing Time to Metastasis in patients who received General Only, Regional Only and General + Regional anesthesia with correspond hazard ratios . Survival table is displayed below the Kaplan Meier Curve

Results

- 317 patients were included in this study with a mean follow up time of 51 months from their primary resection.
- Of the 317 patients, 10 received Regional only (3.2 %), 103 received General only (32.5 %), and 204 received General + Regional anesthesia (64.3 %).
- Compared to General Only the Regional Only group and the General + Regional group had a HR of 1.06 (.38 - 3.05) and 1.1 (.73 – 1.66) respectively for Time to Metastasis (Figure 1)

Conclusions

- There is a growing body of work suggesting the potential benefits of regional anesthetics in the management of cancer
- Univariate survival analysis does not show reduced risk of metastasis in patients who received regional anesthesia
- Study is limited small sample size and large number of clinical distinct sarcoma subtypes

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