

Prognosis of small (T1) localized synovial sarcoma depends primarily upon re-excision and definitive surgery by trained orthopaedic/surgical oncologists

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Background

Synovial sarcoma is a malignant disease that tends to affect a younger population than some other soft tissue sarcomas. It can present as a small, superficial lesion with a predilection for the hands and feet. They are frequently removed by surgeons in the community in an unplanned manner, without recognition of the tumor's malignant nature. Most are higher grade, and there is debate as to whether small tumors ought to be treated with chemotherapy and/or radiation, especially for unfavorable locations and prior, unplanned surgery. The role of re-excision in the setting of negative margins is uncertain.

Questions/purposes

1. What are the local recurrence-free survival (LRFS) and the distant recurrence-free survival (DRFS) for small (<5 cm) synovial sarcomas?
2. Is outcome superior when small synovial sarcomas are treated by orthopedic/surgical oncologists?
3. What is the role of chemotherapy and radiotherapy in the treatment of small synovial sarcomas?

Patients and Methods

Between 1994 and 2012, we treated 80 patients with non-metastatic, T1 (<5 cm), non-recurrent synovial sarcoma. This retrospective analysis includes 63 of 80 (78%) patients with minimum follow-up of 12 months (mean 85, median 78, range 13 – 210 months). Seventeen patients were excluded for inadequate follow-up or incomplete data. There were 26 males and 37 females with a median age of 33 years (range, 4 – 74 years). Re-excision was performed if there were positive margins on the initial surgical specimen. Kaplan-Meier survival analysis was used to calculate LRFS and DRFS. The log rank test was used to compare groups in survival analysis. The study was approved by the Institutional Review Board.

Results

The LRFS at 5 and 10 years was 95% and 82%, respectively (95% confidence interval [CI] 67 – 97% at 10 years). The DRFS at both 5 and 10 years was 95% (95% CI 89 – 100%). Patients who underwent re-excision had a 5 year LRFS of 100% (95% CI 100%) whereas patients without re-excision had a 5 year LRFS of 85% (95% CI 69 – 100%; $p=0.014$). Definitive surgery at our institution by trained orthopaedic/surgical oncologists resulted in a 5 year LRFS of 98% (95% CI 93 – 100%) whereas patients without formal re-excision at our center had a 5 year LRFS of 87% (95% CI 69 – 100%; $p=0.045$). In addition, definitive surgery at our institution resulted in a 5 year DRFS of 100% (95% CI 100%) compared

to 80% (95% CI 60 – 100%) for no re-excision at our hospital ($p=0.007$). Radiation was administered to 35 of 63 patients (56%) and resulted in a 5 year LRFS of 96% (95% CI 87 – 100%) compared to 89% (95% CI 77 – 100%) for no radiation ($p=0.69$). Chemotherapy was given to 9 of 63 patients (14%) and was associated with a 5 year LRFS of 100% (95% CI 100%) compared to 94% (95% CI 88 – 100%) for no chemotherapy ($p=0.691$). Four of 6 (67%) patients with local recurrence developed metastasis whereas 1 of 57 (2%) patients without local recurrence had metastasis (chi-square $p<0.001$). Patients who initially had an R0 resection surgery and no re-excision had a 5 year LRFS of 86% (95% CI 71 – 100%) vs. 100% (95% CI 100%) for R1 surgery followed by wide re-excision at our hospital ($p=0.18$). DRFS at 5 years was 100% (95% CI 100%) in patients with tumors <3 cm (median size) compared to 90% (95% CI 80 – 100%) in patients with tumors ≥ 3 cm ($p=0.018$). Factors that did not predict LRFS or DRFS included gender, race, age, tumor site, monophasic vs. biphasic histology, and depth ($p>0.05$).

Conclusion

The overall prognosis of small, localized synovial sarcoma is good, with LRFS of 95% and DRFS of 95% at 5 years. Follow-up beyond 5 years is important for late local relapse. The main determinants of local recurrence were re-excision and surgical treatment by trained orthopedic/surgical oncologists. The factors predicting metastasis were tumor size ≥ 3 cm, local recurrence, and surgical treatment by non-specialists. Chemotherapy and radiotherapy did not affect LRFS and DRFS, but this may be the result of selection bias or small sample size. Based on this retrospective analysis, we recommend that small synovial sarcomas be formally re-excised by orthopedic/surgical oncologists after an unplanned excision regardless of outside margin status. Tumors <3 cm do not appear to benefit from chemotherapy after adequate wide re-excision, but DRFS is clearly worse for tumors ≥ 3 cm, and the need for chemotherapy should be studied further in this subgroup.

Level of Evidence

Level IV, prognostic study.