

**Epidemiology of Synovial Sarcoma over 1975-2017: A Surveillance, Epidemiology, and End Results Population-based Analysis**

**Background:** Synovial sarcoma is a rare soft-tissue malignancy that can arise at any age and anatomic area. No study has yet simultaneously investigated the incidence, prevalence, case-fatality, and overall survival trends and risk factors of the disease.

**Methods:** Synovial sarcoma patients diagnosed between 1975 and 2017 were identified from the Surveillance, Epidemiology, and End Results program. Population-based data were used to find age-adjusted incidence, limited-duration prevalence, incidence-based mortality, case-fatality ratios, and overall survival rates. Independent predictors of worse survivorship were determined.

**Results:** A total of 3397 patients were identified, 1789 (52.7%) of whom were males. Over the course of the study, age-adjusted incidence and 20-year limited-duration prevalence of synovial sarcoma increased from 0.92 (95% confidence interval [CI] 0.55 – 1.46) per million persons and 9.8‰ (95%CI 8.6 – 11.1) to 1.80 (95%CI 1.53 – 2.10) per million persons and 18.1‰ (95%CI 16.9 – 19.4), respectively (both,  $p < 0.05$ ). In 1975, 9 (31.0%) of 29 patients died of the disease, compared to 24 (14.3%) of 168 in 2017 ( $p = 0.033$ ). Median overall survival was 21.7 years in the entire cohort, decreased to 1.3 years in subjects with metastatic disease, and could not be reached in patients with early-stage tumors. Male sex, older age, as well as tumor size, grade, and stage, independently predicted worse prognosis (all,  $p < 0.05$ ).

**Conclusions:** Although advances in treatment have led to higher survival rates in synovial sarcoma, improvements are still needed in the metastatic setting, and long-term follow-up is warranted for adequate tumor relapse monitoring.