**Post-operative radiation therapy in adenoid cystic carcinoma: A SEER analysis.**

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Abstract Text:

**Background:** Adenoid Cystic Carcinoma (ACC) is a rare malignancy affecting the major and minor salivary glands and also a number of other glandular tissues. Local management is surgery plus or minus adjuvant radiation (RT). No prospective study of RT for resected ACC has been reported.  We hypothesized that RT might improve survival for patients with ACC.

**Methods:**   The Surveillance, Epidemiology and End Results Database (SEER) database was queried for ACC cases from 1988-2010. The outcomes were survival and cause specific survival (CSS). A univariate analysis of each outcome by whether RT was received, and several demographic, staging, and treatment related factors was performed using K-M survival curves and log–rank tests. Cox proportional hazards multivariate models were used to model the outcomes versus receipt of RT, age, year of diagnosis, gender, race, site, and stage, in addition to the interaction terms between RT and other factors, except for site. Hazard ratios and 95% CI were produced for contrasts of interest. Local control rate could not be adequately assessed.

 **Results:**The 10-yr CSS for localized disease was 90% (95% CI: (87%,92%)) for no radiation versus 89% (95% CI: (86%,92%)) for RT, indicating no survival difference. In a multivariate model, there was an increased risk of CS death associated with RT for regional disease (HR 1.50, CI 1.15-1.97, p = 0.003), and a decreased risk for CS death in metastatic disease (HR 0.68, CI 0.47-0.99, p = 0.043).  In a multivariate model, there was an increased risk of all-cause death associated with RT for regional disease (HR 1.24, CI 1.01-1.53, p = 0.044), and a trend for decreased risk of death associated with RT for metastatic disease (HR 0.74, CI 0.53-1.03, p = 0.073).

**Conclusions:**  There is no evidence of a survival benefit associated with adjuvant RT for adequately resected local ACC in this analysis of the SEER database. A worsened survival for regional ACC suggests a selection bias toward use of RT in higher risk patients. Prospective studies of adjuvant RT in ACC are needed.