

Title: Surveillance, Epidemiology, and End Results Database Update for Pediatric Thyroid Carcinomas Incidence and Survival Trends 2000-2016

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Objective: To reflect on trends in pediatric thyroid carcinomas using the Surveillance, Epidemiology, and End Results (SEER) Database.

Methods: The National Cancer Institute's SEER database was used for all cases of pediatric thyroid cancer between the years 2000 and 2016 for patients aged 0-19. Patients were grouped by histological subtype, disease-specific survival (DSS) based on treatment modality, and the following demographic data: age, sex, year of diagnosis, and race. Treatment methods, surgery alone (SA) and surgery with adjuvant radiation (S/R), were compared using Fifteen-Year DSS Curves.

Results: A total of 1175 pediatric patients were identified and the average age-adjusted rate of malignancy was 0.3 per 100,000 patients. The incidence of pediatric thyroid cancer was approximately 1:3.6, male to female. The papillary follicular variant histological subtype was the most common (n=689, 58.6 %), followed by papillary (n=223, 18.9%), follicular (n=153, 13.1%), and medullary (n=110, 9.4%). Overall incidences of thyroid carcinomas were highest in patients aged 15-19 (69.8%) and medullary thyroid carcinomas were highest specifically in patients aged 0-9. Patients aged 10-19 treated with S/R therapy provided the highest DSS fifteen-years past initial diagnoses in all histologic subtypes($p < 0.05$). Patients with metastatic medullary thyroid carcinoma at initial diagnosis who underwent SA showed significantly poorer fifteen-year DSS when compared to other histologic subtypes ($p < 0.05$).

Conclusion: There were significantly improved prognosis in pediatric thyroid carcinomas if diagnosed and treated early. All four major histological subtypes exhibit an increase in overall survival rates, excluding medullary carcinomas 9 or more years after diagnosis.