Pediatric Nasopharyngeal Carcinoma: A National Cancer Data Base Review

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Introduction & Background

- Nasopharyngeal carcinoma is endemic in some Asian regions
- It is uncommon in the United States
- Little known about pediatric nasopharyngeal carcinoma including:
  - Racial distribution
  - Demographic features
  - Biologic characteristics

Aims

- Use National Cancer Data Base to improve our understanding of the differences between pediatric and adult nasopharyngeal carcinoma
- Determine if Asian American relative to Caucasian race confers survival difference among pediatric patients with nasopharyngeal carcinoma

Methods

- National Cancer Data Base (NCDB) queried for diagnosis of nasopharyngeal carcinoma 1998 – 2011
- Pediatric patients ≤21 were compared to adults >21 years of age using Chi², t-tests (P<0.05)
- Cox proportional hazard model used to examine:
  - Survival differences in pediatric patients relative to adults
  - Overall risk of pediatric mortality by race
  - Survival differences when age is restricted to ≤60 years
- Adjustment factors: gender, income, education, race, insurance, urban versus rural place of residence, Charlson-Deyo score, tumor stage, grade

Results – Univariate Analysis

- Patients identified with primary nasopharyngeal carcinoma:
  - 699 pediatric patients
  - 16,618 adult patients
- Male gender predominated
  - 460 (65.8%) male pediatric patients
  - 11,465 (69.0%) male adult patients
- No difference (p<0.05) between pediatric and adult patients with regard to:
  - Insurance status
  - Invasive disease at presentation
  - Positive surgical margin at resection
- Pediatric patients more likely to:
  - Be of Black race (p<0.001)
  - Live in a rural area (p<0.001)
  - Live in an area with lower educational achievement (p=0.01)
  - Have advanced nodal disease (p<0.001)

Results – Hazard Regression

- Cox regression analysis:
  - Hazard Ratio for mortality: 0.37 (95% CI 0.25-0.56) for pediatric nasopharyngeal carcinoma relative to adults
  - When stratified by racial groups:
    - No difference in mortality: Hazard Ratio 1.1 (95% CI 0.82-1.4)
  - When restricted to adults ≤60 years:
    - Hazard Ratio for mortality: 0.41 (95% CI 0.27-0.63) for pediatric nasopharyngeal carcinoma relative to adults

Results – Survival Analyses

- Kaplan-Meier Survival Estimate
- Overall Survival Analysis
- Survival Analysis Restricted to Age ≤60 years
- Survival Analysis for Pediatric Patients Stratified By Race

Conclusions

- Pediatric patients with nasopharyngeal carcinoma are more commonly:
  - African American
  - Live in a rural area
  - Reside in a region where fewer people have a high school degree
  - Present with Stage IV disease
  - Have undifferentiated tumors
- Pediatric patients have a decreased adjusted mortality risk relative to adults
- Asian American race was not associated with increased mortality in pediatric patients with nasopharyngeal carcinoma
- Racial differences do not appear to be associated with increased mortality risk

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