Survival for Thyroid Cancer in the 21st century: Europe vs. United States

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Abstract

Educational Objective: At the conclusion of this presentation, the participants should be able to compare survival for thyroid cancer between the United States, Europe, and geographic regions of Europe.

Objective: To compare survival for thyroid cancer across European regions, and the United States (U.S.).

Study Design: Frequency, and Relative Survival (RS) data were obtained from The Surveillance, Epidemiology, and End Results (SEER), and EUROCARE databases, for thyroid cancer reported between 2000 and 2007. Cases were broken down by age and gender. For Europe, results were also broken down by country and geographic region.

Results: From 2000 to 2007, 146,904 cases of major salivary gland cancer were identified, 86,691 in Europe and 60,213 in the U.S. RS for the U.S. (1-year:97.9%,5-year:97.2%) was greater than that of Europe overall (1-year:93.1%,5-year: 89.7%), and that of all European regions ($p<0.05$). The United Kingdom (U.K.) & Ireland (1-year:88.6%,5-year: 83.5%) had the lowest, and South (1-year:95.9%,5-year:93.9%) had the highest RS within Europe ($p<0.05$). For the U.S., 1-year RS was greater than all European countries besides Malta, and 5-year RS was greater than all European countries ($p<0.05$). Females had higher RS than males ($p<0.05$), except in Northern Europe. Older patients, especially those e75 years of age had lower RS when compared to younger patients ($p<0.05$).

Conclusions: Survival for thyroid cancer in the U.S. is better than in Europe. While studies have shown Eastern Europe to have the worst survival in Europe for head and neck cancers overall, this study demonstrates that the U.K&Ireland have the worst survival for thyroid cancer. Further studies looking at survival by stage of presentation and histologic subtype, at a population level, are needed for Europe.

Introduction

- With an estimated 64,300 new cases in 2016, thyroid cancer makes up roughly 3.8% of all new cancer diagnoses in the United States (U.S.) and is the 8th most common cancer.[1]The incidence rate has more than doubled in the past 2 decades, but the mortality rate has been stable over this time period.[1]
- The demographic, epidemiologic, and clinicopathologic characteristics, as well as the outcomes largely depend on the histologic subtype. Since there is significant geographic variability of both the histologic makeup of thyroid cancer and its risk factors, differences in survival would be expected between countries.
- We aim to identify commonalities between geographic areas with similar outcomes, and differences among regions with contrasting RS rates.
- By highlighting differences between geographic areas and temporal trends it may be possible to better understand factors that influence RS rates for thyroid cancers.

Materials and Methods

- All data for Europe were obtained from the EUROCARE website (www.eurocare.it). EUROCARE is a cancer database that is comprised of information from the 116 registries in 30 European countries.[5,6]
- EUROCARE-5, which covers the years 2000 to 2007, captures approximately half of Europe, and all of the Northern European (Denmark, Finland, Iceland, Norway, Sweden) and British Isles (United Kingdom, Ireland) population.
- Subgroup analysis by age (15-44, 45-54, 55-64, 65-74, 75+ years) and gender were then performed. Additionally, to analyze temporal trends in survival, data were also obtained from the EUROCARE-4 (1995-1999) and EUROCARE-3 (1990-1994) databases.
- The same information was obtained from the Surveillance, Epidemiology, and End Results (SEER) 18 database using SEER*Stat(version 8.3.2), for the U.S. The database captures approximately 28% of the U.S. population. In order to produce valid results which are comparable to those of EUROCARE, the methodology was kept consistent with that used in the EUROCARE analysis.

Results

Table 1. Demographics of Thyroid Cancer

	Europe Overall		Central Europe		U.K. & Ireland		Southern Europe		Eastern Europe		Northern Europe		United States	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Total	86,691		23,499		14,338		26,829		13,683		8,342		60,213	
Age(y)														
15-44	29,446	34.0%	7,541	32.1%	5,493	38.3%	9,744	36.3%	3,936	28.8%	2,732	32.7%	24,471	40.6%
45-54	18,347	21.2%	5,169	22.0%	2,463	17.2%	5,903	22.0%	3,124	22.8%	1,688	20.2%	14,291	23.7%
55-64	17,143	19.8%	4,760	20.3%	2,293	16.0%	5,357	20.0%	3,188	23.3%	1,545	18.5%	10,202	16.9%
65-74	12,956	14.9%	3,674	15.6%	1,988	13.9%	3,909	14.6%	2,269	16.6%	1,116	13.4%	6,747	11.2%
75+	8,799	10.1%	2,355	10.0%	2,101	14.7%	1,916	7.1%	1,166	8.5%	1,261	15.1%	4,502	7.5%
Gender														
Male	20,942	24.2%	6,430	27.4%	3,799	26.5%	5,971	22.3%	2,553	18.7%	2,189	26.2%	14,483	24.1%
Female	65,749	75.8%	17,069	72.6%	10,539	73.5%	20,858	77.7%	11,130	81.3%	6,153	73.8%	45,730	75.9%

Results

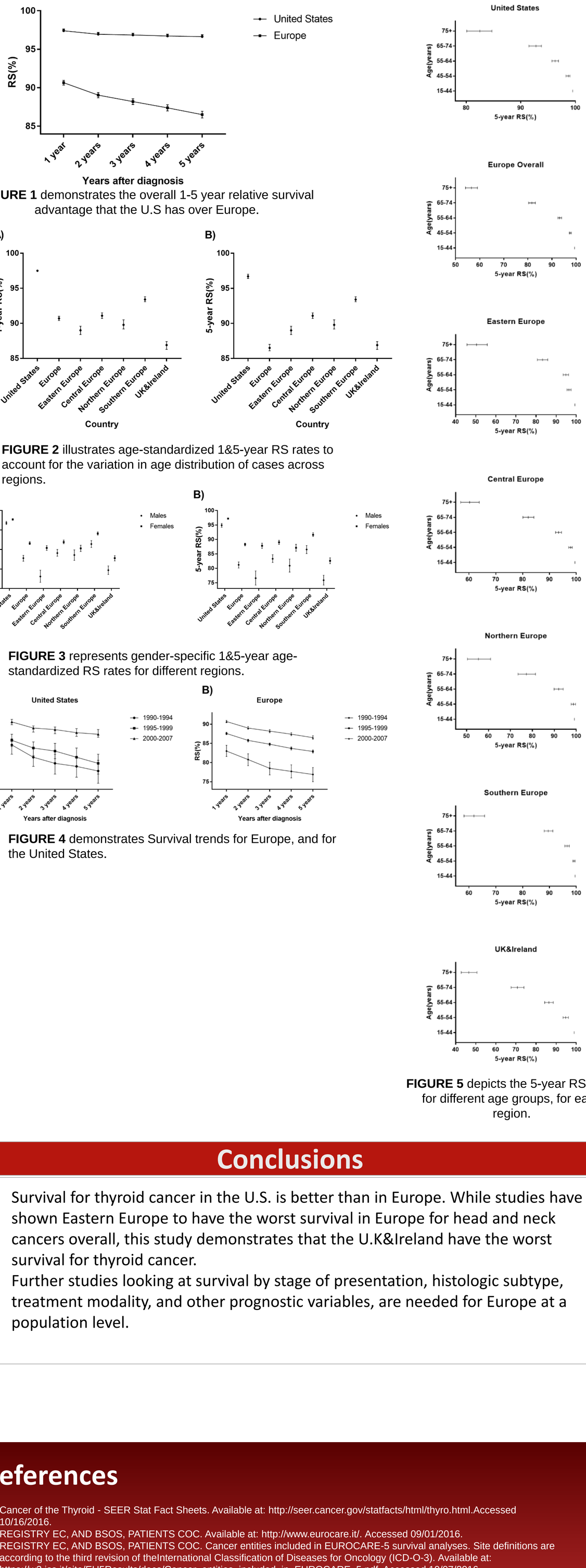

FIGURE 1 demonstrates the overall 1-5 year relative survival advantage that the U.S has over Europe.

FIGURE 2 illustrates age-standardized 1&5-year RS rates to account for the variation in age distribution of cases across regions.

FIGURE 3 represents gender-specific 1&5-year age-standardized RS rates for different regions.

FIGURE 4 demonstrates Survival trends for Europe, and for the United States.

FIGURE 5 depicts the 5-year RS rates for different age groups, for each region.

Conclusions

- Survival for thyroid cancer in the U.S. is better than in Europe. While studies have shown Eastern Europe to have the worst survival in Europe for head and neck cancers overall, this study demonstrates that the U.K&Ireland have the worst survival for thyroid cancer.
- Further studies looking at survival by stage of presentation, histologic subtype, treatment modality, and other prognostic variables, are needed for Europe at a population level.

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