

EPIDEMIOLOGY AND TREATMENT OF RADIOACTIVE IODINE-REFRACTORY DIFFERENTIATED THYROID CANCER IN THE EU5

Knar Nersesyan, MS, MA¹; David Robinson, MS¹; Greg Wolfe, PhD¹; Natalia Flores, PhD¹; Corey Pelletier, PhD²;

Anna Forsythe, PharmD, MSc, MBA²; David Pomerantz, BS¹

¹Kantar Health, New York, NY, USA; ²Eisai Inc., Woodcliff Lake, NJ, USA

KANTAR HEALTH

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ABSTRACT

OBJECTIVE: Explore epidemiology and drug treatment of radioactive iodine-refractory differentiated thyroid cancer (RR-DTC) in EU5.

METHODS: Epidemiology of RR-DTC was derived from the Kantar Health CancerMPact® database, sources for which include country-specific cancer registries, published scientific studies, and proprietary physician surveys comprising 81 doctors seeing a total of 3,985 patients per month. Data specific to treatment of RR-DTC was derived from patient chart review studies conducted by Kantar Health. Age- and gender-specific incidence rates, annual stage-specific progression rates, and annual stage-specific survival rates are used to calculate total number of surviving patients at a specific stage up to 10 years after diagnosis.

RESULTS: Incidence of thyroid cancer ranged between 5-20 per 100K population across EU5 (UK-4.8, Germany-8.4, France-13.4, Italy-20.3, Spain-7.2). Among all thyroid patients, percentage DTC showed less variation: 76% (UK), 83% (Germany), 87% (Italy), 88% (Spain), 91% (France). Among DTC, percentage RR was very similar (range 26%-33%). Among RR-DTC, 23% received watch and wait, 33% non-systemic management, and 44% systemic therapy. Among those receiving systemic therapy, 48% received chemotherapy, 46% received tyrosine kinase inhibitors (TKI), and 6% BRAF inhibitors. Among those receiving chemotherapy, 50% received doxorubicin (either as monotherapy or part of a multi-drug regimen), and 20% received cisplatin. Among those receiving a TKI, 51% received sorafenib and 28% sunitinib.

CONCLUSIONS: Among RR-DTC patients treated with systemic therapy, chemotherapy and TKIs are used most often. The most common chemotherapy is a doxorubicin-containing regimen, and sorafenib is the most common TKI used.

- Among the metastatic RR-DTC, most (67%) received some type of systemic treatment. Among those receiving systemic treatment, most (67%) received a TKI. First-line doxorubicin-based therapies were highest in UK. Cisplatin use was highest in Italy. Sorafenib was the preferred TKI across all countries. Sunitinib use was higher in Spain than the other countries. Twenty-two percent of first-line patients received second-line treatment. Second-line treatments across all the EU5 countries was fairly evenly split among doxorubicin-based therapies, sorafenib and sunitinib.

Table 2. Treatment of Metastatic RR-DTC in EU5

		Systemic	
Systemic	67%	Chemo	28%
Non-systemic	16%	TKI	67%
WW	17%	BRAF	4%

Table 3. First-line Systemic Treatment of Metastatic RR-DTC

	UK	SPAIN	ITALY	GERMANY	FRANCE
Doxorubicin-based Therapy	53%	28%	40%	46%	44%
Cisplatin	15%	22%	40%	8%	13%
Docetaxel	9%	3%	6%	0%	9%
Paclitaxel-based Therapy	3%	6%	26%	4%	16%
Etoposide	3%	6%	0%	4%	0%
Other Chemotherapy Drug	0%	0%	14%	4%	9%
Sorafenib (Nexavar)	26%	44%	20%	25%	34%
Sunitinib (Sutent)	9%	25%	9%	13%	13%
Vandetanib (Caprelsa)	3%	0%	6%	4%	6%
Cabozantinib (Cometriq)	0%	0%	6%	4%	0%
Pazopanib (Votrient)	3%	0%	0%	4%	6%
Axitinib (Inlyta)	0%	0%	0%	0%	0%
Other TKIs	3%	9%	0%	0%	0%

Table 4. Second-line Systemic Treatment of Metastatic RR-DTC for EU5

	EU5
Doxorubicin-based Therapy	17%
Cisplatin	0%
Docetaxel	11%
Paclitaxel-based Therapy	11%
Etoposide	3%
Other Chemotherapy Drug	0%
Sorafenib (Nexavar)	20%
Sunitinib (Sutent)	17%
Vandetanib (Caprelsa)	0%
Cabozantinib (Cometriq)	0%
Pazopanib (Votrient)	11%
Axitinib (Inlyta)	3%
Other TKIs	0%

- The figures in the tables above represent patients receiving the specific therapies at any time during their course of treatment so a patient could be counted more than once.

OBJECTIVE

- The objective of this study was to explore differences/similarities in epidemiology and treatment of radioactive iodine-refractory (RR) differentiated thyroid cancer (DTC) in the EU5 (France, Germany, Italy, Spain, United Kingdom).

METHODOLOGY

- Epidemiology data were derived from the Patient Metrics module of the Kantar Health CancerMPact® database. CancerMPact® is a comprehensive oncology decision support resource. It can be utilized for market analysis, strategic planning, and identification of commercial opportunities in the US, Western Europe, Japan, and China. This resource is composed of web-based integrated modules including Patient Metrics, Treatment Architecture, and Future Trends and Insights.
- Historical age-, gender-, and stage-specific incidence rates are obtained from country-specific registry sources. These rates of disease are then applied to country-specific population data to calculate age-, gender-, and stage-specific number of newly diagnosed patients. Projections of the historical incidence rates to future years are done using Bass diffusion curve modeling.
- Histology distribution and survival rates are obtained from either these same cancer registries or in-depth literature search and review, depending on the country. The annual stage-specific cumulative rates of survival are used to calculate the number of patients at a specific stage of disease among all surviving patients up to 9 years post diagnosis.
- Stage-specific recurrence/progression rates obtained from the Treatment Architecture module of CancerMPact® are based on physician surveys conducted annually. The current thyroid cancer survey was fielded in March 2014. This was an internet survey of 49 physicians who treated a total of 3,985 thyroid cancer patients per month.
- Treatment of RR-DTC was determined through patient chart audits. 129 physicians (medical oncologists, clinical oncologists, endocrinologists, nuclear medicine physicians, hematology oncologists, and radiation oncologists) were recruited in each of the EU5 countries. Each eligible physician was instructed to randomly select 1-4 charts of RR-DTC patients. The study was IRB approved and informed consent was obtained from all participants.

RESULTS

- Incidence rates of thyroid cancer ranged between 5-20 per 100K population across EU5. Italy has the highest incidence rate and also the largest number of incident thyroid cancer. Five-year prevalence rates (2014 newly diagnosed patients plus those alive in 2014 who were diagnosed in the previous 4 years) varied from 19 to 92 per 100K population.
- The percentage of the 5-year thyroid cancer prevalence that was DTC showed less variation, ranging from 81% (UK) to 93% (France). Approximately one-fourth of the DTC 5-year prevalence were metastatic. Among these metastatic DTC patients, between 29% and 36% were RR-DTC.
- Overall, metastatic RR-DTC was about 6% of total thyroid 5-year prevalence.

Table 1.

2014	France	Germany	Italy	Spain	UK	EU5
Thyroid Cancer Incidence Rate per 100K	13	8	20	7	5	11
Thyroid Cancer Incidence	8,592	6,875	12,410	3,319	3,031	34,227
Thyroid Cancer 5-year Prevalence Rate per 100K	60	37	92	33	19	48
Thyroid Cancer 5-year Prevalence	38,463	30,202	56,493	15,066	12,353	152,577
DTC 5-year Prevalence (% of thyroid 5-year prevalence)	93%	88%	91%	91%	81%	90%
Metastatic DTC (% of DTC 5-year prevalence)	23%	24%	24%	25%	24%	24%
RR-mDTC (% of metastatic DTC)	29%	32%	29%	32%	36%	30%
RR-mDTC (% of thyroid cancer 5-year prevalence)	6%	7%	6%	7%	7%	6%

CONCLUSIONS

- The percentage of patients with DTC (as opposed to anaplastic or medullary) was similar across EU5 countries, ranging from 81% (UK) to 93% (France) within a 5-year prevalence timeframe.
- Approximately a quarter of this 5-year DTC prevalent population had metastatic disease, with 29%-36% of these metastatic patients also categorized as RR-DTC.
- Our findings show that overall, metastatic RR-DTC was a very small subset of the overall EU5 thyroid cancer population, only about 6% of total thyroid 5-year prevalence.
- Less than three-quarters of this metastatic RR-DTC population received systemic treatment.
- Different treatment practices were observed across the EU5 with chemotherapy regimens being preferred in the UK and Italy while multi-kinase inhibitors were more frequently used in Spain.
- This variation may be due to the lack of approved therapies and established guidelines for RR-DTC.

DISCLOSURE

- This study was sponsored by Eisai Inc.

Sources

	France	Germany	Italy	Spain	UK
Incidence	Institut de Veille Sanitaire (InVS) ¹	Robert Koch Institute ²	ITACAN ³	Cancer Incidence in Five Continents, IARC ⁴	Cancer Research UK ⁵
Histology	IARC C15 VIII-X	IARC C15 VIII-X	IARC C15 VIII-X	IARC C15 VIII-X	IARC C15 VIII-X
Survival	Eurocare-5 ⁶	Eurocare-5 ⁶	Eurocare-5 ⁶	Eurocare-5 ⁶	Eurocare-5 ⁶
Recurrence	Kantar Health Treatment Architecture ⁷	Kantar Health Treatment Architecture ⁷	Kantar Health Treatment Architecture ⁷	Kantar Health Treatment Architecture ⁷	Kantar Health Treatment Architecture ⁷
Treatment	Proprietary Custom Research ⁸	Proprietary Custom Research ⁸	Proprietary Custom Research ⁸	Proprietary Custom Research ⁸	Proprietary Custom Research ⁸

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