EE599

Cost-effectiveness Analysis of Trastuzumab Emtansine for the Adjuvant Treatment of Patients with Residual Invasive HER2+ Early Breast Cancer in Greece

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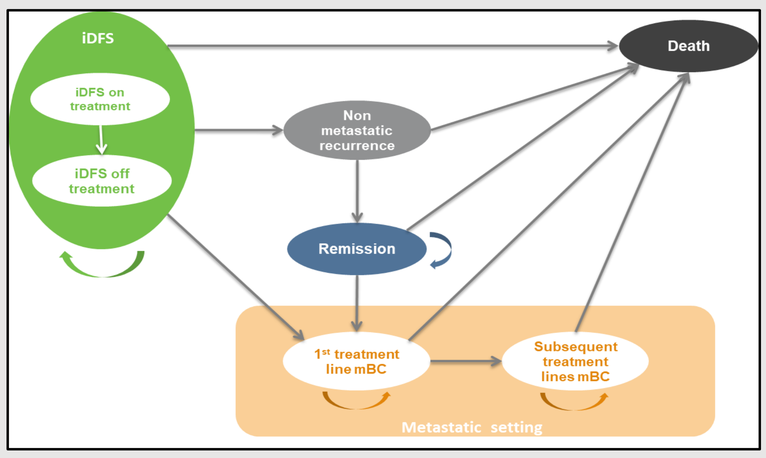
Objectives

Approximately 7,770 new patients are diagnosed annually with breast cancer in Greece (1) and 25% of them have human epidermal growth factor receptor 2 (HER2+) disease (2). 49% of newly diagnosed HER2+ patients have early-stage breast cancer (eBC) (2). Based on a recently conducted survey among medical and surgical oncologists in Greece (N=95), 44% of patients receive neo-adjuvant treatment, of whom 33.7% have residual disease and require additional treatment in the adjuvant setting (2). The objective of this study was to evaluate the cost-effectiveness of trastuzumab emtansine (T-DM1) for the adjuvant treatment of patients with residual invasive HER2+ eBC after neoadjuvant taxane-based and HER2-targeted therapy, from the third-party payer perspective (EOPYY) in Greece.

Methods

A 6-state Markov model (Fig. 1) was developed to assess the quality-adjusted life years (QALYs) and costs associated with T-DM1 versus trastuzumab, over a lifetime horizon (51 years). Efficacy data and patient baseline characteristics were sourced from the KATHERINE trial. Transition probabilities through health states were sourced from the KATHERINE and EMILIA trials, as well as from published literature (3-9). Costs were estimated from the third-party payer perspective (2022 values). A 3.5% discount rate was applied to both costs and health outcomes. Uncertainty was explored via univariate deterministic sensitivity analysis (UDSA) and probabilistic sensitivity analysis (PSA) where 1,000 iterations were simulated.

Fig. 1. *Cost-effectiveness model structure*



The present study was funded by Roche Hellas

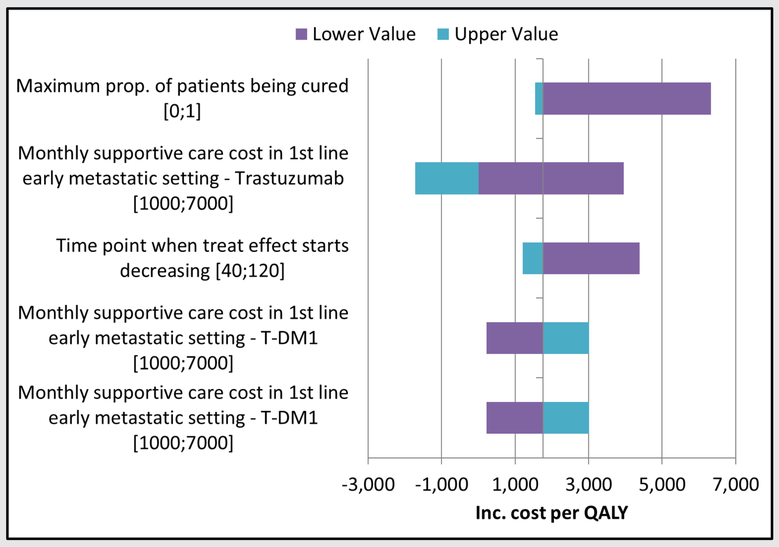
Results

The lifetime costs associated with T-DM1 and trastuzumab were estimated at €89,539 and €86,757, respectively. T-DM1 was associated with 1.59 gained QALYs compared to trastuzumab (13.49 vs. 11.90) and 2.02 gained life years (17.49 vs. 15.46) (Table 1). The results indicated that T-DM1 was cost-effective compared to trastuzumab, with an incremental cost-effectiveness ratio (ICER) of €1,753 per QALY gained. Univariate deterministic sensitivity analysis (+/-10% change) revealed that the maximum proportion of cured patients and monthly supportive care costs in the 1st line metastatic setting of the trastuzumab arm had the greatest impact on the ICER (Fig. 2). Probabilistic sensitivity analysis confirmed the robustness of the results, with 99.7% probability of T-DM1 being cost-effective at a willingness to pay (WTP) threshold in Greece of €34,242 (Fig. 3). Cost-effectiveness plane revealed that T-DM1 dominated over trastuzumab in 28.9% of iterations (Fig. 4).

Table 1. *Cost-effectiveness analysis results*

	T-DM1	Trastuzumab	Difference
Drug cost	€ 39,554	€ 12,260	€ 27,294
Administration cost	€ 1,200	€ 1,194	€ 6
Supportive care cost per health state	€ 47,911	€ 72,416	-€ 24,505
iDFS	€ 9,120	€ 8,020	€ 1,099
Non-metastatic recurrence	€ 277	€ 1,163	-€ 886
Remission	€ 68	€ 288	-€ 220
1st line metastatic breast cancer	€ 17,050	€ 26,974	-€ 9,924
2nd line+ metastatic breast cancer	€ 21,396	€ 35,971	-€ 14,575
AE management cost	€ 101	€ 17	€ 84
End-of-life cost	€ 132	€ 228	-€ 96
Diagnostic test cost	€ 642	€ 641	€ 0
Total mean costs	€ 89,539	€ 86,757	€ 2,782
Total mean QALYs	13.49	11.90	1.59
Total mean LYs	17.49	15.46	2.02
Cost per QALY gained (T-DM1 vs. trastuzumab)	-	€ 1,753	-
Cost per LY gained (T-DM1 vs. trastuzumab)	-	€ 1,375	-

Fig. 2. *UDSA results*



Conclusions

T-DM1 is likely to be a cost-effective treatment option for patients with residual invasive HER2+ eBC in Greece with an ICER below the commonly accepted WTP threshold. The results indicated that the reduced likelihood of recurrence provided by treatment with T-DM1 would contribute in creating cost-offsets due to the avoidance of more costly metastatic treatments.

Fig. 3. *Cost-effectiveness acceptability curve*

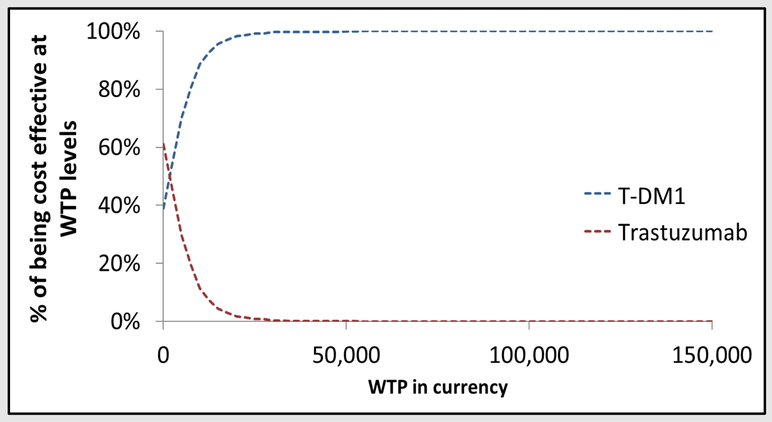
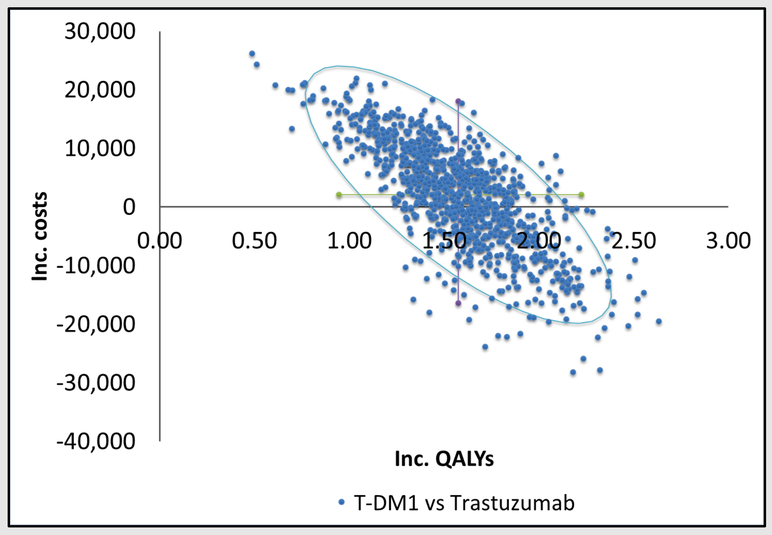


Fig. 4. *Cost-effectiveness plane*



Abbreviations

AE: Adverse events
eBC: Early breast cancer
HER2: human epidermal growth factor receptor 2
ICER: Incremental cost-effectiveness ratio
iDFS: Invasive disease-free survival
LY: Life year
PSA: Probabilistic sensitivity analysis
QALY: Quality-adjusted life year
T-DM1: Trastuzumab emtansine
UDSA: univariate deterministic sensitivity analysis
WTP: Willingness-to-pay

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