Economic Evaluation of Treating Moderate to Severe Rheumatoid Arthritis Patients With Adalimumab: A Cost Utility Analysis Based on an Observational Study in Greece

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Background

•Rheumatoid Arthritis (RA) is a chronic disease characterized by pain, stiffness and progressive joint destruction [1,2] but also presents a serious socioeconomic burden [1-3].

•Since the introduction of biologic drugs management of RA has been transformed [4]. However, as biologics have a substantial cost, several existing economic evaluations have assessed the cost-effectiveness of biologics vs DMARDs [5].

•Because of the significant differences in national health care systems, we sought to evaluate the treatment of patients with moderate to severe RA with adalimumab compared to traditional DMARD treatment, both in terms of health outcomes and costs in Greece.

Methods

•A cost-utility analysis was performed based on a 52-week, multicenter (Figure 1), single-arm, observational study for the health economic evaluation of treatment with adalimumab compared with traditional treatment in Greek patients with moderate to severe RA.

Figure 1. Regional distribution of study centers

•In total, 76 patients -out of 124 enrolled- completed the study and were present at all 4 visits (at baseline and at 3, 6, and 12 months) (Table 1). During each visit, patients completed the EuroQol-5 Dimension (EQ-5D) questionnaire, which is widely used in clinical, economic and population based studies [6] and reported all costs incurred during the preceding 3 months.

•The health outcomes and the relevant costs used in the health economic model were calculated at an individual-patient level. The health outcomes were measured in terms of quality-adjusted life years (QALYs) based on the EQ-5D derived utilities. The EQ-5D scale varies from -0.57 (worse health) to 1(perfect health) using the UK algorithm. The values of EQ-5D scores served in the model as utility weights associated with each health outcome. Only direct costs were taken into account and they were calculated based on the local unit costs multiplied with the volume of each resource used for each patient.

Table 1. Baseline patient demographic characteristics

Baseline Patient Characteristics		Frequency
Gender	Male	17.4%
	Female	82.6%
Age group	20-30	2.6%
	31-40	11.1%
	41-50	17.1%
	51-60	29.9%
	61-70	24.8%
	71-80	12.8%
	81+	1.7%

Results

•The QALYs and costs reported after 1 year of administration of adalimumab were compared to the equivalent QALYs and costs reported at baseline.

•For all 76 patients who completed the study, the total direct costs were €201,355.6 at 12 months compared to €20,920.05 at baseline. The relevant total QALYs gained for all 76 patients were 47.18 and 33.94 at 12 months and baseline, respectively.

•The resulting incremental cost-effectiveness ratio (ICER) was €13,628.06 per QALY gained (Figure 2).

Figure 2. Cost-effectiveness plane of incremental costs and QALYs for Adalimumab vs traditional treatment at 12 months.
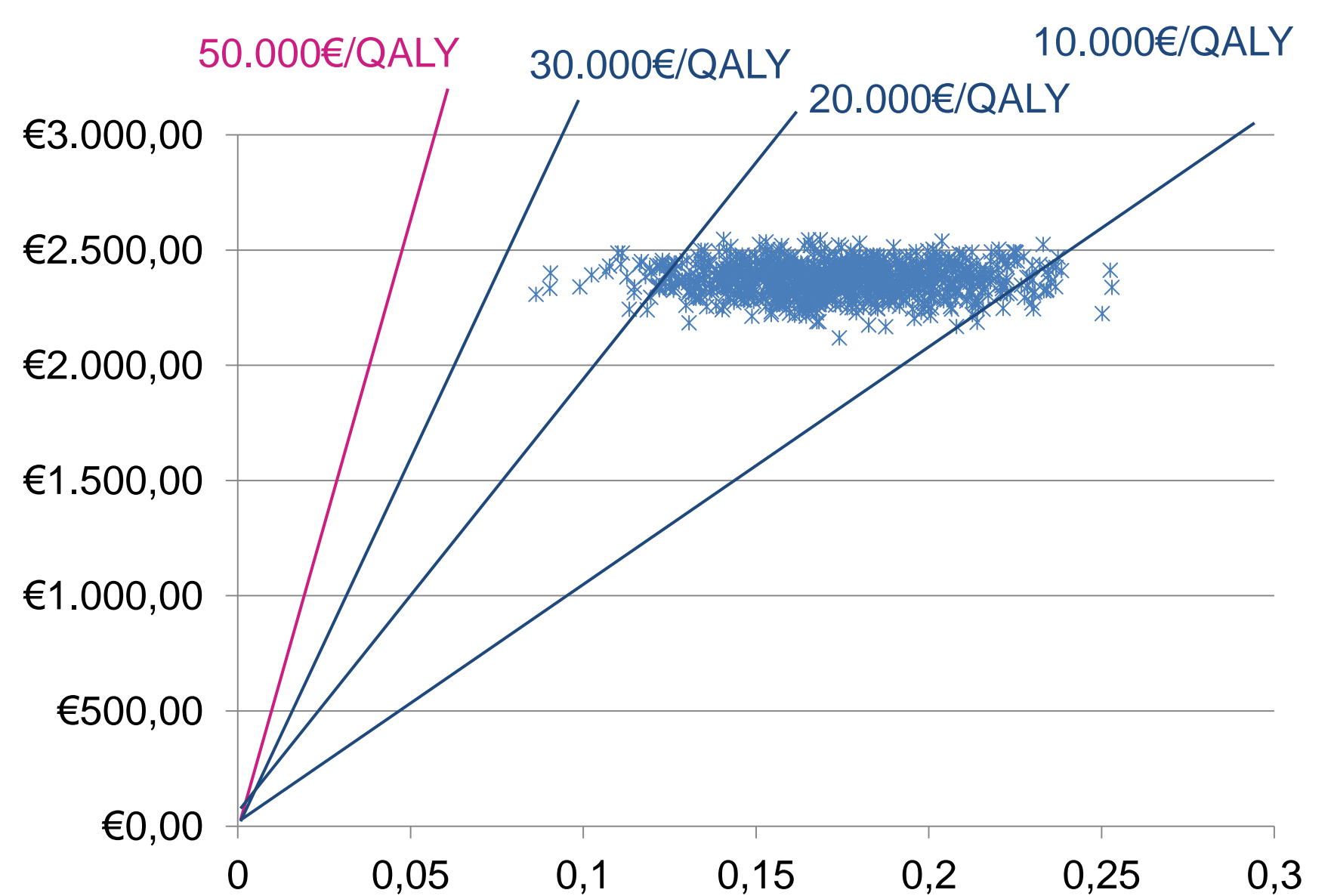
Notes:
•Each point represents a patient.
•The proportion of points under the willingness to pay thresholds (50.000€/QALY, 30.000€/QALY, 20.000€/QALY and 10.000€/QALY) represent the probability the intervention is cost-effective.
•The midpoint of the samples represents the central estimate.

•We also conducted multiple one-way sensitivity analyses, including a probabilistic sensitivity analysis and our results were proven robust for the willingness to pay ratio of €50.000/QALY.

Conclusions

•Compared with traditional treatment, treatment with adalimumab is associated with an ICER of **€13,628.06/QALY** which is significantly less than the threshold of generally accepted medical interventions (€50.000/QALY) and better health outcomes.

Therefore, Adalimumab is a cost-effective treatment in Greek patients with moderate to severe RA.

Acknowledgement

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