

Research Project

Impact of targeted therapy in patients with metastatic lung cancer

Third-party funded project

Project title Impact of targeted therapy in patients with metastatic lung cancer

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Project start 15.03.2018

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Status Completed

Cost effectiveness of pembrolizumab vs chemotherapy as first-line treatment for metastatic NSCLC that expresses high levels of PD-L1 in Switzerland

Aim

The study aim was to evaluate the cost-effectiveness of pembrolizumab monotherapy compared to chemotherapy as a first-line treatment for previously untreated metastatic non-small cell lung cancer (NSCLC) with PD-L1 tumour proportion score (TPS) $\geq 50\%$, from a Swiss payer perspective. Cost-effectiveness of pembrolizumab for this indication has not previously been evaluated in Switzerland.

Methods

We conducted an analysis using a partitioned survival model with a cycle length of one week, basecase time horizon of 20 years and discount rate of 3% for cost and health outcomes. KEYNOTE-024 randomised controlled trial data of pembrolizumab monotherapy compared to chemotherapy was used as a basis for projecting time-on-treatment, progression-free survival and overall survival outcomes, over a 20 year period. For overall survival and progression-free survival, we used Kaplan-Meier probabilities for a brief initial period of the model, followed by parametric curves which had the best fit with subsequent trial data. Quality-adjusted life years (QALYs) were calculated based on the EuroQol 5-dimensional 3-level (EQ-5D-3L) questionnaire administered to trial patients. Costs (Swiss Franc (CHF), year 2018) of drug acquisition/administration, adverse events and disease management were included.

Results

For the base-case, pembrolizumab monotherapy resulted in mean incremental costs of CHF 77,060 (pembrolizumab: CHF 223,324, chemotherapy: CHF 146,264) and mean incremental QALYs of 1.34 (pembrolizumab: 3.05, chemotherapy: 1.71), leading to an incremental cost-effectiveness ratio of CHF 57,402 per QALY gained. Cost-effectiveness results were most sensitive to overall survival parameters and relatively insensitive to other parameters varied. In probabilistic sensitivity analysis, the probability of cost-effectiveness of pembrolizumab assuming a willingness-to-pay threshold of CHF 100,000 per QALY gained, was 88%.

Conclusion

Pembrolizumab is likely to be cost-effective for treating Swiss patients with previously untreated metastatic NSCLC expressing PD-L1 TPS $\geq 50\%$.

This economic evaluation was based on the KEYNOTE-024 trial. The trial identifier is NCT02142738.

(Swiss Med Wkly 2019;149:w20170. doi: 10.4414/smw.2019.20170. eCollection 2019 Dec 16)

Keywords Metastatic NSCLC, Cost effectiveness, Health Economics, PD-L1 positive, Pembrolizumab, Switzerland

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