Introduction

Muscle-Invasive Urinary Carcinoma

- The most common cancer worldwide with 490,000 new cases diagnosed annually, resulting in approximately 145,000 deaths globally each year.
- Muscle-invasive urinary carcinoma (MUC) is a serious, life-threatening disease that occurs predominantly in men (90% of cases in the bladder muscle-invasive bladder cancer) and can also be seen in the upper urinary tract in 5-10% of cases (upper tract urothelial carcinoma).
- The management strategy for MUC is based on radical surgery. For patients eligible for cisplatin-based chemotherapy, neoadjuvant cisplatin-based combination chemotherapy is recommended. After surgery and prior to CheckMate 274, no active therapy is recommended when patients are ineligible for cisplatin-based adjuvant chemotherapy. Only active surveillance is recommended.

Nivolumab

- Nivolumab monotherapy is the first and only immuno-oncology therapy to show through a phase 3 study (CheckMate 274) a statistically significant increase in disease-free survival (DFS) compared with placebo in patients with MUC at high risk of recurrence.
- In patients whose tumour cells expressed programmed death (PDL)-1 levels ≥1%, the study demonstrated the superiority of nivolumab over placebo on DFS (HR: 0.56; 95% confidence interval, 0.38-0.82) and a safety profile comparable with patients with metastatic urothelial carcinoma and other cancers. Based on these results, nivolumab was granted European marketing authorization on 1 April 2022.

Objective

- To assess the cost-effectiveness of nivolumab versus surveillance, a proxy of placebo, in MUC for patients with tumour cell PD-L1 ≥1% (expressed as tumour proportion score) in Greece.

Methods

Model Structure

- A 2-state Markov model was developed combining disease-free (DF) and recurrent disease (RD), which consists of both local recurrence and distant recurrence, and finally death. The model included costs of drug acquisition, administration, monitoring, adverse events (AEs), and the utility value for DF surveillance (approximately –5% to 6%). The remaining parameters resulted in the ICUR varying by less than 2%.

Efficacy and Survival

- Efficacy measures for nivolumab versus surveillance were based on PD-L1 ≥1% subgroup data from the CheckMate 274 trial.
- To estimate the cumulative DFS over a 30-year time horizon, parametric survival curves were fitted to the CheckMate 274 data following the National Institute for Health and Care Excellence guidance.

Table 1. Key Model Settings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Time horizon</td>
<td>30 years</td>
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<tr>
<td>Discounting</td>
<td>3.85%</td>
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</tbody>
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Results

Base Case

- Survival was predicted to be higher for nivolumab, with a 2.77% difference (total DFS: 8.27% vs. 5.49%), respectively, with surveillance over a 30-year time horizon.
- Treatment with nivolumab was associated with greater total QALYs compared with surveillance (total QALYs: 6.739 vs. 4.436, respectively), resulting in an incremental QALY gain of 2.303.
- Most QALYs were generated from the DF health state (94% for nivolumab and 87% for surveillance), and the utility value for DF surveillance (approximately –5% to 6%).

Conclusions

- Over 30 years, with a deterministic ICUR of €11,814/QALY gained and a probabilistic sensitivity analysis, including increasing the time horizon and allowing discounting the survival following radical recurrence, nivolumab as adjuvant therapy in patients with MUC is highly cost-effective compared with surveillance beyond a WTP threshold of €35,000/QALY gained.

Acknowledgments

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