Introduction

In advanced or metastatic tumor stages, healthcare resources utilization (HCRU) and costs are usually increasing until the end of life. However, few studies describe long-term HCRU of patients treated with immunotherapy.

UNIVOC background

UNIVOC is a cohort of 10,452 patients, encompassing all patients with advanced non-small cell lung cancer (aNSCLC) starting treatment with nivolumab within two years of the date of its availability in France, identified in the National Health System (SNDS) which provides detailed data on the use of health resources by all beneficiaries of the French health system insurance.

Study Rationale

- In advanced or metastatic lung cancer patients, intensity of care usually increases until the end of life.
- Around 30% of patients with aNSCLC are still alive two years after nivolumab treatment initiation in 2nd line. Beyond those two years, patients are considered long-term survivors.
- For these patients, quality of life appears to be maintained or even improved but little is known about their total cost of care. In particular, no data are available on the evolution of healthcare resources utilization (HCRU) and costs associated with the management of these patients.
- We hypothesize that long-term survival in patients initiating nivolumab may lead to substantial decrease of HCRU and costs.

Study objectives

- To describe the long-term (3-y) HCRU evolution of patients who initiated nivolumab for pre-treated aNSCLC (i.e. number of hospital visits per patient and number of hospitalization days per patient).
- To describe the evolution of the long-term (3-y) costs evolution of patients who initiated nivolumab for pre-treated aNSCLC.

Methods

- The study was a retrospective cohort study of all aNSCLC patients initiating nivolumab for pre-treated aNSCLC (i.e. number of hospital visits per patient and number of hospitalization days per patient).
- Around 30% of patients with aNSCLC are still alive 2 years after nivolumab initiation, and the median 64 years. Comorbidities or disease states affecting included patients during the year prior to inclusion were mainly hypertension (19.0% of patients), malnutrition (18.7% of patients), and brain metastasis (17.2% of patients).
- The most common histological type was squamous cell (44.3%).
- Over 90% patients required hospitalization during the follow-up period. The % of patients requiring hospitalizations decreased from the follow-up, from 76.8% the first year to 46.2% the last year (Table 1).

HCRU - Hospital visits per patient

- There was a decreasing trend of hospital visits per patient over the years (p<10⁻⁶) (Table 2). The number of patients at risk also decreased from 10,452 patients for Y1 to 2,514 patients at the beginning of Y3. The overall number of hospital visits per patient was 21.1 for Y1, 19.4 for Y2, and 13.1 for Y3.
- The overall number decreased by 7.05 between Y1 and Y2 (15.1 visits) (p<10⁻⁶), it decreased by 3.31 between Y2 and Y3 (6.5 visits) (p<10⁻⁶) and by 3.77 between Y1 and Y3 (8.0 visits) (p<10⁻⁶).
- The overall number of day care visits per patient decreased by 4.6% between Y1 and Y3 (6.4 visits). It decreased by 37.5% for emergency room visits between Y1 and Y3 (3.3 visits) and by 20.5% for outpatient consultations (3.3 visits).
- Hospital visits represented 90.2%, 91.9%, and 92.2% of the sum of Y1, Y2, and Y3 hospital visits and hospitalizations, respectively. Day care visits represented 99.7%, 95.6%, and 92.6% of the sum of Y1, Y2, and Y3 hospital visits and hospitalizations, respectively.
- Emergency room visits represented 3.3%, 3.2%, and 5.2% of the sum of Y1, Y2, and Y3 hospital visits and hospitalizations, respectively.

HCRU - Hospitalizations per patient

- The mean cumulative number of hospital days per patient significantly decreased over the years (p<10⁻⁶) (Table 3). The number of patients for risk also decreased from 10,452 patients for Y1 to 2,514 patients for the beginning of Y3. The mean cumulative number of hospitalization days per patient was 27.6 for Y1, 22.7 days for Y2, and 16.5 days for Y3 (Table 3).
- The mean cumulative number decreased by 20.1% between Y1 and Y2 (5.5 days) (p<10⁻⁶). It decreased by 38.7% between Y2 and Y3 (6.3 days) (p<10⁻⁶) and by 51.0% between Y1 and Y3 (14.0 days) (p<10⁻⁶).
- The mean cumulative number of days per patient for other hospitalizations decreased by 53.9% between Y1 and Y3 (4.9 days). It decreased by 73.1% between Y1 and Y3 (6.4 visits) (p<10⁻⁶), by 45.0% for inpatients (2.3 visits), by 33.0% for total hospital visits and hospitalizations, respectively.

HCRU associated costs

- The mean HCRU costs per patient significantly decreased over the years (p<10⁻⁶) (Table 4). The extra diagnosis-related group drug cost per patient significantly decreased between Y1 and Y2 and between Y2 and Y3 (p<10⁻⁶). The results were the same regarding hospital visits and hospitalizations.
- For each year, extra diagnosis-related group drugs accounted for the majority of the costs.
- The cost per patient of hospitalizations and hospital visits significantly decreased from year 1 to year 3 (p<10⁻⁶) (Table 5). The number of patients at risk also decreased from 10,452 patients for Y1 to 6,498 patients at the beginning of Y3. The overall number of hospitalizations and hospital visits mean cost per patient was €16,790 for Y1, €13,405 for Y2, and €8,344 for Y3 (Table 5).
- The costs decreased by 20.2% between Y1 and Y2 and (6.3, 384) (p<10⁻⁶). It decreased by 36.4% between Y2 and Y3 (8.6, 384) (p<10⁻⁶) and by 49.2% between Y1 and Y3 (10.3, 384) (p<10⁻⁶).
- The costs per patient for hospitalizations decreased by 44.2% between Y1 and Y3 (6.2, 384). It decreased between Y1 and Y3 by 32.5% for hospitalizations (6.4, 384).

Conclusion

The UNIVOC large cohort of patients with aNSCLC treated with nivolumab allowed to describe HCRU and costs evolution of these patients.

The percentage of patients requiring hospitalizations decreased over the follow-up period, from 76.8% the first year to 46.2% the last year.

There was a decreasing trend in the number of sessions per patient from 21.1 during the first year to 13.1 during the third year.

There was a decreasing trend in the mean cost per patient (from around €43,332 during the first year to €19,861 during the third year). In addition to the large decrease in the treatment associated costs, the other main drivers were the decreases in palliative care and other hospitalizations costs.

HCRU and their associated costs decreased over the 3-years of follow-up and thus, de-intensification of care for long-survivors should be explored.