Cost comparison of adverse events and administration of lurbinectedin versus intravenous topotecan for relapsed small cell lung cancer in Spain and the United Kingdom

García San Andrés B[1], Ubi S[2], Alvarez-Alvarez R[3], Barwood C[2], Olmedo-García E[4] , Forster M[5]

[1] PharmaMar, Spain; [2] FIECON Ltd, St Albans, UK; [3] Hospital General Universitario Gregorio Marañón, Madrid; [4] Hospital Universitario Ramón y Cajal, Madrid; [5] University College London Hospital, UK

1 Background

Small cell lung cancer (SCLC) has a very aggressive course. Initial high response to chemotherapy are typically followed by relapses and chemo resistance. Topotecan is approved as single agent after failure of first line chemotherapy. Lurbinectedin is an active treatments for second line SCLC with an acceptable safety profile and uncomplicated intravenous (IV) administration. In addition to the benefits to patients of a therapy with fewer undesirable adverse events (AEs) and more favourable administration, significant savings on direct costs may be achieved from a payers perspective.

2 Objectives

To conduct an economic analysis comparing the costs of managing treatment-related grade ≥ 3 adverse events (AEs) and cost of treatment administration in patients with relapsed SCLC treated either with lurbinectedin monotherapy 3.2 mg/m2 IV infusion day 1 q3w or IV topotecan 1.5 mg/m2 on days 1 through 5 q3w. The perspective of the study was from the UK and the Spanish National Healthcare Systems.

3 Methods

- Incidence of AEs was obtained from the multicenter, phase II Basket trial (Paz-Ares 2019, n=105) of lurbinectedin single agent for patients with relapsed SCLC after one prior line of chemotherapy.
- A targeted literature review was performed to identify trials in order to characterise the safety profile of IV topotecan in populations matching that of the Basket´s trial. Data was extracted from three randomized controlled trials (RCTs): Von Pawel 1999 (n=107), Von Pawel 2001 (n=54) and Eckardt 2007 (n=151) of topotecan in second line recurrent SCLC.
- Primary prophylaxis with granulocyte-colony stimulating factors (G-CSF) and/or antibiotics was not permitted in the Basket trial and consequently, RCTs of topotecan allowing primary prophylaxis were excluded.
- For the analysis, only treatment related AEs ≥3 affecting ≥1% of patients were included.
- AEs were reported as % of patients except for febrile neutropenia in von Pawel 2001 and Eckardt 2007 (% cycles); these were converted to % patients to allow comparisons.
- The time horizon of the analysis was in line with median treatment duration of lurbinectedin and topotecan in the selected trials (4 cycles).
- AEs and administration costs in UK were extracted from NHS Reference Costs and in Spain from the e-Salud healthcare database and health technology assessments.

4 Results

Table 1. Frequency of AEs ≥3 associated with topotecan and lurbinectedin (%) in the identified trials for relapsed SCLC.

	Lurbinectedin Paz Ares 2019 n=105	Topotecan von Pawel 1999 n=107	Topotecan von Pawel 2001 n=54	Topotecan Eckardt 2007 n=151
Abscess	0%	0%	6%	0%
Alopecia	0%	0%	13%	0%
Anemia	8%	42%	30%	31%
Anorexia	0%	1%	0%	3%
Asthenia	0%	0%	9%	7%
Diarrhea	1%	1%	0%	3%
Dyspnea	0%	0%	11%	10%
Fatigue	7%	5%	2%	8%
Febrile neutropenia	5%	28%	13%	20%
Fever	0%	2%	2%	7%
Leukopenia	29%	87%	74%	75%
Nausea	0%	4%	0%	3%
Neutropenia	46%	88%	94%	88%
Pneumonia	2%	0%	2%	0%
Pulmonary embolism	0%	0%	2%	0%
Stomatitis	0%	2%	0%	0%
Thrombocytopenia	7%	58%	49%	43%
Vomiting	0%	2%	4%	0%

£

€

Table 2. Cost savings of AEs and administration with lurbinectedin vs topotecan in patients with relapsed SCLC in UK (£)

	Lurbinectedin	Topotecan				
	Basket study	Von Pawel (1999)	Von Pawel (2001)	Eckard (2007)	Average	Cost savings on Lurbinectedin
Administration	£1,157	£5,787	£5,787	£5,787	£5,787	**£4,629**
Adverse events	£2,816	£9,484	£7,910	£8,393	£8,596	**£5,780**
Cost per patient	£3,973	£15,271	£13,697	£14,180	£14,383	**£10,410**

Table 3. Cost savings of AEs and administration with lurbinectedin vs topotecan for patients with relapsed SCLC in Spain (€)

	Lurbinectedin	Topotecan				
	Basket study	Von Pawel (1999)	Von Pawel (2001)	Eckard (2007)	Average	Cost savings on Lurbinectedin
Administration	€1,276	€6,379	€6,379	€6,379	€6,379	**€5,103**
Adverse events	€1,766	€5,080	€4,776	€5,080	€4,979	**€3,213**
Cost per patient	€3,042	€11,459	€11,155	€11,459	€11,358	**€8,316**

5 Conclusions

- In the UK, mean costs savings of £4,629 and £5,780 for administration and AE management, respectively were achieved with lurbinectedin vs topotecan. In Spain, total cost savings of €8,316 were achieved corresponding to €5,103 and €3,302 for administration and AEs, respectively.
- From a UK and Spanish public health-care systems this analysis demonstrated that utilizing lurbinectedin for the management of relapsed SCLC results in substantial savings when considering the costs of treatment-related AEs and therapy administration when compared to IV topotecan, due to fewer toxicities and a more favourable administration.

References

1. Topotecan Versus Cyclophosphamide, Doxorubicin and Vincristine for the Treatment of Recurrent Small-Cell Lung Cancer J von Pawel et al. J Clin Oncol. 1999
2. Phase II comparator study of oral vs intravenous topotecan in patients with chemosensitive small cell lung cancer, von Pawel 2001. J Clin Oncol 2001
3. Phase III study of oral compared with intravenous topotecan as second-line therapy in small-cell lung cancer. Eckardt et al. J Clin Oncol. 2007
4. Efficacy and safety profile of lurbinectedin in second-line SCLC patients: Results from a phase II single-agent trial. Paz-Ares at al. ASCO 2019
5. NHS Reference costs 2017/2018
6. E-Salud. Spanish Health Costs Database. Oblikue Consulting. Available at: http://www.oblikue.com/bddcostes/. Accessed: June 2019