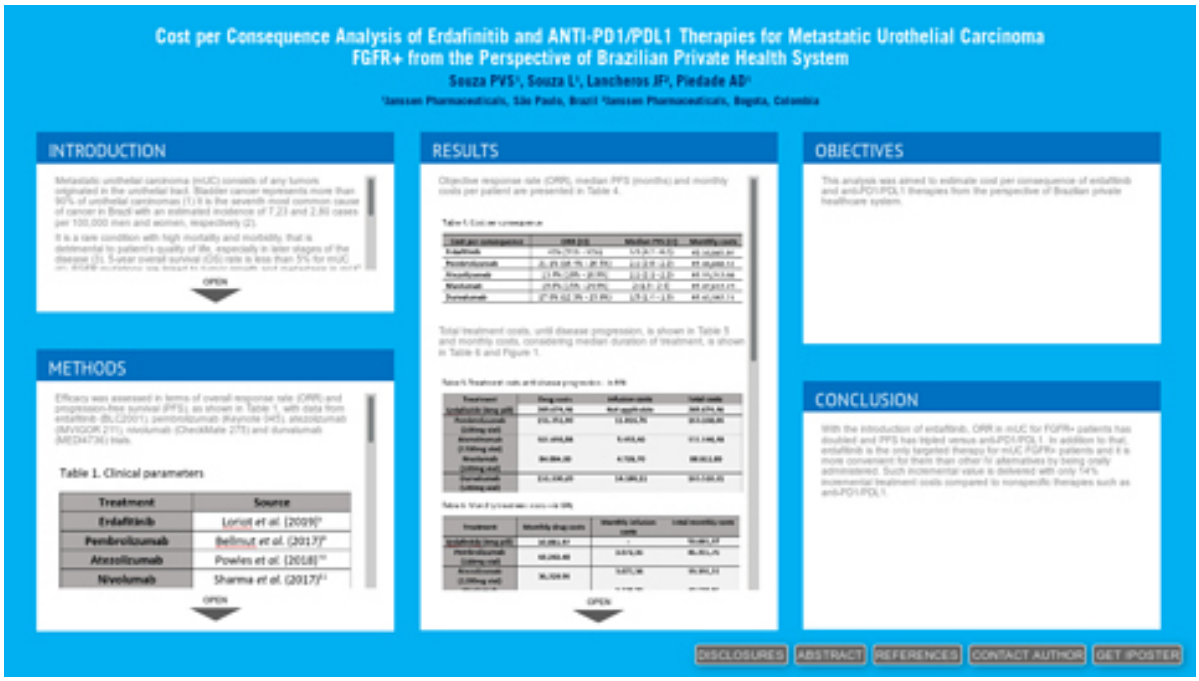
Cost per Consequence Analysis of Erdafinitib and ANTI-PD1/PDL1 Therapies for Metastatic Urothelial Carcinoma FGFR+ from the Perspective of Brazilian Private Health System



Souza PVS[1], Souza L[1], Lancheros JF[2], Piedade AD[1]

[1]Janssen Pharmaceuticals, São Paulo, Brazil [2]Janssen Pharmaceuticals, Bogota, Colombia

PRESENTED AT:

INTRODUCTION

Metastatic urothelial carcinoma (mUC) consists of any tumors originated in the urothelial tract. Bladder cancer represents more than 90% of urothelial carcinomas (1) It is the seventh most common cause of cancer in Brazil with an estimated incidence of 7,23 and 2,80 cases per 100,000 men and women, respectively (2).

It is a rare condition with high mortality and morbidity, that is detrimental to patient's quality of life, especially in later stages of the disease (3). 5-year overall survival (OS) rate is less than 5% for mUC (4). FGFR mutations are linked to tumor growth and metastasis in mUC and 1 in every 5 mUC patients have FGFR alterations (FGFR+) (5,6).

Erdafitinib is the first, and, so far, only targeted therapy approved for the treatment of mUC FGFR+ (7). Before, the treatment pattern of mUC for FGFR+ patients consisted of non-specific drugs, such as chemotherapy and anti-PD1/PDL1. In the context of oncology precision medicine, non-targeted therapies can be ineffective up to 75% of times (8), representing a poor allocation of healthcare system resources and impacting patient's outcomes.

Comparative effectiveness and cost data for these therapies are important to inform decision-making processes for healthcare budget allocation.

METHODS

Efficacy was assessed in terms of overall response rate (ORR) and progression-free survival (PFS), as shown in Table 1, with data from erdafitinib (BLC2001), pembrolizumab (Keynote 045), atezolizumab (IMVIGOR 211), nivolumab (CheckMate 275) and durvalumab (MEDI4736) trials.

Table 1. Clinical parameters

Treatment	Source
Erdafitinib	Loriot *et al.* (2019)[6]
Pembrolizumab	Bellmut *et al.* (2017)[9]
Atezolizumab	Powles *et al.* (2018)[10]
Nivolumab	Sharma *et al.* (2017)[11]
Durvalumab	Powles *et al.* (2017)[12]

Treatment costs until disease progression were calculated based on each drug label dosages, administration costs and professional fees. The median duration of treatment reported in the trials were considered for calculating total costs for each treatment, except for nivolumab in which median PFS was used, because duration of treatment was not available (Table 2).

Infusion materials and fees were estimated by an oncology nurse and was based on a microcosting (Table 3). A premise of 70% of port-a-cath and 30% of IV infusions was considered appropriate, being this a 2L+ treatment setting. Brazilian official lists of drugs prices (CMED) and medical materials (SIMPRO) were used as sources for unitary prices.

Table 2. Prices (BRL), dosages and frequency of administration per drug

Treatment	Unit Price	Price per mg	Dose	Frequency	Median treatment duration (months)	Total # infusions	Monthly infusions
Erdafinitib (4mg pill)	848.03	212.01	8 mg	Daily	5,3	Not applicable	Not applicable
Pembrolizumab (100mg vial)	15,135.19	151.35	200 mg	Each 21 days	3,5	5	1,3
Atezolizumab (1200mg vial)	25,423.27	21.19	1200 mg	Each 21 days	2,8	4	1,3
Nivolumab (100mg vial)	8,408.43	84.08	500 mg	Each 28 days	2,0*	2	1,1
Durvalumab (500mg vial)	12,610.85	25.22	700 mg	Each 14 days	2,8	6	2,1

* median PFS was considered, because duration of treatment was not available

Table 3 .Infusion costs – in BRL

Infusion	%	Costs
Port-a-cath	70%	R$1,923.47
Intravenous	30%	R$439.88
Infusion costs	-	**R$2,363.35**

RESULTS

Objective response rate (ORR), median PFS (months) and monthly costs per patient are presented in Table 4.

Table 4. Cost per consequence

Cost per consequence	ORR (CI)	Median PFS (CI)	Monthly costs
Erdafitinib	40% (31% - 50%)	5.5 (4.2 - 6.0)	R$ 50,881.97
Pembrolizumab	21.1% (16.4% - 26.5%)	2.1 (2.0 - 2.2)	R$ 46,666.51
Atezolizumab	13.4% (10% - 16.9%)	2.1 (2.1 - 2.2)	R$ 39,742.06
Nivolumab	19.6% (15% - 24.9%)	2 (1.9 - 2.6)	R$ 47,612.49
Durvalumab	17.6% (12.3% - 23.9%)	1.5 (1.4 - 1.9)	R$ 42,967.21

Total treatment costs, until disease progression, is shown in Table 5 and monthly costs, considering median duration of treatment, is shown in Table 6 and Figure 1.

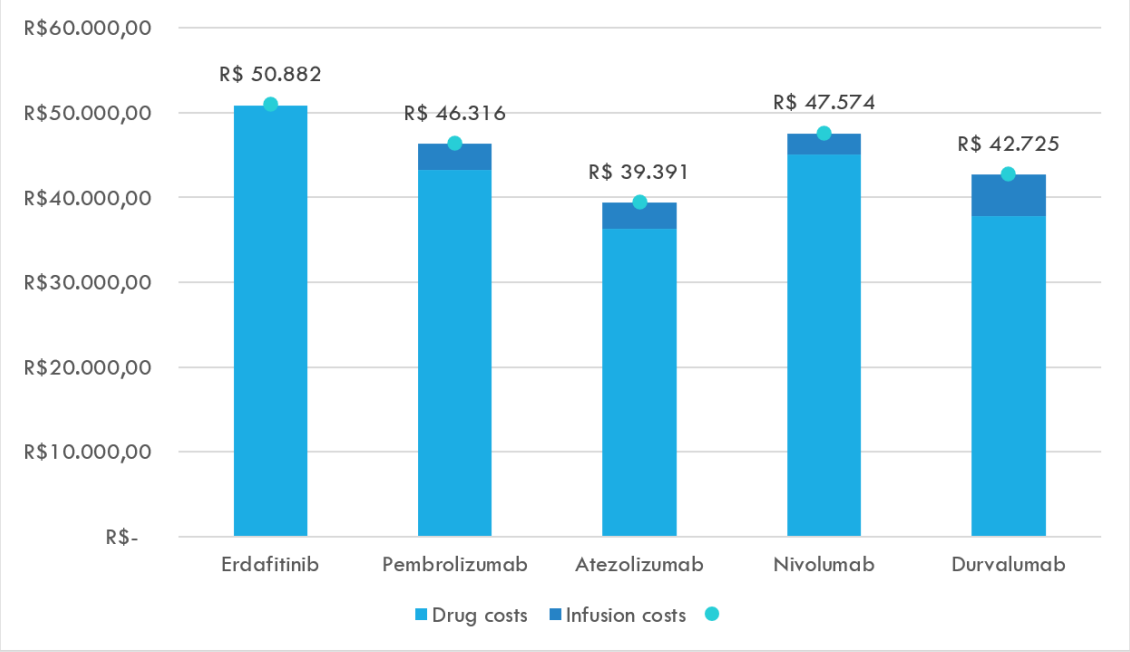
Table 5. Treatment costs until disease progression – in BRL

Treatment	Drug costs	Infusion costs	Total costs
Erdafinitib (4mg pill)	**269.674,46**	**Not applicable**	**269.674,46**
Pembrolizumab (100mg vial)	**151.351,90**	**11.816,76**	**163.168,66**
Atezolizumab (1200mg vial)	**101.693,08**	**9.453,40**	**111.146,48**
Nivolumab (100mg vial)	**84.084,30**	**4.726,70**	**88.811,00**
Durvalumab (500mg vial)	**151.330,20**	**14.180,11**	**165.510,31**

Table 6. Monthly treatment costs – in BRL

Treatment	Monthly drug costs	Monthly infusion costs	Total monthly costs
Erdafinitib (4mg pill)	**50,881.97**	**-**	**50.881,97**
Pembrolizumab (100mg vial)	**43,243.40**	**3.072,36**	**46.315,76**
Atezolizumab (1200mg vial)	**36,318.96**	**3.072,36**	**39.391,31**
Nivolumab (100mg vial)	**45,045.16**	**2.528,79**	**47.573,95**
Durvalumab (500mg vial)	**37,832.55**	**4.892,14**	**42.724,69**

Figure 1. Monthly treatment costs – in BRL



On average, erdafitinib increased ORR by 2-fold (1,9 to 3,0-fold) compared to immunotherapies. Likewise, erdafitinib has the longest PFS, being 3-times higher (2,6 – 3,7 times) than immunotherapies. Finally, erdafitinib costs on average 14% (9% to 23%) more than its comparators (Table 7). For example, erdafitinib costs only 9% more than pembrolizumab in a monthly basis, with an ORR 1.9 times higher and PFS 2.6 times higher than pembrolizumab.

Table 7. Incremental benefits and costs of erdafitinib versus immunotherapies

Erdafitinib vs	ORR	PFS	Incremental costs
Pembrolizumab	1.9x	2.6x	9%
Atezolizumab	3.0x	2.6x	23%
Nivolumab	2.0x	2.8x	7%
Durvalumab	2.3x	3.7x	16%
Average vs immunotherapy	**2.3x**	**2.9x**	**14%**

OBJECTIVES

This analysis was aimed to estimate cost per consequence of erdafitinib and anti-PD1/PDL1 therapies from the perspective of Brazilian private healthcare system.

CONCLUSION

With the introduction of erdafitinib, ORR in mUC for FGFR+ patients has doubled and PFS has tripled versus anti-PD1/PDL1. In addition to that, erdafitinib is the only targeted therapy for mUC FGFR+ patients and it is more convenient for them than other IV alternatives by being orally administered. Such incremental value is delivered with only 14% incremental treatment costs compared to nonspecific therapies such as anti-PD1/PDL1.

ABSTRACT

OBJECTIVES: Erdafitinib is the first, and, so far, only targeted therapy approved for the treatment of metastatic urothelial carcinoma (mUC) FGFR+. Before, the treatment pattern of mUC for FGFR+ patients consisted of non-specific drugs, such as chemotherapy and anti-PD1/PDL1. Comparative effectiveness and cost data for these therapies are important to inform decision-making processes for healthcare budget allocation. This analysis was aimed to estimate cost per consequence of erdafitinib and anti-PD1/PDL1 therapies from the perspective of Brazilian private healthcare system.

METHODOLOGY: Efficacy was assessed with data from erdafitinib (BLC2001), pembrolizumab (Keynote 045), atezolizumab (IMVIGOR 211), nivolumab (CheckMate 275) and durvalumab (MEDI4736) trials. Treatment costs until disease progression were calculated based on each drug label dosages, administration costs and fees. The Brazilian official lists of drugs prices (CMED) and medical materials (SIMPRO) were used as sources.

RESULTS: Objective response rate (ORR), median PFS (months) and monthly costs per patient were: erdafitinib (40,0% - 5,5 - BRL 50,882), pembrolizumab (21,1% - 2,1 - BRL 46,666), atezolizumab (13,4% - 2,2 - 39,742), nivolumab (19,6% - 2,0 - BRL 47,612) and durvalumab (17,6% - 1,5 - BRL 42,967). On average, erdafitinib increased ORR by 2-fold (1,9 to 3,0-fold) compared to immunotherapies. Likewise, erdafitinib has the longest PFS, being 3-times higher (2,6 – 3,7 times) than immunotherapies. Finally, erdafitinib costs on average 13% (8% to 22%) more than its comparators.

CONCLUSIONS: With the introduction of erdafitinib, ORR in mUC for FGFR+ patients has doubled and PFS has tripled versus anti-PD1/PDL1. In addition to that, erdafitinib is the only targeted therapy for mUC FGFR+ patients and it is more convenient for them than other IV alternatives by being orally administered. Such incremental value is delivered with only 13% incremental treatment costs compared to nonspecific therapies such as anti-PD1/PDL1.

REFERENCES

Powles T, O'Donnell PH, Massard C, et al. Efficacy and safety of durvalumab in locally advanced or metastatic urothelial carcinoma: updated results from a phase 1/2 open-label study. JAMA Oncol. 2017;3(9):e172411.