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A pharmacoeconomic evaluation in the therapy evolution setting of renal cell carcinoma (RCC)

F. Capano[1], A. Filieri[1], C. Lerda[2], A. Buscaino[1], D. Ielo[1]

[1]San Luigi Gonzaga Hospital, Pharmacy, Turin, Italy
[2]University of Turin, School of Hospital Pharmacy, Turin, Italy

Background

RCC (Renal Cell Carcinoma) management has changed remarkably in past years: in 2014, the Italian Medical Oncology Association (AIOM) released its guidelines for RCC management, based on latest medicine evidence. AIOM recommendations relate to cell histology and risk stratification:

✓ **First line low/intermediate risk**: either bevacizumab (combined with interferon-alpha) or sunitinib or pazopanib have proved effective.

For high risk: temsirolimus or sunitinib are indicated.

✓ Although, **second-line** management for both risk cathegories, TKIs (Tyrosine Kinase Inhibitor) based therapy (sorafenib, axitinib, pazopanib, everolimus)[1].

Purpose

Analyzing AIOM guidelines, we went to identify, from a pharmacoeconomic point of view, the best RCC treatment clinical approach.

Material and methods

Using the RCC treatment algorithm we evaluated drugs clinical efficacy data, that were used to calculate the effectiveness of each treatment (evaluating effectiveness, response rate and discontinuation rate).

The C/E (Cost/Effectiveness) pharmacoeconomic analysis was performed from NHS (National Health System) point of view, where the efficacy data was inferred from the submitted studies and the costs were calculated assuming a therapy duration equal to PFS (Progression Free Survival) net of AIFA discounts, considering local prices.

For both risk categories, the analysis was performed on the possible treatments within which the efficacy and cost data were the result of first and second line treatment.

Results

✓ Within the **low/intermediate risk** category, sunitinib as first-line therapy + sorafenib as second-line therapy (C/E=3,172€/month), was the most favorable C/E ratio, while the least favourable was pazopanib as first-line therapy + everolimus as second-line therapy (C/E=3,734€/month). *(Tab. 1)*

Low/intermediate risk category				
I line	II line	EFFICACY (PFS)	COST (€)	C/E
Sunitinib	Sorafenib	15,4	48845,03	3171,76
Bevacizumab + IFN alpha	Sorafenib	14,6	48307,85	3308,76
Pazopanib	Sorafenib	15,5	52055,15	3358,40
Bevacizumab + IFN alpha	Sorafenib	18,4	62452,53	3394,16
Sunitinib	Axitinib	17,5	59679,69	3410,27
Bevacizumab + IFN alpha	Axitinib	16,7	59142,52	3541,47
Bevacizumab + IFN alp	**Axitinib**	**22,3**	**79037,88**	**3544,30**
Sunitinib	Everolimus	15,9	56532,41	3555,50
Bevacizumab + IFN alpha	Pazopanib	17,6	62624,10	3558,19
Pazopanib	Axitinib	17,6	62889,82	3573,29
Bevacizumab + IFN alpha	Everolimus	15,1	55995,23	3708,29
Pazopanib	Everolimus	16	59742,53	3733,91

***Table 1** Cost/Effectiveness Ratio of the treatments within the low risk category*

✓ In the **high-risk category** sunitinib as first-line therapy + sorafenib as second-line therapy (C/E=2,776€/month) was the best C/E profile, and the least favorable was temsirolimus as first-line therapy + everolimus second-line therapy (C/E=4,000€/month), and related data are shown in the next table.

High risk category				
I line	II line	EFFICACY (PFS)	COST (€)	C/E
Sunitinib	Sorafenib	8,5	23597,65	2776,19
Sunitinib	**Axitinib**	**10,6**	**34432,32**	**3248,33**
Temsirolimus	Sorafenib	9,9	33911,45	3425,40
Sunitinib	Everolimus	9	31285,03	3476,11
Temsirolimus	Axitinib	12	44746,12	3728,84
Temsirolimus	Everolimus	10,4	41598,83	3999,89

***Table 2** Cost/Effectiveness Ratio of the treatments within the high risk category*

✓ Considering only the effectiveness, the best treatment was in the **low/intermediate risk**, obtained with bevacizumab and IFN (I line) + Axitinib (II line) with a C/E corresponding to 3,544€/month and 22.3 months PFS. *(Tab. 1).*

✓ In **high risk category** the best treatment was with sunitinib (I line) + Axitinib (II line) with a C/E corresponding to 3,248€/month and a PFS of 10.6 months. *(Tab. 2)*

Conclusion

Considering C/E profile, results are homogeneous, both in low risk (PFS= 14.6-22.3; C/E= 3172 to 3734) and in high-risk (PFS= 8.5-12; C/E = 2776-4000) nevertheless this study will be a starting point to find the best RCC therapeutic strategy.

References *1. Italian Association of Medical Oncology (AIOM) Guidelines Ed. 2014*