COMPARATIVE PHARMACOECONOMICS OF BX IN THE TREATMENT OF PATIENTS WITH UNCONTROLLED MODERATE AND SEVERE ATOPIC ASTHMA IN THE RUSSIAN HEALTH CARE SETTING

Zyryanov S.[1], Dyakov I.[2]

1. RUDN University, Moscow, Russian Federation. 2. Research Institute for Vaccine and Sera at I.I. Mechnikov, Moscow, Russian Federation

According to the results of local epidemiology studies, 1.3 million patients with asthma were registered in Russia. However, basing the data of key opinion lieders, real number of patients is much more - 6 million, while the prevalence of the disease among children and adolescents is 9-10%, and among adults - 5%. The population of patients with asthma is represented mainly by people of working age. Lack of control over the incidence leads to inefficient health care costs, unjustified expenses, disability and mortality[1].

The use of Bx against key pathogenic factors of inflammation is a new direction in the treatment of severe asthma. More and more studies dedicated to assessment of Bx effectiveness in real clinical practice have been appearing for the last years and demonstrating successful outcomes with Bx therapy.

OBJECTIVES

Therefore the goal of this work was to conduct a comparative pharmacoeconomic analysis of omalizumab, mepolizumab and resilizumab in the treatment of patients with uncontrolled severe atopic bronchial asthma in the Russian healthcare setting

METHODOLOGY

Comparative cost-effectiveness analysis (CEA) and budget impact analysis (BIA) in accordance with the requirements of Ministry of Health were done

Direct medical costs included:

- Basic pharmacotherapy
- Bx
- DRG tariffs on hospitalization
- Cost on Standards of treatment

Number of prevented exacerbations were used as effectiveness in CEA

Budget impact analysis demonstrated partial replacement of omalizumab with mepolizumab and/or reslizumab in accordance with the epidemiology data[6,7] and results of purchasing of anti-asthmatic products in 2018 (www.zakupki.gov.ru)

The time horizon for CEA was 1 year, for BIA – 3 years

Detailed clinical features of patients included in the study demonstrated in table 1

Table 1. Clinical features of patients and therapy regimens

INN	Eosinophil count in the peripheral blood	Therapy regimen	References
Omalizumab	Omalizumab is effective in treatment of asthma irrespective of blood eosinophil count (≥**300 cell/μl** or <**300 cell/μl**)	**472 mg** SC every 4 week	2, 3, 6
Mepolizumab	≥**150 cell/μl** in the peripheral blood at screening or ≥**300 cells/μl** at some time during the previous year	**100 mg** SC every 4 weeks	4
Reslizumab	≥**400 cells/μl** for 2-4 weeks at the screening	**3 mg/kg** IV every 4 weeks	5

RESULTS

Due to the lack of F2F studies, indirect comparison of omalizumab vs mepolizumab and omalizumab vs reslizumab separately was used
Results of comparative direct medical costs, used data of clinical effectiveness, CEA and BIA are presented in tables 2, 3, 4 and figure 1

Table 2. Comparative direct medical costs per patient per year therapy, EUR

omalizumab vs **mepolizumab**

INN	Bx*	Cost per basic treatment**	Cost per exacerbation without hospitalization***	Cost per exacerbation with hospitalization*^*	Administration costs^*^	TOTAL	Incremental cost
Omalizumab[2,3]	11 642	219	325	231	309	12 726	11 095
Mepolizumab[4]	11 506	219	429	139	235	12 528	10 897
Routine practice[6]	-	317	839	475	0	1 631	-

omalizumab vs **reslizumab**

INN	Bx*	Cost per basic treatment**	Cost per exacerbation without hospitalization***	Cost per exacerbation with hospitalization*^*	Administration costs^*^	TOTAL	Incremental cost
Omalizumab[2,3]	11 642	219	324	261	309	12 755	12 755
Reslizumab[5]	13 557	219	389	304	235	14 704	14 704
Routine practice[6]	0	317	802	487	0	1606	1606

* registered/ or declared for registration price on Bx and regimen in accordance with the instructions
** corresponds to drug therapy with bronchodilators, based on Russian registry data
*** based on Standard and clinical guidelines
^ based on DRG tariff on hospital care
^*^ based on cost per visit

Figure 1. Results of Budget Impact analysis with the prescription of Bx in accordance with the profile of patients in a three-year time horizon

Table 3. Clinical effectiveness of comparative Bx

Therapy regimen	#exacerbations/ year	# prevented exacerbations of Bx vs placebo/ basic therapy	Exacerbation rate reduction per year, %
	Comparison omalizumab - mepolizumab		
Omalizumab[2,3]	1,20	1,77	59,5
Placebo/controller therapy	2,97	-	-
Mepolizumab[4]	1,59	1,38	46,6
	Comparison omalizumab - reslizumab		
Omalizumab[2,3]	1,20	1,91	61,4
Placebo/controller therapy	3,11	-	-
Reslizumab[5]	1,44	1,67	53,6

Table 4. Results of cost-effectiveness analysis

INN	Incremental cost per year, EUR	Exacerbation rate reduction per year	ICER, EUR/ % exacerbation rate reduction	Δ ICER, %
Omalizumab[2,3]	11 095	1.77	6 268	-21
Mepolizumab[4]	10 897	1.38	7 896	
Omalizumab[2,3]	11 149	1.91	5 837	-25
Reslizumab[5]	13 098	1.67	7 843	

In terms of cost-effectiveness analysis, omalizumab is the dominant technology compared to mepolizumab and reslizumab for the treatment of patients with severe atopic uncontrolled asthma with eosinophilia

In the group of patients with eosinophilia ≥**400 cells/μl** reslizumab usage instead of omalizumab will increase the budget by **13.25%**

In the group of patients with eosinophilia ≥**150 cells/μl** mepolizumab usage instead of omalizumab will lead to an insignificant budget reduction **– 1.58%**

CONCLUSION

Pharmacoeconomic results demonstrate the efficiency of omalizumab in compare with reslizumab and mepolizumab in the treatment of patients with uncontrolled moderate and severe atopic asthma in the Russian health care settings

Exchange rate is 1 EUR = 72.74 RUR

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