

Ways of Medication Administration Improving for Treating Pregnant Women with Acute Respiratory Viral Infection

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Abstract—The article presents the results of the research aimed at Medication Administration improving for pregnant woman with acute respiratory viral. During this social research a medical and social portrait of woman with acute respiratory viral was developed, the analysis of satisfaction and preferences in the choice of pharmaceuticals was carried out. The analysis of pharmaceuticals range for the treatment of acute respiratory viral that are registered in Russia was analyzed. The marketing analysis of the Russian pharmaceutical market for the treatment of ARVI, that pregnant women are allowed to take was carried out.

Keywords—*pharmaceutical care, pregnant women, acute respiratory viral infections, Russian pharmaceutical market, pharmaceuticals*

I. INTRODUCTION

Despite the outstanding achievements in the field of medical treatment of a significant number of diseases, viral infections are classified as global infections. Such diseases are almost non-controllable, they cause enormous socioeconomic damages. Pandemics emerge three times a century, striking up to 20% of the world's population [1,2].

Up to 500 million people (10-20% of the population) get sick with influenza and acute respiratory viral infections (ARVI) during the Interpandemic period every year. 705 million cases of viral infection have severe or complicated form, that leads to hundreds of thousands of deaths [3].

Every year from 27.3 to 41.2 million people in Russia (in 2016-31.7 million people) suffer from influenza and ARVI. Influenza sick rate reaches one billion cases worldwide. About 3 to 5 million cases are severe. Viruses cause degeneracy, necrosis, epithelial metaplasia. They affect the lymphatic and blood capillary permeability and other pathologies [4,5].

According to scientists, 2-9% of pregnant women get sick with ARVI during gestation. By means of mother's hemolymph viruses enter the placenta, involve the fetus in the infectious process and subsequently damage the organs of the unborn child [6,7].

An infectious agent (virus) disrupts the trophoblast invasion process and placental maturation during pregnancy. It can lead to placental insufficiency [8,9]. This fact dictates the necessity for more careful monitoring in pregnant

women and for timely prescription of right pharmaceuticals complex. Providing pharmaceutical care (PC) of pregnant women (PW) with ARVI also includes the issue of trial of medical therapy. There is a pharmaceuticals complex for the treatment of ARVI today, but there are medicament restrictions for pregnant women. Most clinical studies of drug use safety during pregnancy are limited or have not been carried out. The process of prescribing pharmacotherapy for pregnant women is also complicated by the lack of standards and formulary lists of pharmaceuticals for the treatment of respiratory infections. Thus, supply analysis of Russian pharmaceutical market for pharmaceutical care of pregnant women with ARVI is relevant now.

Objectives: improvement of pharmaceutical care of pregnant women with acute respiratory viral infections.

II. EXPERIMENTAL

Research materials: official source of information about medicines: " State Register of Medicinal Remedies in Russia", 2018; support literature: " Register of Medicines in Russia», 2018, Vidal «Medicines in Russia», 2018; the «Analyte-Pharmacy» software; price lists of pharmaceutical distributors across the Belgorod region; 100 questionnaires of sociological survey of pregnant women with ARVI, living in Belgorod and Belgorod region.

Research methods: content analysis, structural analysis, ranking, comparative analysis, graphical analysis, segmentation analysis, sociological analyses.

III. RESULTS AND DISCUSSION

To implement the objectives the concept of the research was developed. It consists of four parts: developing of medical and social portrait of woman with ARVI; the analysis of the range of medicines for treatment of ARVI, that are registered on the Russian pharmaceutical market (RPM); the marketing analysis of the range of the RPM medicines for treatment of ARVI that pregnant women are allowed to take; segmentation analysis of the RPM medicines for treating pregnant women with ARVI.

Thus, in the first part of the research, a social research of 100 pregnant women of Belgorod and Belgorod region who suffered from ARVI during pregnancy being under ambulatory treatment was carried out. A medical and social

portrait of a pregnant woman with ARVI was developed. It is established that the woman is aged 20 to 30 years (70%), married (78 %), has a higher education (55%), lives in the city (96%), is pregnant for the first time (36%), lives in a two-person family (51%); her average income is from 10 to 20 thousand rubles per person per month; she suffered ARVI once (86%) during the second trimester (49%); period of illness was 3-5 days (80%); peak incidence is in autumn and winter period (90%); complication is sinusitis (43%).

In the next stage of sociological research, it was revealed that most women are aware of the consequences of ARVI during pregnancy (59%), respondents are afraid to take prescribed medicines (85,4%), worrying about the consequences. At that the doctor did not explained anything prescribed medicines (42,0%) also did not provide any information on the impact of the pharmaceutical on the body of a pregnant woman and the development of the unborn child (76%). Practically everybody women (97.0%) believe that the main criteria for choosing of a pharmaceutical for treatment of ARVI is the absence of a negative impact on gestation course and the health of the unborn child. Women noted that they need specialized advanced medical and pharmaceutical information about the disease and its treatment of this disease (96%). Immediately following consultation by a specialist pregnant women turn to pharmacists, despite they do not have enough information about prescribed pharmaceuticals complex (49.4%).

Within the ambit the second part in order to determine the pharmaceutical resource a marketing analysis of the range of medicines for treatment of ARVI that are registered on the RPM was carried out. The volume of information amounted to 1043 pharmaceuticals, 474 tradenames (TN) and 160 international nonproprietary names (INN) of pharmaceuticals. During the structural analysis of the range of pharmaceuticals the Anatomical Therapeutic Chemical (ATC) Classification and unincorporated in it pharmacological classes according to the 10th revision of the International Statistical Classification of Diseases (ICD-10) segmentation was carried out: homeopathic medicines, plant-based pharmaceutical and plant-based raw materials (PRM). It is established that the range of the RPM medicines for treatment of ARVI consists of eight groups of pharmaceuticals. The first rank in the product mix is Group R "Respiratory system" – 461 names of pharmaceuticals (44.2 %). The second place is Group N "Nervous System" – 170 pharmaceuticals (16.3%). The third position is plant based raw materials, amounted to 160 names of pharmaceuticals (15.3%). The following are: a Group of herbal products – 140 pharmaceuticals (13.4%); Group J "Antivirals for systemic use" – 46 pharmaceuticals (4.4%); group L "Antitumor drugs and immunomodulators" – 39 pharmaceuticals (3.7%); homeopathic medicine – 26 drug products (2.5%) and group D "Dermatology" is represented by one pharmaceutical (0.1%).

As part of the third researches' block marketing analysis of RFM (Russian pharmaceutical market) medicinal products for the treatment of ARVI in pregnant women was carried out.

For the first time, an assortment segment of the pharmaceuticals possible for use in pregnant women for the treatment of ARVI was identified. So, from the general

assortment of pharmaceuticals for the treatment of ARVI, the categories of "Contraindicative" and "It is not recommended to administer" were excluded. As a result, an informational array of drugs for the treating pregnant women with ARVI was formed. It was revealed that the assortment includes 503 pharmaceuticals, 217 trade names and 67 INN pharmaceuticals.

Further pharmaceuticals are ranked and grouped. So, all the received assortment is divided into 6 subgroups. The leading position is taken by a subgroup, the pharmaceuticals of which can be administered only after specialized medical consultation or medical prescription and doctor's assessing of potential benefits to the mother and the risks to the fetus. The drugs of this Group are predominate. They amount to 57.2% (288 pharmaceuticals) of the total number of pharmaceuticals administered during pregnancy. Pharmaceuticals, the administration of which is prohibited in the 1st trimester of pregnancy, occupy the second position and their further administration is possible only after a doctor's consultation and his correlation of the risks and benefits – 16.1% (81 pharmaceuticals). The third place is the group "Administer with care" – 14.3% (72 pharmaceuticals). The following are "Application is possible" – 5% (25 pharmaceuticals), "Contraindicated in the first trimester of pregnancy" – 1.4% (7 pharmaceuticals). It was founded that only 6.0% – 30 pharmaceuticals are approved for use in pregnant women (Fig. 1).

It has been established that the structure of Russian pharmaceutical market assortment for the treatment of ARVI in pregnant women is presented by seven pharmaceuticals Groups.

So, the first rank in the number of pharmaceuticals for the treatment of ARVI in pregnant women is occupied by group R "Respiratory system" – 293 pharmaceuticals (58.3%) (Table I).

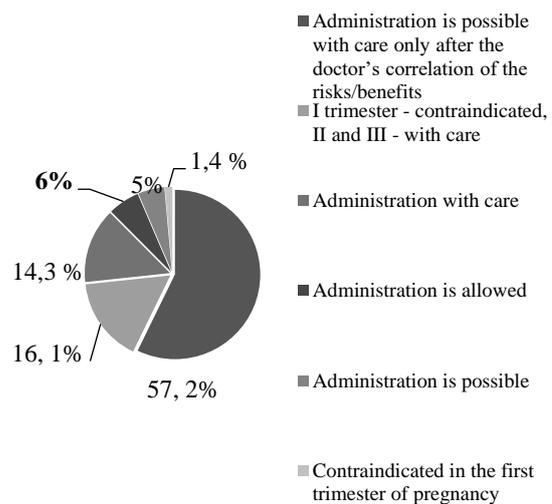


Fig. 1. Segmentation of the assortment of the Russian pharmaceutical medicinal products market for the treatment of ARVI, on the potential use of pregnant women, %.

TABLE I THE STRUCTURE OF THE ASSORTMENT OF PHARMACEUTICALS USED FOR THE TREATMENT OF ARVI IN PREGNANT WOMEN IN THE RUSSIAN PHARMACEUTICAL MARKET

Sr.No	Name of classification group	Number of items													
		INN		TN		Pharmaceuticals									
						Total			including Russian		including foreign		including new		
		Quantity	Share, %	Quantity	Share, %	Quantity	Share, %	Rank	Quantity	Share, %	Quantity	Share, %	Quantity	I, %	
<i>R The respiratory system</i>															
1	R01 Pharmaceuticals for the treatment of the nose diseases	14	20.9	43	19.8	108	21.5	II	52	48.1	56	51.9	62	57.4	
2	R02 Pharmaceuticals for the treatment of the pharynx diseases	25	37.3	42	19.4	60	11.9	III	26	43.3	34	56.7	29	48.3	
3	R05 Pharmaceuticals for the treatment of cough and colds	12	17.9	50	23	125	24.9	I	52	41.6	73	58.4	54	43.2	
<i>Group total</i>		51	76,1	135	62,2	293	58,3								
<i>N Excitatory system</i>															
4	N02 Analgesics	6	9	21	9,7	50	9,9	V	35	70	15	30	18	36	
<i>J Antivirals for systemic use</i>															
5	J05 Antivirals for systemic use	3	4.5	3	1.4	13	2.6	IX	8	61.5	5	38.5	10	76.9	
<i>L Antineoplastic and immunomodulating agents</i>															
6	L03 Immunostimulants	7	10.4	14	6.5	30	6	VII	25	83.3	5	16.7	15	50	
<i>Pharmaceutical of other product group</i>															
7	Homeopathic medicines	-	-	19	8.7	21	4.2	VIII	1	4.8	20	95.2	6	28.6	
8	Plant-based pharmaceutical	-	-	20	9.2	42	8.3	VI	19	45.2	23	54.8	16	38.1	
9	Plant-based raw materials	-	-	5	2.3	54	10.7	IV	54	100	-	-	28	51.9	
Total		67	100.0	217	100.0	503	100.0		272	55.3	231	44.7	238	47.8	

On the second place is the Group “Plant based raw materials” – 54 pharmaceuticals (10.7%) and on the third place is the Group N “Nervous System” – 50 pharmaceuticals (9.9%). Plant preparations – 42 pharmaceuticals (8.3%); group L “Antineoplastic and immunomodulation agents” – 30 pharmaceuticals (6.0%); homeopathic medicines – 21 pharmaceuticals (4.2%) and J “Antivirals for systemic use” – 13 pharmaceuticals (2.6%) (Table I).

The following is a structural analysis of the assortment of pharmaceuticals by INN. It was established that the leading position is occupied by group R “Respiratory system” – 76.1% (51 INN). The following are drugs of group L “Antineoplastic and immunomodulating agents” – 10.4% (7 INN), N “Nervous system” – 9.0% (6 INN), J “Antiviral drugs for systemic use” – 4.5% (3 INN).

Next a segmentation analysis by production basis was carried out. A predominance of the share of Russian-made pharmaceuticals was revealed – 272 names (54.1%). Foreign manufacturers offer 231 names (45.9%).

The proposals of 38 foreign countries were registered, among which the leading countries are Germany (30.3%), France (7.4%) and India - (6.9%), etc.

The calculation of updating the medicine assortment was carried out. This indicator in all groups of researched medicines takes a value from 28.6% to 76.9% and averages 47.8%.

On the next step the segmentation of the pharmaceuticals ranged by composition was carried out. In the overall structure, the dominant part belongs to monocomponent preparations – 54.9%. Combined pharmaceuticals amount to 45.1%.

During the segmentation of pharmaceuticals by the type of dosage form, it was revealed that the assortment is represented by 4 types – solid, liquid, soft and gaseous.

The proportion of liquid pharmaceuticals prevails and amounts to 50.0%. On the second place are solid dosage forms – 43.4%, followed by soft and gaseous – 3.3%.

According to the results of the research, a macrocontour of the Russian pharmaceutical market for the treatment of ARVI in pregnant women was formed (Fig. 2).

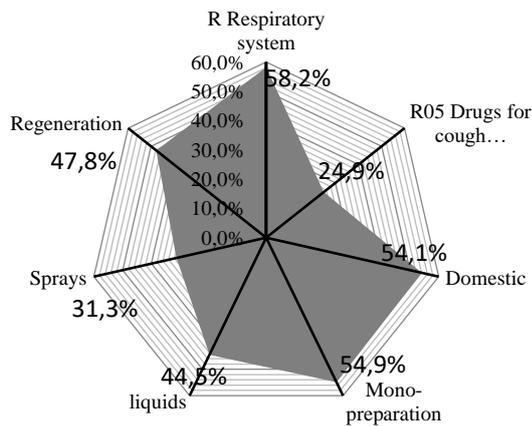


Fig. 2. Macro-contours of the Russian pharmaceutical medicine market for the treatment of AEFI in pregnant women.

So, the leading position is occupied by the group R “Respiratory system” (58.3%), in which the leader in the absolute number of pharmaceuticals is the group R05 “Pharmaceuticals used for cough and colds” (24.9%), with a predominance of domestic (54.1%), monocomponent pharmaceuticals (54.9%), in the form of liquid pharmaceuticals (50.0%), mainly sprays (31.3%), with the degree of regeneration – 47.8% (Fig. 2).

It should be noted that the range of pharmaceuticals used to treat ARVI in pregnant women uses the general range of RFM only by half – 48.2%.

IV. CONCLUSION

A sociological study of pregnant women with acute respiratory viral infections was carried out, as a result of

which a medical and social portrait of a pregnant woman with ARVI was formed.

The analysis of the assortment of the pharmaceutical market of medicinal products registered in Russia was carried out, during which its array and structure for the treatment of ARVI were revealed.

For the first time, a segment of the Russian pharmaceutical market of medicinal products for the treatment of respiratory infections in pregnant women was identified, and its marketing analysis was carried out. It was found that the RFM of pharmaceuticals for pregnant women is less than half (48.2%) of the entire range of pharmaceuticals on the market for the treatment of ARVI.

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