



DYNAMICS OF THE ACUTE VIRAL HEPATITISES MORBIDITY AND RANGE OF MEDICINAL PREPARATIONS FOR TREATMENT IN HOSPITAL ENVIRONMENT IN THE VOLGOGRAD REGION (THE RUSSIAN FEDERATION), 2016–2018

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The aim of the study was to investigate the prevalence of acute viral hepatitis A, B and C in the Volgograd region; the range and identification of the most frequently prescribed pharmacological groups to be used in hospital environment; and analyzing the price dynamics of medicines. These factors will make it possible to assess the state of the medicine provision for the patients with this disease in hospital environment.

Materials and methods. In the study, the following methods have been used: comparison, a method of grouping indicators and a structural-logical method. The materials were the hepatological department patients' treatment sheets (Volgograd Regional Clinical Infectious Diseases Hospital N1).

Results. Acute hepatitis A is the most common (46.9%), acute hepatitis B occupies the second position (27.4%), and acute hepatitis C – the third one (25.7%), where in 46.2%, 23.5% and 14.7%, respectively, are accounted for by icteric viral hepatitis. Hepatoprotectors, symptomatic medications and rehydration and detoxification medicinal preparations are prescribed for all forms and degrees of the disease severity.

Conclusion. The study has revealed a decreased morbidity of acute viral hepatitis A, B and an increased morbidity of acute viral hepatitis C in the Volgograd region. Among all the types of hepatitis, the prevailing one is the icteric form of moderate severity. The range of medicinal preparations prescribed for the treatment of acute viral hepatitis has been studied. Most often, doctors prescribe hepatoprotectors, rehydration and detoxification medicinal preparations. The study of price dynamics, showed a predominant increase in hepatoprotectors and a decrease in medicines for rehydration and detoxification. The results obtained indicate a tendency towards the improvement of drug provision in the Volgograd Region, for the patients with acute viral hepatitis. Besides, the results of the study give an opportunity to consider the ways of its further optimization.

Keywords: acute viral hepatitis, the form and severity of the disease, range of medicinal preparations

Abbreviations: ATC – Anatomical Therapeutic Chemical Classification System; HAV – viral hepatitis A; HBV – hepatitis B virus; HCV – viral hepatitis C; SRMP – state register of medicinal preparations; VEDL – Vital and Essential Drugs List; AVH – acute viral hepatitis.

ДИНАМИКА ЗАБОЛЕВАЕМОСТИ ОСТРЫМИ ВИРУСНЫМИ ГЕПАТИТАМИ В ВОЛГОГРАДСКОМ РЕГИОНЕ И АССОРТИМЕНТ ЛЕКАРСТВЕННЫХ ПРЕПАРАТОВ ДЛЯ СТАЦИОНАРНОГО ЛЕЧЕНИЯ, 2016–2018 ГГ.

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Цель. Исследование распространенности острых вирусных гепатитов А, В и С в Волгоградском регионе, изучение ассортимента, выявление наиболее часто назначаемых фармакологических групп для стационарного лечения и анализ динамики цен на лекарственные препараты, что позволит оценить состояние лекарственного обеспечения пациентов с данным заболеванием в условиях стационара.

Материалы и методы. Использовались методы сравнения, группировки показателей и структурно-логический. Материалами послужили листы назначений пациентов гепатологического отделения Волгоградской областной клинической инфекционной больницы №1.

Результаты. Наибольшее распространение имеет острый гепатит А – 46,9%, острый гепатит В – 27,4%, острый гепатит С – 25,7%, из которых соответственно 46,2%, 23,5% и 14,7% приходится на желтушную форму средней степени тяжести. При всех формах и степенях тяжести заболевания назначают гепатопротекторы, симптоматические препараты и препараты для регидратации, дезинтоксикации.

Заключение. За исследуемый период в Волгоградском регионе выявлено снижение заболеваемости острыми вирусными гепатитами А и В, но, в свою очередь, и рост заболеваемости острым вирусным гепатитом С. Преобладающей среди всех видов гепатита является желтушная форма средней степени тяжести. Изучен ассортимент лекарственных препаратов, применяемых при лечении острых вирусных гепатитов в Волгоградской областной клинической инфекционной больнице № 1. Наиболее часто врачи назначают гепатопротекторы, препараты для регидратации, дезинтоксикации. Изучение динамики цен показало преимущественное повышение на гепатопротекторы и понижение на препараты для регидратации и дезинтоксикации. Полученные результаты свидетельствуют о тенденции к улучшению лекарственного обеспечения в Волгоградском регионе пациентов с острыми вирусными гепатитами и позволяют рассмотреть пути его дальнейшей оптимизации.

Ключевые слова: острый вирусный гепатит, форма и степень тяжести заболевания, ассортимент лекарственных препаратов

Список сокращений: АТХ – анатомо-терапевтическо-химическая классификация; ВГА – вирусный гепатит А; ВГВ – вирусный гепатит В; ВГС – вирусный гепатит С; ГРЛС – государственный реестр лекарственных препаратов; ЖНВЛП – перечень жизненно необходимых и важнейших лекарственных препаратов; ОВГ – острый вирусный гепатит.

INTRODUCTION

Viral hepatitis is a widespread infectious disease that destroys a human liver. According to the World Health Organization, hundreds of millions of people in different countries are infected with viral hepatitis, which exceed the spread of HIV infections. Hepatitis is a medical and social problem both for the Russian Federation and for the whole world. A decrease in the incidence of acute hepatitis, is associated with increased preventive measures and the introduction of vaccination in accordance with the national vaccination calendar¹. Vaccination against viral hepatitis A (HAV) and B (HBV) has been carried out in Russia for the past 20 years, but a vaccine against viral hepatitis C (HCV) has not been developed due to the severe variability of the virus genome [1, 2]. The main reason for the carrier state of this hepatitis virus is the epidemiological problems of countries over the previous 20–25 years. About 650 thousand deaths per year in the world are associated with hepatitis B virus. 2–3% of the Russia population, are infected with hepatitis C. The main routes of HBV and HCV transmission are parenteral, contact (through a skin microtrauma, sexual promiscuity), and the vertical routes (from a mother to a child) [3–9].

The mechanism of HCV transmission is the fecal-oral route. As the practical data have shown, in the Volgograd Region, the main route of hepatitis B infection is the parenteral route (administration of narcotic substances with non-sterile needles in drug addiction).

Viral hepatitis A is the most common and, although this disease is typical of the third world countries, rare cases or outbreaks of hepatitis A are also observed in developed countries. In the Russian Federation, HAV is the most common (more than 50% of cases). In its turn, mortality rate due to HAV is low and accounts for a fraction of a percent worldwide. About 1.5 million cases of HAV have been registered in the world annually, and in the Russian Federation in 2010, the mortality rate was 6.3 cases per 100 thousand people. High incidence of the disease is associated with the active release of HAV (hepatitis A virus) from the patient's body and its high resistance to the environment. As a rule, chronic hepatitis A does not develop

when it comes to a single-agent infection. [10, 11]. Statistics of the Volgograd region on acute hepatitis A, are not available in the public information sources.

In the Russian Federation in 2012, acute hepatitis B amounted to 1.43 cases per 100 thousand people. Thanks to the vaccination, the morbidity decreased by 30 times in 2000–2012. 90–95% of adults with HBV recover and only 10% have the chronic form. The mortality rate due to acute hepatitis B is less than 1%. In the Volgograd region in 2015, the morbidity of acute hepatitis B was 1.7 times lower than its morbidity rate in the Russian Federation, in 2015 it amounted to 0.78 cases per 100 thousand people, in 2016 it was 0.54 [12, 13].

In the Russian Federation in 2012, acute hepatitis C amounted to 1.8 cases per 100 thousand people. 50–80% of the infected people have a chronic form. In the Volgograd region in 2015, the morbidity of acute hepatitis B amounted to 0.66 per 100 thousand people, which is 2.1 times lower than the average rate of this disease in the Russian Federation, and in 2016 it amounted to 0.16 [14].

THE AIM of the study was to investigate the state of affairs in acute viral hepatitis A, B and C in the Volgograd region during the period of 2016–2018: its prevalence, the forms and severity of the disease, the range of medicinal preparations used in hospitals for the acute hepatitis treatment, the dynamics of prices for medicines of the most widely used pharmacological groups based on the state register of medicinal preparations.

Early disease and treatment intelligence plays an important role in preventing health complications and saving budget funds, of both the state and the population.

MATERIALS AND METHODS

In the study, the following methods have been used: comparison, a method of grouping indicators and a structural-logical method. The materials were 175 hepatological department patients' treatment sheets (Volgograd Regional Clinical Infectious Diseases Hospital No.1) and the data of the state register of medicinal preparations of the Russian Federation.

The research design is represented by 4 interconnected stages:

1 – the analysis of the morbidity dynamics of acute viral hepatitis A, B, C;

2 – the analysis of the data on the duration of treatment in hospital environment;

¹ On approval of the national calendar of preventive vaccinations and the calendar of preventive vaccinations according to epidemic indications: order of the Ministry of Health of the Russian Federation dated March 21, 2014 (as amended and added by the order of the Ministry of Health of the Russian Federation, dated 16 June 2016). Available at system "Consultant Plus"

3 – the detection of the most significant range groups of medicinal preparations for the treatment of acute viral hepatitis A, B, C.

4 – the analysis of the dynamics of prices for the medicinal preparations prescribed for the treatment of acute viral hepatitis.

RESULTS AND DISCUSSION

Viral hepatitis are classified according to the form and severity of the disease [15,16]. In the infectious hospital during 2016–2018, the following forms were registered:

- the icteric form (moderate and heavy severity level);
- the anicteric form (mild and moderate severity level).

At the first stage of the study, the analysis of the morbidity dynamics of the acute viral hepatitis A, B, C (according to the form and severity in the Volgograd region) was carried out (Tab. 1). Methods of comparison and grouping were used. From the data of Tab.1 it follows that acute hepatitis A was the most common – 82 (46.9%) cases; acute hepatitis B – 48 (27.4%) cases, it occupies the second place; and acute hepatitis C – 45 (25.7%) cases it occupies the third place.

In 2016–2018, the dynamics of the acute hepatitis A prevalence was characterized by a significant decrease in the morbidity rate from 59.8 to 12.2%, i.e. by 5 times; the morbidity of icteric moderate forms was decreased from 58.8 to 12.3%, i.e. by 4.5 times, although it should be noted that a single case of an icteric form of heavy severity was detected in 2016.

The dynamics of the acute hepatitis B prevalence in 2016–2018 was characterized by a tendency of a decrease in the morbidity rate from 39.5 to 29.2% (by 1.5 times); a decrease in the icteric form of moderate severity from 31.3 to 25% and in the anicteric form of moderate severity from 2.1 to 4.2% was also found out. A single case of acute hepatic encephalopathy has been detected for the whole period.

The dynamics of the acute hepatitis C prevalence in 2016–2018 was characterized by a tendency of an increase from 20 to 42.2% (by 2 times); there was a growth of the icteric form of moderate severity from 11.1 to 20%, of the anicteric form of mild severity – from 2.2 to 11.1%; and of an anicteric form of moderate severity from 4.4 to 11.1%. Two cases of icteric severity were also detected in 2016 and 2017 per annum.

A decrease in the acute hepatitis A and B morbidity is associated with an active use of the hepatitis vaccines [17]. Vaccination of newborns is carried out from the first days of their lives in accordance with the national calendar of vaccinations. Vaccination has also been prescribed for the adult population¹.

At the 2nd stage of the study, the data of the duration of treatment in hospital environment were reviewed and summarized. The therapy of acute viral hepatitis takes a different time depending on the type of hepatitis, the form and severity of the disease, and goes with clinical guidelines, standards of specialized medical care for patients with acute viral hepatitis [18]. The icteric form of hepatitis is severer than the anicteric form and, therefore, requires a longer treatment. Using the structural-logical method, we can conclude that among icteric forms of hepatitis, it is more difficult to treat acute severe hepatitis B (the treatment duration is 25 ± 5 days).

The icteric form of acute severe hepatitis, occupies the 2nd position as its treatment duration is 19 ± 0 days. Acute hepatitis A and B of the icteric form of moderate severity are in the third position; their treatment duration is 17 ± 7 days. A period from 8 to 16 days is required for the treatment of the anicteric form of mild severity of acute hepatitis C; of moderate severity of acute hepatitis C and B; for the icteric form of acute hepatitis C of moderate severity; and for the icteric form of acute severe hepatitis A (Tab. 2). The cases of the anicteric form of moderate severity of acute hepatitis A and a mild degree of acute hepatitis A and B in hospital environment were not registered.

At the next stage of the study, the range groups of medicinal preparations and the frequency of their prescriptions were cleared up. In the treatment of acute viral hepatitis, pathogenetic therapy (hepatoprotectors, enzymes, vitamins, hormonal medicines, medicines for rehydration and detoxification for parenteral use) was used; besides, etiotropic (interferons and their inducers) and symptomatic kinds of therapy were used. These kinds of therapy also go with the clinical recommendations and standards of specialized medical care [19–23]. The use of groups of medicinal preparations in the corresponding types, forms and degrees of severity of acute hepatitis are presented in Tab. 3–5.

As it follows from Tab. 3, etiotropic therapy was not used for the icteric form of moderate severity of acute hepatitis A, and only interferons in the function of etiotropic therapy, are added to the main treatment of the icteric form of heavy severity of acute hepatitis A. It should be also noted that vitamins were not used at all in this hospital for the treatment of acute hepatitis A.

As Tab. 4 shows, vitamins were not used in the treatment of acute viral hepatitis B either. In its turn, interferon therapy was not used for the icteric form of heavy severity and the anicteric form of moderate severity of acute hepatitis B. Enzymatic and hormonal medicines were not prescribed for the treatment of acute hepatitis B anicteric forms of moderate severity either.

As it follows from Tab. 5, etiotropic therapy was not used in the icteric form of heavy severity and in the anicteric form of mild severity of acute hepatitis C. In the treatment of the anicteric form of moderate severity, only interferons were used in etiotropic therapy. In the treatment of the anicteric form of mild severity, enzyme medicines, hormonal, rehydration and detoxification medicines were not used. Hormonal medicines were not prescribed for the treatment of the acute hepatitis C anicteric forms of moderate severity either.

Thus, the data presented in Tab. 3–5, illustrate the specific treatment of acute viral hepatitis depending on their type, form and severity [24–27].

Tab.6 contains a range of medicinal preparations used in the treatment of acute viral hepatitis in Volgograd Regional Clinical Infectious Diseases Hospital N 1.

The medicinal preparations referring to pathogenetic and etiotropic therapy, have been examined in detail because they directly affect the outcome of the disease. In Tab.6, the groups of medicinal preparations are indicated in accordance with the anatomical-therapeutic-chemical classification [28]. All the presented medicinal preparations belong to the Vital and Essential Drugs List (dated 2016–2018).

Table 1 – Dynamics of the morbidity of acute viral hepatitises A, B, C during 2016-2018

Year	Type of hepatitis	Total	Icteric form		Anicteric form	
			Moderate severity	Heavy severity	Moderate severity	Mild severity
2016	Acute hepatitis A	49 (59.8)	48 (27.4%)	1 (0.7%)	–	–
2017	Acute hepatitis A	23 (28%)	23 (13.1%)	–	–	–
2018	Acute hepatitis A	10 (12.2%)	10 (5.7%)	–	–	–
		82(46.9%)				
2016	Acute hepatitis B	19 (39.5%)	15 (8.6%)	3 (1.7%)	1 (0.5%)	–
2017	Acute hepatitis B	15 (31.3%)	14 (8%)	–	1 (0.5%)	–
2018	Acute hepatitis B	14 (29.2)	12 (6.9%)	–	2 (1.2%)	–
		48(27.4%)				
2016	Acute hepatitis C	9 (20%)	5 (2.8%)	1 (0.6%)	2 (1.1%)	1 (0.6%)
2017	Acute hepatitis C	17 (37.8%)	12 (6.8%)	1 (0.6%)	3 (1.7%)	1 (0.6%)
2018	Acute hepatitis C	19 (42.2%)	9 (5.1%)	5 (2.8%)	5 (2.8%)	–
		5(25.7%)				

Table 2 – Treatment duration of acute viral hepatitises in hospital environment of Clinical Infectious Diseases Hospital N1 (average statistics)

Type of hepatitis / form and severity	Icteric form		Anicteric form	
	Moderate severity	Heavy severity	Moderate severity	Mild severity
Acute hepatitis A	17±7 days	14±0 days	–	–
Acute hepatitis B	17±7 days	25±5 days	16±6 days	–
Acute hepatitis C	15±5 days	19±0 days	9±4 days	8±4 days

Table 3 – The use of medicinal preparations groups in the treatment of acute viral hepatitis A

Group of medicines / form and severity	Icteric form	
	Moderate severity	Heavy severity
Symptomatic medicines	+	+
Vitamin medicines	–	–
Hepatoprotective medicines	+	+
Enzyme medicines	+	+
Hormonal medicines	+	+
Rehydration and detoxification preparations for parenteral use	+	+
Interferons	–	–
Interferon inducers	–	+

Table 4 – The use of medicinal preparations groups in the treatment of acute viral hepatitis B

Group of medicinal preparations / form and severity	Icteric form		Anicteric form
	Moderate severity	Heavy severity	Moderate severity
Symptomatic medicines	+	+	+
Vitamin medicines	–	–	–
Hepatoprotective medicines	+	+	+
Enzyme medicines	+	+	–
Hormonal medicines	+	+	–
Rehydration and detoxification preparations for parenteral use	+	+	+
Interferons	+	–	–
Interferon Inductors	+	+	+

Table 5 – The use of medicinal preparations groups in the treatment of acute viral hepatitis C

Group of medicines/form and severity	Icteric form		Anicteric form	
	Moderate severity	Heavy severity	Moderate severity	Mild severity
Symptomatic medicines	+	+	+	+
Vitamin medicines	–	–	–	–
Hepatoprotective medicines	+	+	+	+
Enzyme medicines	+	–	+	–
Hormonal medicines	+	+	–	–
Rehydration and detoxification preparations for parenteral use	+	+	+	–
Interferons	+	–	+	–
Interferon Inductors	+	–	–	–

Table 6 – The range of medicinal preparations and the frequency of their prescriptions during the study period of 2016–2018

Medicinal preparations group	Trade name, prescribed dosage, dosage form, route of administration	Number of prescriptions *		
		2016	2017	2018
Hepatoprotective medicines	Heptor® 400 mg (pills, p.o.)	1 (1.2%)	–	–
	Heptral® 400 mg (lyophilisate, i.v)	2 (3.1%)	7 (8.5%)	4 (3.9%)
	Phosphogliv® 65 + 35 mg (capsules, p.o.)	42 (60%)	55 (66.3%)	75 (70%)
	Phosphogliv® 2.5 g (lyophilisate, i.v)	15 (21.4%)	3 (3.6%)	7 (6.7%)
	Ursodez® 250 mg (capsules, p.o.)	3 (4,3%)	15 (18%)	20 (19.4%)
	Ursodez® 500 mg (capsule, p.o.)	7 (10%)	3 (3.6%)	–
Total		70 (100%)	83 (100%)	106 (100%)
Enzyme medicines	Pancreatin 25 units (pills, p.o.)	–	–	9 (16%)
	Pancreatin 0.5 (pills, p.o.)	–	–	1 (2%)
	Pancreatin 30 units (pills, p.o.)	1 (100%)	1 (100%)	46 (82%)
Total		1(100%)	1 (100%)	56 (100%)
Hormonal medicines	Dexamethasone 8 mg (injection solution, i.v)	1(14.3%)	1 (4.4%)	1 (4.5%)
	Prednisolone 5 mg (pills, p.o.)	–	1 (4.1%)	1 (4.6%)
	Prednisolone 10 mg (pills, oral)	–	1 (4.1%)	–
	Prednisolone 15 mg (pills, p.o.)	–	1 (4.1%)	–
	Prednisolone 30 mg (injection solution, i.v)	–	2 (8.3%)	1 (4.6%)
	Prednisolone 60 mg (injection solution, i.v)	–	6 (25%)	3 (13.6%)
	Prednisolone 90 mg (injection solution, i.v)	4(57,4%)	9 (37.5%)	11 (50%)
	Prednisolone 120 mg (injection solution, i.v)	–	3 (12.5%)	5 (22.7%)
Total		7 (100 %)	24 (100%)	22 (100%)
Rehydration and detoxification preparations for parenteral use	Acesol 400 ml (infusion solution, i.v)	6 (7.7%)	23(16.5%)	46(27.5%)
	Acesol 450 ml (infusion solution, i.v)	–	2 (1.4%)	–
	Acesol 800 ml (infusion solution, i.v)	1 (1.3%)	1 (0.7%)	2 (1.2%)
	Glucose 5% – 400 ml (infusion solution, i.v)	32 (41%)	44(31.7%)	60 (36%)
	Glucose 10% – 400 ml (infusion solution, i.v)	6 (7.7%)	19(13.7%)	8 (4.8%)
	Ringer’s solution 400 ml (infusion solution, i.v)	9(11.5%)	11 (8%)	4 (2.4%)
	Ringer’s solution 500 ml (infusion solution, i.v)	5 (6.4%)	7 (5%)	3 (1.8%)
	Reamberin® 200 ml (infusion solution, i.v)	-	11 (8%)	–
	Reamberin® 250 ml (infusion solution, i.v)	1 (1.3%)	–	–
	Reamberin® 400 ml (infusion solution, i.v)	2 (2.6%)	–	–
	Remaxol® 200 ml (infusion solution, i.v)	–	–	1 (0.6%)
	Remaxol® 400 ml (infusion solution, i.v)	–	–	4 (2.4%)
	Remaxol® 500 ml (infusion solution, i.v)	–	–	3 (1.8%)
	Potassium chloride 4% –10 ml (injection solution, i.v)	7 (9.0%)	7 (5%)	3 (1.8%)
	Sodium chloride 0.9% -400 ml (infusion solution, i.v)	9(11.5%)	14 (10%)	33 (19.7%)
	Total		78 (100%)	139 (100%)
Interferons	Altevir® 3 mln UNITS (injection solution, IM)	1 (12.5%)	1 (16.6%)	16 (100%)
	Alpharona® 1.5 million units (lyophilisate, IM)	–	1 (16.7%)	–
	Alfarona® 3 million units (lyophilisate, IM)	6 (75%)	4 (66.7%)	–
	Layfferon® 3 mln UNITS (injection solution, lyophilisate, IM)	1 (12.5%)	–	–
Total		8(100%)	6 (100%)	16 (100%)
Interferon Inductors	Cycloferon® 12.5% -2ml (injection solution, IM)	8 (100%)	2 (100%)	22 (100%)
Total		8 (100%)	2 (100%)	22 (100%)

Note: 1 prescription = 1 person

Table 7 – Dynamics of prices for rehydration and detoxification medicinal preparations used in the treatment of acute viral hepatitis during the period of 2016–2018 (according to the data of the state register of medicinal preparations)

Group of medicinal preparations	Trade name, prescribed dosage, medicine form, route of administration, package	Limit price, rubles without VAT (per 1 unit)			Price change, % 2018 to 2016
		2016	2017	2018	
Rehydration and detoxification preparations for parenteral use	Acesol 400 ml (infusion solution, i.v), medicine bottle	27.95	27.95	27.95	0
	Glucose 5% – 400 ml (infusion solution, i.v), medicine bottle	44.06	28.72	29.88	32.2
	Glucose 10% – 400 ml (infusion solution, i.v), medicine bottle	39.27	28.08	30.96	22.0
	Ringer's solution 400 ml (infusion solution, i.v), medicine bottle	45.93	35.78	24.89	46.0
	Ringer's solution 500 ml (infusion solution, i.v), medicine bottle	35.93	28.74	26.62	26.0
	Reamberin® 200 ml (infusion solution, i.v)	128.31	132.99	138.00	+7,5
	Reamberin® 250 ml (infusionsolution, i.v)	113.83	113.83	113.83	0
	Reamberin® 400 ml (infusion solution, i.v)	157.05	162.65	168.85	+ 7.5
	Remaxol® 400 ml (infusion solution, i.v)	–	–	315.00	–
	Potassium chloride 4% – 10 ml (injection solution, i.v) ampula	2.53	4.43	4.60	+ 81.8
	Potassium chloride 0,9% – 400 ml (injection solution, i.v)	33.64	23.94	33.26	– 1.2

Table 8 – Dynamics of prices for medicines of the group of hepatoprotectors used in the treatment of acute viral hepatitis in the period of 2016 – 2018 (according to the data of the state register of medicinal preparations)

Group of medicinal preparations	Trade name, dosage, medicine form, route of administration	Limit price, rubles without VAT (per 1 unit)			Price change, % 2018–2016
		2016	2017	2018	
Hepatoprotective medicines	Heptor® 400 mg (pills, p.o.)	44.80	44.80	44.80	0
	Heptral® 400 mg (lyophilisate, i.v.)	65.31	65.31	280.71	+ 329.8
	Phosphogliv® 65 + 35 mg (capsules, p.o.)	8.00	8.81	9.15	+ 14.4
	Phosphogliv® 2.5 g (lyophilisate, i.v.)	264.45	264.45	270.12	+ 2.1
	Ursodez® 250 mg (capsules, p.o.)	9.03	9.03	12.05	+ 33.4
	Ursodez® 500 mg (capsule, p.o.)	24.11	24.11	24.11	0

The range of medicinal preparations expanded in 2017–2018 in comparison with 2016. Among hepatoprotectors, the most widely used was Phosphogliv® 35+65 mg, among enzyme preparations it was pancreatin 30 UAs, among hormonal preparations – prednisolone 90 mg, among rehydration and detoxification preparations – acesol 400 ml, among interferons – 3 mln UAs of Altevir® and among interferon inducers – Cycloferon® 12.5% – 2 ml.

It should be noted that the prescription of the same medicine in different dosages is associated with the type, form and severity of acute hepatitis. The following names and dosages are registered in both – the list of medicinal preparations presented in Tab. 6 and in the state register of medicinal preparations: Phosphogliv® 65+35 mg, Phosphogliv® 2.5 mg, Heptor® 400 mg, Heptral® 400 mg, Ursodez® 250 mg and 500 mg; pancreatin 30 UAs and 25 UAs; dexamethasone 4 mg, prednisone 30 mg and 5 mg; glucose 5%, 10% – 400 ml, potassium chloride 4% – 10 ml, sodium chloride 0.9% – 400 ml, Remaxol® 400 ml, Ringer's solution 400 ml and 500 ml, Reamberin® 20, 250, 400 ml, acesol 400 ml; Alpharona® 3 mln UAs, Liffeferon® 3 mln UAs, Altevir® 3 million UAs; Cycloferon® 12.5% – 2 ml.

According to Tab. 6, during the period of 2016–2018, rehydration and detoxification medicinal preparations were prescribed most often (47% of the entire range), as well as the group of hepatoprotectors (31.7%). In 2018, unlike the previous years, a group of enzyme medicinal preparations began to be prescribed quite widely.

The final stage of the investigation was devoted to the study of price dynamics for the most commonly prescribed medicines of two pharmacotherapeutic groups: medicines for rehydration and detoxification and hepatoprotectors. Since the presented medicines are included in the list of Vital and Essential Medicines, their prices and wholesale surcharges are fixed and controlled by the state. Tables 7, 8 show the dynamics of prices for rehydration and detoxification medicinal preparations, as well as the group of hepatoprotectors in the period of 2016–2018.

According to Tab. 6, in the period of 2016–2018, the most often prescribed were rehydration and detoxification medicines (47% of the entire range), as well as the group of hepatoprotectors (31.7%). In 2018, unlike the previous years, a group of enzyme medicines began to be prescribed quite widely. Tab. 7, 8 show the dynamics of prices for rehydration and detoxification medicines, as well as the group of hepatoprotectors.

Since the presented medicines are included in the list of Vital and Essential Medicines, their prices and wholesale surcharges are fixed and controlled by the state. From the data of Tab. 7 it follows, that in the study period in the rehydration and detoxification group (11 items taken as 100%) the prices increased for 3 medi-

cines (27%), Reamberin® 200 ml and 400 ml, potassium chloride 4% – 10 ml; 2 medicines remained in the same price category: acesol 400 ml and Reamberin® 250 ml (18%); the prices decreased for 5 medicines: glucose 5% – 400 ml, glucose 10% – 400ml, Ringer's solution 400ml, Ringer's solution 500ml, sodium chloride 0.9% – 400 ml (45%). Remaxol® 400 ml (1%) belongs to new medicines of 2018, therefore its price dynamics is not possible to trace. A significant decrease in the price of 4 medicines (–22–46%), a significant increase in the price of 1 medicine (+81.8%) and a slight increase (+7.5%) for 2 medicines were revealed in comparison with 2016.

Consequently, a larger percentage consists of the medicinal preparations the costs of which have decreased (by 45%). This fact may be associated with an increase in the affordability of medical care, and, accordingly, an increase in medical prescriptions for 2016–2018.

The data of Tab. 8 shows that in the group of 6 hepatoprotectors, the price of 2 medicines did not change (Heptor® 400 mg and Ursodez® 500 mg), the price of other medicines went up from 2.1 to 329.8%. However, this fact did not affect the frequency of prescriptions of this group of medicines, which may be due to an increase in the allocation for the purchase of these items for use in hospital environment. Attention should be also paid to the fact that according to Tab. 6 and 8, the prices for Heptor® 400 mg and Ursodez® 500 mg remained the same in 2016–2018, but their prescription was not registered in 2017 and 2018, which may be due to the lack of their procurement.

CONCLUSION

The studies have shown the following. In the period of 2016–2018, there has been a steady tendency of decreasing in the morbidity of acute hepatitis A and B, but in its turn, there has been an increase in the incidence of acute hepatitis C (it was nicknamed “a gentle killer” because of the hidden course of the disease). The main groups of medicines used in hospital environment for the treatment of acute hepatitis A, B and C depending on the form and severity of the disease, have been identified. 3. A study of the range of medicines, the frequency of medical prescriptions and dosages showed that rehydration and detoxification medicines for parenteral use, and hepatoprotectors are the most commonly prescribed. 4. The dynamics of the prices for the groups of medicines has been studied. It has demonstrated a decrease in prices for rehydration and detoxification medicines (45% of all the numbers of the items) and an increase in prices for medicines of the hepatoprotectors group (66.7% of all the numbers of the items).

The results gained indicate a tendency towards the improvement of medicine provision of patients with acute viral hepatitis, and give an opportunity to consider the ways of their further optimization.

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AUTHORS' CONTRIBUTION

All authors equally contributed to the research work.

CONFLICT OF INTERESTS

The authors declare no conflict of interest.

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