A PHARMACO-ECONOMIC ANALYSIS OF TREATMENT EFFICACY INTEGRATING HCV DIAGNOSIS AND TREATMENT

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Annotation: This article delves into the realm of pharmaco-economics by conducting a comprehensive analysis of the efficacy of treatments for Hepatitis C Virus (HCV) while integrating both diagnosis and treatment processes. The authors explore the economic implications of various treatment strategies, considering factors such as cost-effectiveness, healthcare resource utilization, and patient outcomes. By integrating HCV diagnosis into the analysis, the article aims to provide a holistic perspective on the economic impact of different treatment approaches. This study contributes valuable insights for healthcare policymakers, clinicians, and researchers seeking to optimize HCV management strategies within the constraints of healthcare budgets and resource allocation. The findings presented in this article are expected to inform decision-making processes regarding HCV treatment policies, ultimately striving for improved patient outcomes and efficient allocation of healthcare resources.

Keywords: Chronic hepatitis C , anti-HCV , ursodeoxycholic acid , ursosan , essential, sofosbuvir, daclatasvir.

Introduction.

According to the WHO Information Bulletin (July 2016), 130-150 million people worldwide suffer from chronic hepatitis C infection, and about 3% of the world's population is infected with it. A feature of this disease is the high frequency of chronicity, ranging from 50 to 85% of acute forms of hepatitis C. Subsequently from 20 to 30% cases of chronic hepatitis C ends in liver cirrhosis and the development of hepatocellular carcinoma, from which approximately 700,000

people die each year. In addition, the lack of serious anti-epidemic measures, such as vaccination, against hepatitis C, as well as the asymptomatic course of the disease in most cases, leads to an annual increase in the number of infected people around the world. Uzbekistan belongs to hyperendemic regions according to the prevalence of this viral infection with different levels of circulation in the regions, which is apparently associated with medical and social conditions (features in the size of families, age structure) and the ethnic way of life of the indigenous population. From screening studies conducted by a number of authors, it was revealed that among the examined healthy population of our country, 5.6% had anti-HCV and 8.3% had HBsAg.

In Uzbekistan, as well as on the other side of the post-Soviet space, there is a need to observe modern level therapy, predolagyushchemu use of new, cost-effective methods and preparations, and constant necessary financing of health care. Therefore, in the current conditions, it is very relevant to analyze the economic feasibility of using antiviral and hepatotropic drugs from various clinical pharmacological groups, taking into account the breadth of their prevalence in real clinical practice, as well as their therapeutic effectiveness and safety, which was the purpose of our study.

The purpose of the study.

To study the pharmaco-economic analysis of the effectiveness of treatment by integrating the diagnosis and treatment of HCV.

Materials and methods of research.

The study was undertaken on 120 patients with chronic hepatitis C who received inpatient treatment at the Bukhara multidisciplinary hospital in 2022-2024 and then examined over the next 3 years during outpatient treatment. All patients upon admission, then regularly after 10 days, underwent standard biochemical blood tests.The comprehensive examination of patients included the determination of indicators of cytolytic, hepatodepressive, mesenchymal-inflammatory and cholestatic syndromes. The etiological diagnosis was established based on the results of enzyme immunoassay. Diagnostic kits “DS” (Nizhny Novgorod, Russia)

were used as test systems to detect antibodies to HCV in blood serum and detect HBsAg. To establish the fact of eradication, molecular genetic studies were performed using PCR analysis. DNA extraction from whole blood was carried out using the DNASorb test system (Interlabservice, Russia). To carry out PCR testing, RotorGene 6000 (CorbettResearch, Australia) and reagent kits (Syntol, Russia) were used.

The results of the study.

Thus, according to a number of authors, due to the lack of clear results on the effectiveness of treatment of hepatitis C with the PegIFN-α + RBV regimen in patients who had previously received AVT, this scenario was stopped at the stage of analysis of pharmacoeconomic effectiveness. According to their data, it was established that treatment regimens DCV + SOF and DCV + SOF + RBV are considered dominant in terms of cost-effectiveness analysis compared to SOF + RBV in groups of CHC patients without cirrhosis and with cirrhosis, respectively. At the same time, the analysis of the "budget impact" showed that the transition to the use of DCV + SOF and DCV + SOF + RBV instead of SOF + RBV will not only not require additional costs for antiviral therapy, but will also lead to a reduction in the cost of medical care for patients.

According to a number of authors, the combination of antiviral drugs sofosbuvir + daclatasvir provides a high rate (95%) of virus eradication in patients with HCV genotype 1. According to the data obtained, the most optimal duration of treatment according to the sofosbuvir + daclatasvir regimen without ribavirin is 12 weeks. in patients without cirrhosis and 24 weeks. - with cirrhosis.

Consequently, to date, new highly effective antiviral drugs have begun to enter the medical market, capable of quite successfully achieving complete eradication of the hepatitis C virus. Moreover, since they are generics, their prices are becoming more and more accessible to the general population.

Taking this information into account, we decided to undertake pharmacoeconomic study on the treatment of patients with chronic viral hepatitis "C" with an assessment of the effectiveness and cost of the course of treatment. It is known that

effective therapy requires a combination of generics with hepatoprotectors and immunomodulators. In order to rationally select the latest drugs, the use of the drug Ursodeoxycholic acid - ursosan, which combines both hepatoprotective and immunomodulatory properties, was proposed as the most optimal. In addition, the main property of ursosan is anticholestatic, the syndrome of which was most often detected among the patients we examined, and their treatment was started during an exacerbation of the disease with a predominance of one or another syndrome.

As shown in Table 1, the use of a standard course of treatment based on Essentiale for chronic viral hepatitis C with manifestations of cholestatic syndrome costs almost one million sum per patient. Moreover, if on average there are 3 cases of exacerbations over three years and in 12% of cases hepatitis turns into cirrhosis, then even without taking into account the treatment of cirrhosis, the costs for three years will be 2.6 million soums. In a similar case, the use of ursosan in a standard dosage slightly reduces the frequency of hospitalizations and reduces the development of liver cirrhosis by more than 2 times, which together can amount to a lower three-year cost of treatment for 2 courses of treatment over 3 years.

The use of a differentiated dosage of ursosan in these cases can cost only 280,000 sum per patient with almost the same treatment effectiveness. When carrying out this treatment option, over three years, on average, 2 cases of exacerbations occur and up to 5% of hepatitis turns into cirrhosis, so even without taking into account the treatment of cirrhosis over three years, the costs can be only 560,000 soums.

The use of a treatment regimen, including a three-month course of oral administration of antiviral drugs (sofosbuvir/daclatasvir) costing 1,040,000 soums with the addition of a course of treatment with ursosan in a differentiated dosage when cholestatic syndrome is detected, costs 1,320,000 soums per patient. As a result of this course of treatment, not a single patient had hepatitis C virus detected at the end of 3 months based on the PCR analysis. Moreover, this was not observed during the next 3 years of observation. Not a single treated patient during this period applied or was hospitalized due to exacerbations of the disease, nor was there any clinical transition of chronic hepatitis to cirrhosis of the liver.

Therefore, in general, the cost of one course of treatment with a complex of antiviral drugs and Ursosan in the amount of 1,320,000 sum remains as a cost for 3 years of observation and this is a cheaper treatment option compared to the use of Essentiale or Ursosan in a standard dosage and, moreover, with a more favorable result.

Table 1.

Pharmacoeconomic assessment of the cost of treatment of chronic hepatitis C with existing and proposed regimens

Treatment regimens	Number of hospitalizations per year	Transition to cirrhosis over a 3-year period	Cost of treatment (in sum) for the first year	Cost of treatment (in sum) for three years
Hepatoprotectors (essentiale) (6 months)	1,1	12%	864000	2592000
Ursosan in standard dosage (6 months)	0,7	4,5%	770000	1540000
Ursosan in individual dosage (3 months)	0,7	5%	280000	560000
Ursosan in the proposed dosage + subviral drugs sofosbuvir\daclatasvir (3 months)	0	0	280000+ 1040000 = 1320000	1320000

The above arguments are evidence of the economic benefit of performing antiviral therapy for chronic hepatitis C by combining generics with hepatoprotectors, in particular, ursosan with the combination of sofosbuvir\daclatasvir. At the same time, the costs of antiviral drugs are fully compensated by the savings in the total losses for the treatment of chronic hepatitis with other drugs, for example, hepatoprotectors such as essential phospholipids. Since currently treatment of CHC with Essentiale or Ursosan in a standard dosage is quite affordable for patients of a wide range of the population, the cost of complex treatment, which has a similar value, is also considered to be well affordable.

Conclusion.

• Differentiated administration of ursosan with different starting doses and their gradual reduction during treatment in patients with chronic hepatitis C when cholestatic syndrome was detected led to a reduction in treatment time by almost 3 months.

• Carrying out a combined course of treatment with antiviral drugs for patients with chronic hepatitis C: daclatasvir + sofosbuvir and differentiated administration of ursosan led to complete stabilization of the clinical picture with the absence of exacerbations and cases of transition to liver cirrhosis in the subsequent 3-year period.

• The cost of treating chronic hepatitis C with a complex of antiviral drugs and Ursosan over 3 years of observation is the cheapest treatment option relative to the use of Essentiale or Ursosan in a standard dosage.

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