

The Dynamics of Incidence of Chronic Hepatitis B and C in the Population of Almaty city for 2001-2014

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Abstract

The results of a retrospective epidemiological analysis revealed a sharp decline in the incidence of acute hepatitis B among the entire population of Almaty and the absence of acute hepatitis B, acute hepatitis C and chronic hepatitis C among children under 14 years of age. We found an increased incidence of chronic hepatitis B and chronic hepatitis C among the population of Almaty. Assessment of the hepatitis C incidence by the cumulative indices more objectively reflects the epidemiological situation for this disease. **Int J Biomed. 2016;6(3):222-224.**

Key Words: hepatitis B virus • hepatitis C virus • morbidity • cumulative indices.

Introduction

Hepatitis B virus (HBV) and hepatitis C virus (HCV) remain an urgent health problem in Kazakhstan. An encouraging trend is that the incidence of HBV in Almaty city decreased 9.3 times and has not registered among children under 14 years since 1998, attributable to effective vaccination programs; the prevalence of HBV carriers also dropped to 2.3%-2.6%.^[1,2] At the same time, it has been shown that 80% of HBsAg carriers are people between the ages of 20 and 40 years.^[2]

Official registration of HCV infections in Kazakhstan and Almaty city started in 1998. In the beginning, only acute hepatitis C (AHC) was registered; new cases of chronic hepatitis C (CHC) began to register in 2008. The first observations have shown that the AHC incidence is characterized by low levels (0.4–2.1 in the general population and up to 0.75 in children).^[2-4] However, the CHC incidence was characterized by higher prevalence and tended to increase, largely covering adults as chronic hepatitis B (CHB).^[2-4] These features of the incidence of CHB and CHC require improving the disease surveillance.

Materials and Methods

For the retrospective epidemiological analysis, we used the data of the official registration of the Department of Sanitary and Epidemiological Surveillance of Almaty for HBV and HCV in the intensive indicators from 2001 to 2014. The behavior of the epidemic process was assessed by the annual dynamics of the cumulative incidence of hepatitis B and C.^[5]

Results and Discussion

Table 1 shows the average incidence rate for acute hepatitis B (AHB) in the general population and in children under 14 years of age at 4-5-year intervals for 2001-2014. As can be seen, the AHB morbidity dynamics among the general population tend to decrease.

Table 1.

Dynamics of AHB incidence in Almaty for 2001-2014

Nosology	population category	The average annual incidence rate (‰) for			Multiplicity reduction
		2001-2005	2006-2010	2011-2014	
AHB	General population	20.0	5.5	1.5	13.3
	children under 14 years of age	1.01	0.0	0.0	Absence of AHB

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The average rate for 2001-2005 was 20.0 per 100,000 and dropped to 1.5 in 2011-2014. Multiplicity reduction amounted to 13.3 times. More striking dynamics were observed for AHB among children under 14 years of age. The AHB incidence was recorded only during 2001-2004. The average rate was 1.01 per 100,000 children. Since 2005 in Almaty, AHB has not been registered among children. These data conclusively demonstrate the epidemiological effectiveness of HBV vaccination in children.

The results of a similar analysis for AHC incidence are shown in Table 2. During the analyzed period, the isolated cases of AHC were recorded annually: figures ranged from 0.6 to 1.14‰. AHC cases were not registered among children. Generally, AHC is uncommon in childhood,^[6,7] and most chronically infected children are asymptomatic with normal growth and development.

Table 2.

Dynamics of AHC incidence in Almaty for 2001-2014

Nosology	population category	The average annual incidence rate (‰) for			Multiplicity reduction
		2001-2005	2006-2010	2011-2014	
AHC	General population	1.14	0.24	0.6	1.9
	children under 14 years of age	0.00	0.00	0.00	-

The standard case definition for AHCV was adapted from World Health Organization recommendations.^[8] It is necessary to diagnose AHCV based on epidemiological and clinicobiochemical findings, such as the presence of newly identified markers of HCV – antibodies to HCV (anti-HCV) and HCV RNA. Unlike with AHB—in which the IgM antibody to the hepatitis B core antigen is diagnostic of acute infection and precedes the appearance of IgG—with HCV infection the IgM antibody responses are variably detected in both acute and chronic phases.^[9] Anti-HCV IgM cannot therefore serve as a diagnostic marker of acute HCV infection. In this context, the continuing practice of determining IgM for the diagnosis of acute hepatitis C in Kazakhstan is incorrect.

In recent years, the incidence of CHB and CHC has increased.^[11,12] Table 3 illustrates the dynamics of incidence of CHB and CHC in Almaty for 2003-2014 years.

Table 3.

Dynamics of incidence of CHB and CHC in Almaty for 2003-2014

Nosology	The average annual incidence rate (‰) for			Multiplicity increase
	2003-2006	2007-2010	2011-2014	
CHB	6.1	5.1	11.6	1.9
CHC	4.7	4.1	14.8	3.1

In particular, from the time of registration in 2003 the incidence of CHB and CHC has tended to increase, and has increased 1.9 and 1.3 times, respectively. Taking into account

the incorrectness of the separate account of AHC cases and treating them as the manifestation of CHC cases, we calculated the cumulative incidence rates of HCV, the average indices of which were compared with the average annual rates of CHB (Table 4).

Table 4.

Dynamics of the cumulative incidence rates of CHC and CHB in Almaty for 2003-2014

Nosology	The average annual incidence rate (‰) for			Multiplicity increase
	2003-2006	2007-2010	2011-2014	
CHC	5.5	4.3	15.0	2.7
CHB	6.1	5.1	11.6	1.9

CHC incidence, according to cumulative indices, was slightly higher than the CHB incidence, especially in 2011-2014. These results indicate an epidemiological potential of CHC and require attention to the public health problem. Analysis of the distribution of patients with CHC and CHC by age groups showed that 80% to 90% of patients are between 20 and 49 years of age.

Thus, the results of a retrospective epidemiological analysis revealed a sharp decline in the AHB incidence among the entire population of Almaty and the absence of AHC and AHC among children under 14 years of age. Registered isolated cases of AHC, apparently, are a manifestation of CHC cases.

We found an increased incidence of CHB and CHC among the population of Almaty. Assessment of the hepatitis C incidence by the cumulative indices more objectively reflects the epidemiological situation for this disease. These circumstances have to be understood by epidemiologists for effective and quality monitoring of hepatitis C. CHB and CHC, being a risk factor for hepatocellular carcinoma and liver cirrhosis, should be a focus of the healthcare system in Kazakhstan.

Competing interests

The authors declare that they have no competing interests.

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