

Background of hepatitis B focal infection rise among immunized population

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Abstract. Hepatitis B (serum hepatitis) - a viral infection of the liver. Transmitted through blood, extremely rare - in other body fluids. Considered "occupational disease" addicts that share needles for intravenous drug use. The disease is characterized icteric staining of the skin and sclera, dark urine, feces discoloration. Over 90 % of the patients with hepatitis B recover without any consequences, from 1 to 4 % become chronically infected. Immunity after illness usually lifelong. Dangerous for infants (leading to chronic hepatitis with an outcome in cirrhosis or liver cancer). A huge number of vaccine-related complications to vaccination against hepatitis B, including autoimmune, well documented in the scientific literature.

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Introduction

Statistics of world literature on recombinant HBs vaccines and results of their use for immunoprophylaxis against hepatitis B (HB) shows high reliability of vaccines and induced by them immune response [1-13].

At present it is generally recognized that vaccinal prevention is a main way to decrease sickness rate of HB on assumption of mass immunization including infants, teenagers and people of "risk group".

In our country massive vaccination program has been introduced since 1998 and continues to be used till present days. As of 01.01.2004 vaccination efficiency against HB in our Republic is like the following: children born in 1998 г. For 97,3%, 1999 – for 98,5%, 2000 – for 98,7%, 2001 г. – for 98,3%, 2002 – 98,5%, 2003 – 99,7%. Children born in 1997 г. were vaccinated as well for 98,7%, in 1996 – for 98,8%, 1995 – 97,1%.

Yearly medical staff is vaccinated for 80-83,0% in average. In parallel students of higher education establishments and secondary educational institutions of medical profile get vaccinated, at the end of 2003 the range was 62,7%. One more contingent to be immunized against HB is blood recipients who started to get vaccination last 2 years, 4262 people had been got involved in this immunization process. Besides, contacting people from focal infection of acute and chronic HB get vaccinated yearly up to 1000 people.

After introduction of vaccination program against HB the sickness rate decreased sharply, especially among children. However sporadic cases

of acute viral hepatitis B continued to take place and be registered because of insufficient (not reaching 100%) immunization coverage of correspondent contingents. During the whole period of vaccine use against HB in Kazakhstan in parallel with new age groups other people get vaccinated who had not been immunized previously by different reasons with the purpose to increase coverage of decreed groups and increase immune layer. However according to the results of 2003-2006 of immunization program introduction it is became obvious that there is a problem with registration of people sick with acute viral hepatitis immunized against this infection. So in 2003 among vaccinated people against HB there were 17 cases of disease registration.

In connection with this the present work is dedicated to study of HB emergence reasons among vaccinated population.

Material and methods

Statistics on sickness rate of HB (f #1-2/y), medical records on infection disease focus epidemiological study (f #357/y), and reports on prophylactic immunization coverage (f #6/y) served as material. Blood serums of HB patients had been investigated for any marker medications of viral hepatitis B in enzyme immunoassay on the base of the National Reference Laboratory RSES and regional laboratories. Diagnosis of acute hepatitis B was determined on the basis HbsAg and anti – HbsIgM reveal.

Results and discussion

Infection indicators (of acute viral hepatitis) in Republic and Almaty are shown in the Table 1.

Table 1. Infection indicators of acute viral hepatitis in Kazakhstan

Regions	Total cases		Children under 14		Medical staff		Fatality	
	Observed people number	for 100 thousand of population	Observed people number	for 100 thousand of population	Observed people number	for 100 thousand of population	Observed people number	for 100 thousand of population
RK	1958	13,2	170	4,08	17	1,02	11	0,6
Almaty	227	19,7	6	2,56	3	13,9	0	0

As seen, HB sickness indicator for 100 000 of RK population is 13, 2 in Almaty – 19, 7, at this indicator among children became 4, 08 and 2, 56. There is inverse relation noticeable conditioned by immunization of children.

Among medical staff the indicators of sickness rate in republic and city are significantly different 1, 02 and 13, 9 accordingly. Fatality 0, 6% from acute viral HB took place in republic. In Almaty fatal cases had not been registered. It is obvious that sickness rate indicators in 2003 are noticeably lower than in previous years [13], and for sure it is a result of conducted vaccinal prevention.

Nevertheless based on official reports data 27 people immunized against infection got sick with acute viral HB in 2003 in republic.

At deep epidemiological analysis of collected data it was determined that out of 27 registered cases only 17 of them can be classified as acute viral hepatitis in accordance with agreed identification of acute viral HB, 3 cases occurred recrudescence of chronic viral HB, 7 cases were classified as hepatitis of unclear etiology.

Further the vaccination against HB 17 and HB patients had been analyzed. At this 5 had been vaccinated three times, 3 people – twice and 9 people – once.

Out of 5 children vaccinated three times one child (14 years old) was vaccinated with major violation of intervals (11 and 6 months) and got sick in 22 days after 3d injection. This gives ground not to consider him as fully vaccinated at the moment of getting sick. Other four children ranged from 3 and 5 years old had full course against HB in their anamnesis confirmed by documents on vaccination. At the same time they got sick with acute viral HB and diagnosis was confirmed by marker medication anti- HBs Ig M in the blood serum.

Generally at analysis of immunization tolerance reasons the following was revealed:

- first timely vaccination against HB, absence of follow-up vaccination due to medical exemption in all cases were stated without background (4);

- not finished vaccination due to non-appearance to the hospital and moving to another place of residence (3);

- vaccination taken place at current chronic viral hepatitis B not diagnosed on time (11);

- unacceptable violation of vaccination intervals (1);

- absence of post vaccination immunity in spite of full course of vaccination conducted without period and interval violation (7). At this there were 3 cases of chronic viral HB and 4 cases of acute viral HB.

Analysis data shows that post vaccination immunity is not developed or developed a little at some people in spite of full vaccination courses and they get sick with acute viral HB.

It is known from literature sources that intensity of immune response to vaccination against HB depends on many factors: mail sex, senior age, overweight, different immune deficit conditions and availability of HLA, B8, DRB3, DQB2 gens [12; 14]. Besides hazard factors depressing immune system function blocks full development of specific immune response to any vaccination [10-15].

Conclusions

1. It is necessary to provide timeliness and full coverage (no less than 95%) of all vaccinated ages and contingents.

2. It is required to make immediate registration of each HB sickening case among vaccinated with informing according to worked out scheme and blood testing on the base of National Reference Laboratory.

3. All cases of acute and chronic viral HB among vaccinated should be investigated by commission on situ to verify diagnosis and vaccination tolerance reasons.

4. It is required to examine all patients with suspicion of HB and IFA for diagnostic marker medication.

5. It is necessary to improve epidemiological supervision under viral HB as vaccine control infection.

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