

PREVENTION OF VERTICAL TRANSMISSION OF INFECTION IN PREGNANT WOMEN WITH HEPATITIS B.

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Abstract

The course of pregnancy and childbirth in pregnant women with hepatitis B is still considered an urgent issue in obstetrics and gynecology. Pregnant women with hepatitis B often experience complications such as threatening miscarriage, premature birth, premature rupture of the membranes, bleeding during childbirth and in the early postpartum period. The most basic and highest risk is vertical transmission.

Keywords: hepatitis B virus; Hepatitis B; immunization; pregnancy; childbirth; the postpartum period.

Purpose of the research. The aim of the study was to conduct an analytical review of modern sources of scientific literature covering the screening and prevention of vertical transmission from mother with HBV to the child.

Materials and methods. The analysis of 69 foreign sources of literature on this topic.

Results. The review highlights the theoretical and practical issues of preventing vertical transmission of infection, describes the effectiveness of screening for this disease and the tactics of managing pregnancy in infected women.

According to the World Health Organization, viral hepatitis B is a global problem that is widespread not only in poor and developing countries, but also in the world's leading economies [1]. According to statistics, 240 million cases of viral hepatitis B infection are currently registered. In the last two decades, a decrease in the prevalence of infection has been observed, depending on the economic situation of countries [2].

The prevalence of HBsAg in pregnant women has not been clearly established. Infection is detected in 0.7–0.9% in the United States [8], with a prevalence of 0.1 to 5.6% in European countries [9] and 0.5% in Russia [10].

The main problem of viral hepatitis B during pregnancy is the vertical transmission of the virus from mother to child. Until now, the parenteral route was the main cause of infection with viral hepatitis B. Thus, the risk group included people with a violation of the integrity of the skin and medical and non-medical procedures taking place on the mucous membranes. These cases included intravenous drug use, blood transfusion, long-term hemodialysis, and others [21, 22]. The problem of vertical transmission of hepatitis B virus is not only infection, but also the increased likelihood of developing chronic HBV in children.

For comparison, the risk of developing chronic HBV is 5% in adults, 10-15% in children, and 90% in newborns born to an infected mother without the necessary prophylaxis [26]. Therefore, in most countries, the current HBV control strategy raises the following question: the introduction of a universal screening program in maternity hospitals. This program allows detecting HBV transport during preparation for gravity and pregnancy, as well as conducting passive-active immunoprophylaxis in newborns [27].

Today the mature recommendation is to get tested for HBV during pregnancy. Experiments in most countries have shown that the introduction of this simple procedure has significantly reduced the risk of neonatal infection.

There is currently no uniform verification rule. In the United States, HBsAg detection is used as a universal screening tool. This is done at the first pregnancy visit [28].

Tenofovir is safe for lamivudine during pregnancy and is effective in rare cases of drug resistance. Therefore, in recent years, this drug has been recommended as a first-line agent for chemoprophylaxis of perinatal infection in pregnant women [63].

The toxicity categories for antiviral drugs used during pregnancy (FDA classification) are listed in the table.

1-Table

Category	Effects on the fetus	Antiviral therapy drug
A	Follow-up results No risk to the fetus in the first trimester of pregnancy, no data on risk in the next trimester	–
B	Animal observation did not indicate fetal risk; Studies on animals and pregnant women have not revealed an adverse effect of the drug on the fetus	Telbivudine, tenofovir
C	Animal studies have shown adverse effects on the fetus; no human studies; however, the potential benefit of using the drug during pregnancy outweighs the potential risk to the fetus	Lamivudine, entecavir, adefovir
D	There is evidence of side effects of the drug on the fetus based on control and post-marketing studies, but the potential benefits of using the drug during pregnancy may outweigh the potential risk to the fetus	–
X	Based on the data of control and post-marketing studies, it was found that it causes defects in the development of the fetus; the risk of using the drug definitely outweighs the potential benefit	Interferon

Tenofovir for pregnant women is FDA Category B. The absence of its teratogenic effect was confirmed on the basis of several RNAs [62].

According to the European Association for the Study of the Liver (European Association for the Study of the Liver) EASL (2017), tenofovir therapy should be started at 24-28 weeks of gestation if HBV DNA exceeds 200,000 IU / ml or HBsAg, the amount exceeds 4 log₁₀ IU /

ml, and there is complications. then it should be continued for up to 12 weeks [30]. Some researchers recommend a 1.5–2 fold increase in AST and ALT levels as an additional criterion for assessing viremia with tenofovir chemotherapy during pregnancy [63, 64].

Telbivudine for Pregnant Women is FDA Category B. The effectiveness of HBsAg in the prevention of perinatal infection in the second and third trimesters of pregnancy with a viremia level > 200,000 IU / ml in positive pregnancies has been determined [65]. In a study by Han L (2011), 135 women with high viremia for 20 to 32 weeks received telbivudine 600 mg / day and vaccinated their babies with specific hepatitis B immunoglobulin after delivery. In the group of women taking telbivudine 28 weeks after childbirth, perinatal infection of children was 0%. In the group of women who did not receive chemotherapy, it was 8% [66].

There are limited data on the secretion of nucleotide analogs in breast milk and their effect on the development of newborns. Therefore, breastfeeding is not recommended with postpartum chemotherapy. There is no clear data on the safety of using the drug when breastfeeding women receiving tenofovir, and information on the benefits of breastfeeding can be made by the patient to make an informed choice [67]. This recommendation is based on the low secretion of the metabolite in breast milk in HIV-infected women receiving tenofovir, which is 0.03% of the recommended daily dose for children [68]. According to EASL (2017), it is not recommended to exclude breastfeeding when taking tenofovir for prophylactic or therapeutic purposes [30].

To date, there is no evidence that cesarean delivery in HBsAg-positive pregnant women reduces vertical transmission of HBV, so this delivery method is not recommended for everyone in practice [11].

Conclusion: in patients with chronic viral hepatitis B of reproductive age who do not have overt cirrhosis of the liver, it is recommended to postpone antiviral therapy until delivery if pregnancy is planned in the near future. In women with chronic viral hepatitis B of reproductive age, who have increased fibrosis or cirrhosis of the liver, treatment with interferon against the background of quality contraception is important for women who agree to postpone pregnancy.

For such patients, treatment with tenofovir is recommended if the pregnancy cannot be delayed. HBsAg-positive women are highly resistant when HBV DNK levels are present (> 200,000 IU / ml) or when HBsAg levels exceed 4 log₁₀ IU / ml. Therefore, chemoprophylaxis in these women in the 3rd trimester of pregnancy is carried out with lamivudine, tenofovir and telbivudine. Of these, tenofovir is more effective. The duration of chemoprophylaxis is not well defined and can be stopped before delivery or 3 months after delivery. On the background of chemoprophylaxis, breastfeeding can be continued. Interferon preparations should not be used during pregnancy. Breastfeeding is safe for babies whose mothers have chronic HBV.

Conclusion

The high prevalence of hepatitis B during pregnancy makes it an urgent problem. The analysis shows that conducting active-passive immunization of newborns from HBsAg_{positive} mothers is an effective way to prevent neonatal transmission of hepatitis DNK (> 200000 ME/ml) or 4 log₁₀ B. / ml recommended in the third trimester of pregnancy chemoprophylaxis with lamivudine, tenofovir and telbivudine, among which tenofovir is preferred.

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