

Article

Incidence of Hepatitis B Among Infants Delivered to Infected Mothers

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Abstract: Background: Hepatitis is a grave ailment when left without treatment it leads to a problem with liver function (Cirrhosis) also severe cases that can lead to liver tumors. In most people, the chronic infection is asymptomatic. This causes liver function problems to become chronic over the years; the absence of symptoms does not mean that an individual is in good health. When no symptoms appear, it is called the dormant phase; symptoms which could appear typically emerge in the later phase. Fifty percent of liver cell cancer (HCC) are caused by hepatitis B virus infection. Objective: This study aimed to determine hepatitis B in infants that were born from infected mother collected from patients' sample in Azadi Teaching Hospital. Methodology: 2636 female were attendance to Azadi Teaching Hospital, in Kirkuk province for deliver their child, blood samples collected by using sterile syringe. Results: 817 of were stay in maternal unit from January till June in 2026, twenty-seven female were positive, twenty female their age between 18-30years. Conclusions: State the main conclusion and significance of the findings HBV remain significant public health issues in world. Detection peaks during specific months reflect healthcare practices rather than seasonal virus transmission. Strengthening screening, vaccination, and infection-control measures is essential for reducing hepatitis burden.

Keywords: HBV, ELISA, Infant.

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1. Introduction

Hepatitis type B is an infection to liver that is caused by exposure to virus called hepatitis B virus (HBV). It's viral infection that can be fatal if left untreated [1]. The infection consist of two type, short-term called acute infection, most patient in this type have no symptoms but can be sever and lead to liver failure, long-term called chronic infection occur when patient unable to cure and virus persist in blood for months, most patient may not have any symptoms while other may have experience nausea, fatigue, loss appetite and yellowing the skin [2]. In chronic infection, virus can lead to liver damage in function which is lead to cirrhosis and that can lead to liver cancer, The vast majority of these viruses are transmitted through exposure to infected blood — whether by handling an infected person's personal items, receiving a blood transfusion, or sustaining a needle-stick injury involving blood from an infected individual, such as can occur in dental clinics[3].

The causes of viral hepatitis infection include imported labor or prior exposure to the virus, many studies and research shown the prevalence rates in Iraq are notably lower than many regional averages so that proved the people can have able to healthcare access [4]. Despite that, persistent monitors are necessary to prevent potential outbreaks [5].

Many factors like migration, resource disparities, education of blood handling and sexual health remain crucial to infection [6].

2. Materials and Methods

2.1 Data collecting

Interview were held to collected patients' data and demographic information, 2636 female were attendance to Azadi Teaching Hospital in Kirkuk province for deliver their child and 817 of them were stay in maternal unit from January till June in 2026, twenty-seven female were positive, twenty female their age between 18-30years, six female between 30-35 and one female above 35 years, 26 child that deliver from positive mother are healthy and didn't receive infected, only one female infected their child by labor.

Twelve females were exposed to second surgery, nine females received dental care, three females have blood transfusion and three females they didn't know source of their infection.

2.2 Sample Collection

Samples were collected from patients' blood by using sterile syringe (five cc), transferred to gel tubes, allowed to coagulate and then centrifuged at 3000rpm for 4 minutes, Serum debrif from blood and tested for hepatitis B surface antigen (HBsAg) and hepatitis B envelope antigen (HBeAg), put in sterile Eppendorf tubes and stored frozen at minus eighty Celsius to next analysis.

2.3 Enzyme-Linked Immunosorbent Assay (ELISA)

2.3.1 Detect HBsAg

To detect HBsAg, an enzyme-linked immunosorbent assay test, specifically a commercial immunospot kit (Jordan), was used following the manufacturer's instructions. Purified hepatitis B surface antibodies (anti-HBsAg) were precoated on the microplate. Serum from the patients were added to the microplate, the HBsAg combine with HBsAb first, then combines with detection of hepatitis B surface antigen, Unbound serum proteins and the horseradish peroxidase conjugate were then washed off. The substrate was added after blocking the enzymatic reaction, and the optical density was measured by an enzyme-linked immunosorbent assay reader.

2.3.2 Detect HBeAg

Intech kit (China) was based on sandwich in ELISA, HBeAb was pre-coated onto microplate, The test samples were added to microplate. Then added HRP conjugated HBeAb, if there were any HBeAg in the samples, it would form a HBeAb- HBeAg - HRP-HBeAb complex. TMB substrates were used to visualize HRP enzymatic reaction. It was catalyzed by HRP to produce a blue color product that changed into yellow after adding acidic stop solution. The optical density of developed color is read with a suitable photometer at 450nm with a selected reference wavelength within 650 nm.

3. Results

2636 female patent attended to hospital, 817 stayed in maternal unit they were positive 27/817 (3.31%) , 20/817 between 18-30 years 2 (2.45%), 6/817 (0.73%) between 30-35 and 1/817 (0.12%) above 35 years, Table1. Twelve patient has a surgery before, 9 dental cares, 3 have blood transfusion and 3 they didn't know how they get infected, Table2.

Five positive females in each January, February and March , Two positive in April , Three positive in May while Seven positive in June, Figure1. Twenty-seven positive females were tested for HBeAg and result show 26 of them were negative while 1 was positive, Figure 2.

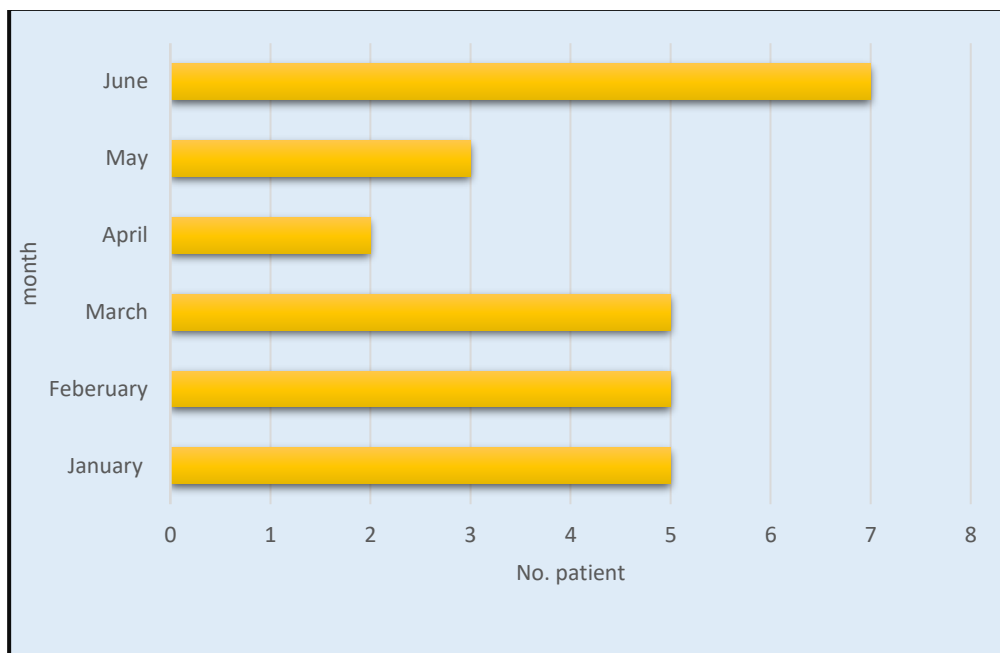


Figure 1. Distribution of the number of cases over the months.

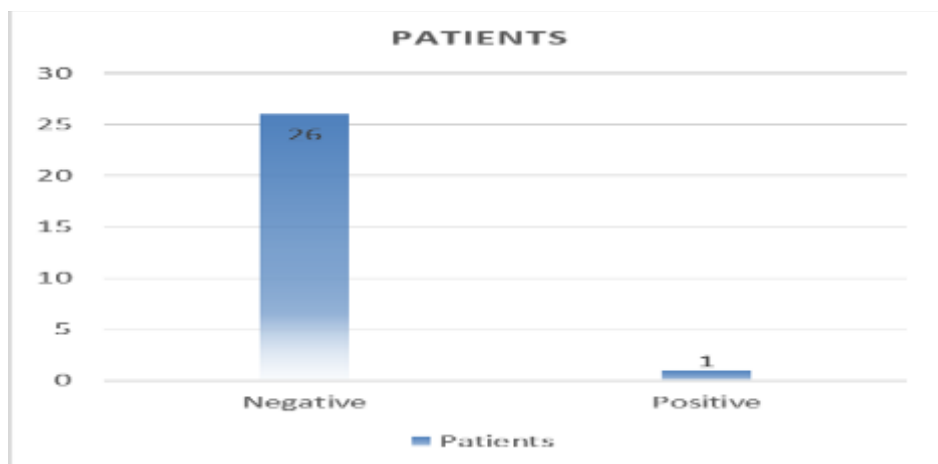


Figure 2. Prevalence of HBeAg in pregnant women infected with HBsAg.

Table 1. Prevalence of hepatitis B.

Way of transmitting	Number of patients
Surgery	12 (44.4%)
Dental care	9 (33.3%)
Blood Transfusion	3 (11.1%)
They haven't any idea	3 (11.1%)
Total=27 (100%)	

Table 2. Incidence of HBV to pregnant women.

Age	Number
18-25	20 (2.45%)
26-35	6 (0.73%)
Above 35	1 (0.12%)
Total = 27	

4. Discussion

According to the findings of this study, Infected mother with HBsAg were transmit during surgery have highest number of isolated. According to the data, the most prevalent age is eighteen to thirty. The findings of HBeAg were related to role and transmission to infants during delivery. This study was shown HBV positive in low rate 1.02% (27/2636) than a study conducts in Kurdistan region 7.7% [3], While Abdullah and his colleagues conducted study in Kirkuk, and result dislike our project shown no infected of hepatitis B occurred during the research period [7]. Study conducted in Kurdistan region shows HBV positivity was shown to be 3.67% rate is higher than this project [8], while study conducted in Karbala province showed prevalence of HBV were 58% [9].

Abdul Rahman and his colleagues conducted study in Erbil province and results showed that infected mothers with HBV were higher from our study with 86.6% [10].

In this study infant didn't exposer to HBV The very low infection rate in infants (<1%) reflects successful HBV vaccination programs implemented across Iraq and globally (WHO, 2023) and this similar with [18]. This study didn't like another study which shown the risk of perinatal infection must increase to 20% in infants that born to HBV infected mother and occur increase 70–90% if the mother was HBeAg positive [19]. Increase of prevalent of infection in infants belong to mothers who were infected with HBV and tested were positive for both HBsAg and HBeAg [13][14]. HBeAg status for the mother was 1 positive from 27 (1/2636) (0.03%) non signfint [16] Studies shows from 70% of infants born to women infected with HBV and HBeAg were positive they will become infected with HBV, which is markedly higher than the 5-10% of infants born to women infected with HBV and tested HBeAg negative [17]. The high level in 18 -25 age similar to [11] in April have low rate of cases dislike with [18] while in June have a high rate of cases.

Wong make study in China shown when HBeAg negative then HBV inactive and did not infected other people similar our study [11] researchers recommended tested for HBeAg to classify the phase of HBV infection [12]. In 2025 Nooraldeen conducted study in Azadi teaching hospital shown prevalence of HBV in women with 36% [15]. Pan and another research conducted study in maternal and child care unit in hospital and showed mother positive in both HBsAg and HBeAg deliver infected to their child and after 7 month there child become negative [20]. Lu and his collogues shown women with HBeAg Negative while HBsAg positive have no risk to transmit there infected to child [21].

5. Conclusion

HBV remains significant public health issues in KIRKUK. HBV is more common in males, while HCV disproportionately affects older adults. Detection peaks during specific months reflect healthcare practices rather than seasonal virus transmission. Strengthening screening, vaccination, and infection-control measures is essential for reducing hepatitis burden. We looking Forward to expand HBV vaccination, especially among high-risk groups. Improve infection-control measures across all healthcare levels and implement health education programs on transmission prevention.

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Authors' contributions: Author contributed to study design and data collection and approved the final version of the study.

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