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Immunoprophylactic failure in children

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Objectives:

To evaluate the prevalence and factors associated with the failure of immunoprophylactic Hepatitis B vaccines.

Materials and Mehtods:

A prospective study was conducted from March 2018 to March 2021. A total of 79 children of hepatitis B surface antigen (HBsAg)-seropositive mothers with known HBeAg status were enrolled. Twenty-seven (34.2%) and 52 (65.8%) children were born to HBeAg-seropositive and HBeAg-seronegative mothers, respectively. Neonates received both the HB vaccine and HBIG within two hours post-birth followed by four subsequent HB vaccinations at ages 1, 2, 4, and 6 months according to Thailand's policy. HBsAg and Anti-HBs were evaluated at ages 9–12 months. Demographic and virological markers (HBsAg, anti-HBs Ab, HBeAg, anti-HBe Ab, and HBV viral load) were included.

Results:

Four children (5%) with HBeAg-seropositive mothers and HBV DNA levels >108 IU/mL (14.8 %) were defined as immunoprophylactic failures based on HBsAg-seropositivity. One developed acute liver failure. Two HBeAg-seropositive mothers with high viral load had histories of irregular medical (Tenofovir) intake. There was no statistical difference between median HBsAg level in HBeAg-seropositive (1,554 IU/mL, range: 1,157-2,186 IU/mL) and seronegative mothers (1,129 IU/mL, range: 891-1219.5 IU/mL). In immunoprophylactic failures children, they had higher median level of HBsAg level (1,760 IU/mL, range: 1,657-2,286 IU/mL) than immunoprophylactic success group (722 IU/mL, range: 364.5-1,749.5 IU/mL) without statistically significant. In immunoprophylactic success group, nearly total of them had anti-HBs Ab level above 1,000 mIU/mL.

Conclusion:

Immunoprophylactic failure in children also occurred even with effective immunoprophylactic protocols, especially those with HBeAg-seropositive mothers and high HBV DNA levels. Inadequate treatment may be one of the reasons for this failure. Novel strategies and large number of cases for further vertical transmission prevention should be considered.

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Biography

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