

Rate of Non Responders to Hepatitis B Vaccine among Paramedical Students – A Prospective Study

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Abstract: AntiHBs is the protective antibody against Hepatitis B infection, which reaches maximum titre after one month of booster dose. Individuals' not developing antiHBs after booster dose are called non responders. This study aims to detect no of non responders to Hepatitis B vaccine, among paramedical students.

Materials and methods – 74 paramedical students, who were screened negative for HBsAg and antiHBS were included in the study. They were given 3 doses of Hepatitis B vaccine at the interval of 0 – 1 – 6 months. At the end of one month of last dose of vaccine, presence of antiHBs was determined. Rate of non responders was assessed by the percentage of paramedical students' not developing antiHBs after completion of vaccine course.

Results: Of the 74 students 4 (5.4%) students did not develop antiHBs after completion of vaccine course. The rate of non responders is 5.4%.

Conclusion: Detection of non responders is important in high risk groups like health care workers, dialysis patients, immunocompromised etc, as they are at increased risk of acquiring HBV infection, they have to be cautious and receive HBIG post exposure to infected materials.

Keywords: Anti HBs, Hepatitis B vaccine, non responders,

I. Introduction

Hepatitis B virus (HBV) infection is a major public health problem worldwide and one of the vaccine preventable disease. India has intermediate endemicity for HBV infection and has 40 million chronic carriers of HBV infection contributing to global disease burden by 11 % [1].

Vaccination of individuals at risk of acquiring HBV infection is the most effective method of control, prevention of transmission and progression to chronicity [2]. Safe and effective hepatitis B vaccine is available since 1982 [3].

Hepatitis B vaccine is a recombinant DNA vaccine, which contains HBsAg protein with 226 amino acids, a product of S gene. It is given 20µg (1ml) i.m, The standard dose schedule is 2 priming dose given one month apart and third dose (booster dose) administered 6 months after first dose. The immune response is developed by production of AntiHBs, which reaches maximum titre after one month of last/booster dose.

Individuals' not developing antiHBs after last/booster dose are called non responders. Several factors are responsible of non response including genetic factors. This population is at increased risk of acquiring HBV infection [4].

This study aims at detecting no of non responders to Hepatitis B vaccine, among paramedical students.

II. Objective

- To determine the presence of protective antibodies after completion of Hepatitis B vaccine.
- To assess rate of non responders.

III. Materials And Methods

This is a prospective study conducted in a tertiary care hospital, during January 2012 – October 2013. The study was commenced with ethical committee clearance.

Paramedical students were involved in the study, 36 (48.6%) students were males and 38 (51.4%) students were females. The students belonged to the age group of less than 20 years, on the day of admission to college, students were screened for HBsAg and antiHBs. Those students negative for HBsAg and antiHBS were included in the study.

They were given 3 doses of Hepatitis B vaccine at the interval of 0 – 1 – 6 months. At the end of two months of last dose of vaccine, presence of antiHBs for each individual, was determined by using commercially

available enzyme immunoassay kit for Qualitative analysis of antiHBs - ANTISURASE B – 96 (TMB). It is a sandwich ELISA. The optical density of the developed Colour corresponding to antiHBs titre of 10 IU/ml, is measured using spectrophotometer with 450nm wavelength.

Rate of non responders was assessed by the percentage of paramedical student's not developing antiHBs after completion of vaccine course.

IV. Results

Of the 74 students, 4 (5.4%) students did not develop antiHBs after completion of vaccine course. The rate of non responders is 5.4%.

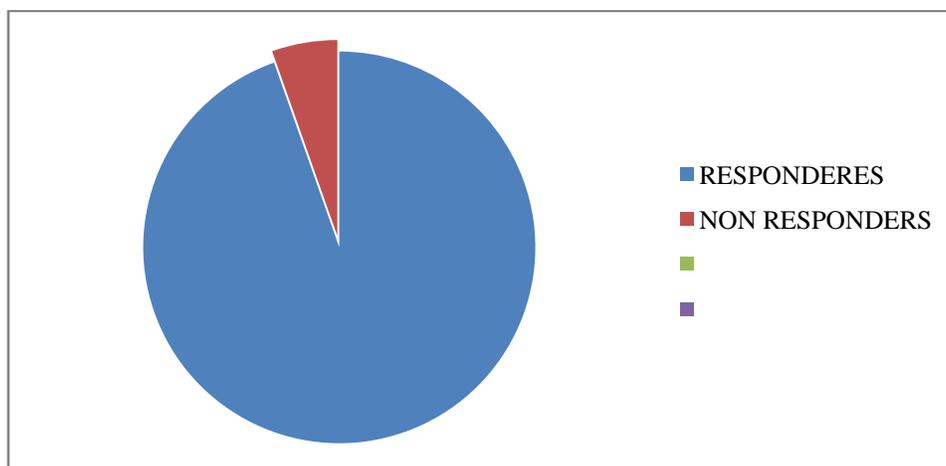


Fig 1: rate of responders and non responders

V. Discussion

Hepatitis B vaccine is highly effective in preventing HBV infection. It is indicated to prevent acute and chronic HBV infection. Immune response to vaccination is measured by specific antibodies in serum.

Although seroconversion is a significant marker of immune response, it does not necessarily confer protection unless it plays critical role in protection and is achieved in sufficient quantity.

Anti HBs is the only easily measurable correlate of Hepatitis B vaccine and person who acquire >10IU/ml are protected from both acute and chronic infection, even if AntiHBs concentration declines subsequently to < 10IU/ml [5]. Small proportion of population does not develop adequate antibodies after complete vaccination. They are called Non responders. Number of factors is responsible for non response, including genetic factors. An additional dose, double the dose, revaccination with complete series is recommended for non responders to achieve immune response. Those persons not mounting immune response after these measures are at increased risk of acquiring HBV infection, they have to be cautious and receive HBIG (Hepatitis B immunoglobulin) postexposure to infected materials[6].

VI. Conclusion

Though post vaccination testing is not routinely done, it is recommended in high risk groups like health care workers, dialysis patients, immunocompromised etc, to detect non responders. Identification of this population is important as they are at increased risk of acquiring HBV infection, they have to be cautious and receive HBIG (Hepatitis B immunoglobulin) postexposure to infected materials[6].

References

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