

Viral Hepatitis B and D - Preventive Aspects

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Viral hepatitis B and D result in significant morbidity and mortality, worldwide and more so in the third world countries. Treatment of established disease is usually difficult and requires numerous resources. It is therefore, important to stress the role of prevention in this communicable disease entity.

Hepatitis B Virus (HBV) Infection

Hepatitis B virus infection produces acute and chronic disease in human. Chronic liver disease leads to complications of cirrhosis, portal hypertension and primary hepatocellular carcinoma. The worldwide estimate of chronic infection is over 300 million chronic carriers of the virus of which 75% reside in the Asian region¹. This infection is highly endemic in the under-developed world with very high carrier rate^{2,3}. High rates of infection by epidemiological studies have been shown in Africa⁴⁻⁷, Middle East⁸, South East Asia and Indonesia^{9,10}. China and Korea, South America^{11,12}, Eskimos^{13,14} and the Pacific Island¹⁵⁻¹⁷. Most of the sufferers from infection have attained the disease at a very early age when the risk of chronic carriage is very high. The perinatal age group has the highest risk of chronicity¹⁸⁻²⁰ and this risk declines with age^{21,22}. High HBsAg and HBeAg carrier rate among pregnant females leads to a high infection rate in new borns in high endemicity areas²³. In intermediate and low endemicity areas, the infection is acquired in older age groups and socio-economic factors and specific behaviours are important to place different groups at high risk of infection. Since HBV infection occurs mostly amongst new borns and children, in high prevalence areas, HBV vaccine should be integrated into childhood vaccination programmes to give pre and post exposure protection and to interrupt the cycle of transmission^{24,25}.

Immunoprophylaxes against Hepatitis B virus infection(HBV)

Two forms of immunoprophylaxes are available against HBV infection. Hepatitis B immunoglobulin (HBIG) gives temporary protection and it is used for post-exposure situations only. Hepatitis B on the other hand is for longer term protection and is recommended for pre and post exposure prophylaxes. Hepatitis B immune globulin is prepared from plasma containing a high titre of anti-HBs antibody. The human plasma screened for HIV antibodies and the process of preparation ensures inactivation as well as elimination of HIV from the final products. Hepatitis B vaccines have been used for a number of years but the real break-through is the development of recombinant yeast derived vaccine which contains the S gene which makes it safer and more efficacious as compared to the original plasma derived vaccine²⁶. Ninety percent of vaccinated individuals have protective antibody levels up to 5 years after vaccination²⁷. Loss of detectable anti- HBs antibody does not always mean susceptibility to infection, as re-infection leads to an anamnestic response and a rise of antibody levels²⁸. Booster vaccination is therefore, generally not recommended except in specific situations like hemodialysis patients who are relatively immune compromised²⁹. Under certain situations mutant strains of the virus have developed in the course of evolution. Such viruses have altered genomic sequences and elude protection afforded by active or passive immunization. These strains of the virus do not express HBeAg during replication and this leads to management problems because persistent liver injury and virus replication are missed^{30,31}. The development of such mutations in the genomic sequence of HBV can result in "breakthrough" infective strains and these have been shown to result in B virus infection in immunized people in Great Britain and Italy³². Failure of immune response to vaccine occurs in approximately 2.5 to 5% of immune competent vaccine recipients³³ whereas immune suppressed individuals such as those who have had organ transplant and/or immunosuppressive therapy or those

who are on hemodialysis have much lower response rate^{34,35}. Although vaccination against hepatitis B virus is recommended to be incorporated into childhood vaccination programmes, there are certain high risk groups where vaccination is specifically needed. These include doctors, dentists, nurses, laboratory technicians, hemodialysis patients, clients and staff of institute for mentally handicapped, recipients of certain blood products like hemophiliacs, household contacts and sex partners carrier, immigrants from countries where HBV infection is endemic, international travellers, intravenous drug abusers, sexually active homosexual and bisexual men and women and inmates of long term correctional facilities.

Hepatitis D virus (HDV)

This virus was first described in Italy in 1977³⁶. HDV infection is endemic in Southern Europe, Middle East, some areas of Africa and South America but it is relatively rare in Western Europe, North America and Asia³⁷. Socioeconomic status, close family clustering and intravenous drug abuse are the major routes of transmission of the virus. No active or passive immune prophylaxes is available. The elimination of disease from the community depends on the control of hepatitis B virus infection.

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