POSTEXPOSURE PROPHYLAXIS OF HEPATITIS B

Pages with reference to book, From 62 To 64

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Previously, passive immunization with specific hepatitis B immune globulin (HBIG) was recommended for post exposure prophylaxis.[1] Since the demonstration of good results achieved from hepatitis B vaccine combined with HBIG in preventing chronic hepatitis B infection in children born to HBs Ag positive mothers[2], revisions have been made for post exposure prophylaxis. HBIG alone is about 75% effective when given soon after perinatal exposure, needle prick or sexual contact with acute hepatitis B infection[3-5]. Protection is, however, temporary and very expensive (over $.150 per adult dose). With the availability of HB Vaccine its use, either alone or in combination with HBIG, has been suggested for postexposure prophylaxis. Response to HB Vaccine is not impaired by simultaneous use of HBIG, on the contrary, the combination immediately produces high levels of antibodies (anti HBs) which persist for a long time[6]. Such a combination when used in HBsAg and HBeAg positive mothers showed highly effective results in preventing HBV carrier state in infants and was significantly more effective than multiple doses of HBIG alone[2].

Perinatal Transmission

Perinatal transmission during birth from mother to infant is the most common mode of transmission of hepatitis B Virus (HBV). About 80 — 90% of infants get infected through This way if the mother is HBsAg and HBeAg positive[7] and approximately 90% of these infected infants will become chronic HBV carriers. Follow up studies have shown that about 25% of these chronic carriers will ultimately die of cirrhosis or primary liver cancer[2]. All HBV carriers are infectious, especially females who continue to transmit the disease via perinatal route. Percentage of transmission drops to 25% and 12%, respectively, if the mother is HBsAg positive but HBe Ag negative or anti HBe positive. Such transmission rarely results in chronic HBV carrier but acute disease like fatal fulminant hepatitis in neonates has been reported[8,9]. Even if perinatal infection does not occur, the infant has a high risk of developing infection from other family contacts, prophylaxis of all infants born to HEsAg positive mothers is, therefore, recommended, regardless of mothers' HBe or anti HBe status. Since 5% of perinatal infection occurs in utero, no form of post natal prophylaxis would be 100% effective. HBIG 0.5 ml 1 .M given within 12 hours birth and repeated at 3 and 6 month reduces the possibility of chronic infection from 90% to 25% (75% efficacy). Simultaneous use of HB vaccine with HBIG increases the efficacy to about 90% and eliminates the use of second and third dose of HBIG. HB vaccine is equally immunogenic in neonates whether given in 10 or 20 ug doses. As the efficacy of HBIG depends mostly upon its administration on the day of birth, it is essential that all mothers especially those belonging to the high risk group for HB infection, should be screened prenatally or at the time of delivery. Such identification would not only help the hospital staff to take appropriate care for self protection but also special care in disposing off infectious material, secretions and blood, and prompt therapy of the neonate. The efficacy of HBIG recedes markedly if given after 48 hours after delivery. First dose of HB vaccine 0.5 ml (10 ug) l.M should be given within 7 days of birth; it may be given simultaneously with HBIG but at a different site. The second and third doses are given at 1 and 6 months (Table).

TABLE

Hepatitis B Virus Postexposure recommendations.

	HBIG		Vaccine	
Exposure	Dose	Recommended timing	Dose	Recommended timing
Perinatal	0.5 ml IM	Within 12 hrs of birth	0.5 ml (10 μg) IM	Within 7 days* repeat at 1 & 6 mos.
Percutaneous	0.06 ml/kg IM or 5 ml for adults	Single dose within 24 hrs	1.0 ml (20 μg) IM†	Within 7 days* repeat at 1 & 6 mos.
		or ν		
	0.06 ml/kg IM or 5 ml for adults	Within 24 hours repeat at 1 mo.	–	–
Sexual	0.06 ml/kg IM or 5 ml for adults	Within 14 days of sexual contact	ϕ	–

HBsAg testing may be done at 6 months and, if found positive, shows therapeutic failure. Third dose of vaccine should not be given to such cases. HBsAg and anti HBs testing should be done at 12 — 15 months to see the therapeutic response. Persistence of antigeraemia indicates a carrier state. Absence of antigen and presence of anti HBs indicates protection. As anti HBc (core antibody) transmitted from the mother to the neonate persists in the neonatal circulation for over an year, its testing and interpretation

is difficult in neonates. HB vaccine, being an inactivated vaccine, does not interfere with other childhood vaccines[10].

Acute exposure to HBsAg positive blood

Though no prospective studies have been done so far to see the efficacy of HBIG plus HB vaccine in preventing hepatitis B following subcutaneous or mucous membrane exposure to HBV, the use of HBIG along with HB vaccine is recommended after accidental exposures. Such a combination provides prolonged immunity and is cost effective because second and third dose of HBIG is not required. Treatment schedule for such accidents is 5.0 ml of HBIG 1 .M within 24 hours of exposure plus 1 ml (20 ug) of HB vaccine I .M at a different site either simultaneously or within 7 days of the exposure. The second and third dose of vaccine is given at 1 and 6 months. If HBIG is not available, immunoglobulin (1G or "gamma globulin") 5.0 ml may be given 1 .M. If accidental exposure occurs after receiving the second dose of vaccine, serological testing for anti HBs is suggested. If anti HBs titers by RIA are more than 10 S/N then no treatment is required. Individuals who refuse to take HB vaccine after an accidental exposure to HBs Ag positive blood should follow the three doses schedule of HBIG[1].

Sexual Contacts of acute HBV infection

Sexual contacts with patients with acute HBV infection carry a high risk of acquiring HB infection. Of the two studies done on postexposure prophylaxis of such contacts, one showed more efficacy with HBIG than with IG[4] , while the second showed similar results with both linmunoglobulins, suggesting higher levels of anti HBs in the newer lot of IC[11]. Since about 90% of the patients with acute hepatitis B infection become HBsAg negative within 15 weeks of diagnosis, the chances of repeated exposure are negligible. Use of HB vaccine in such condition is not recommended. Testing of anti HBc is the most efficient prescreening test for sexual contacts especially homosexuals. HBIG 5 ml I .M is recommended within 14 days of sexual contact with HBsAg positive partner, a second dose is given if the partner remains HBsAg positive 3 months after detection. Vaccine is given if the partner is known to be a carrier or in whom antigen persists for 6 months. HB vaccine is recommended for all homosexual men.

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