HEPATITIS B

Viral Hepatitis

Viral hepatitis consists of at least two distinct disease entities. Hepatitis B (also known as serum hepatitis) is one type. It is spread by direct injection into the blood stream, usually with infected blood, but antigen has also been detected in saliva, urine and faeces. It has an incubation period of between six weeks and six months and occurs mainly in specific high-risk groups in circumstances where adequate safeguards have been neglected.

These groups include health care personnel, recipients of blood transfusions, patients and staff in renal dialysis units, residents and staff in institutions, drug addicts and patients who must receive frequent injections. Promiscuous individuals, especially homosexuals, also constitute a high-risk group, which suggests that transmission may sometimes be venereal. Also, tattooing and ear-piercing in unskilled hands may cause infection.

Hepatitis B is a serious infection which can lead to chronic liver disease and carries a case fatality rate of up to 5%, although it tends to be milder in children. There were 1061 cases of acute hepatitis B reported by the P.H.L.S. during the period July 1975 to June 1976 in England and Wales, seven of whom died. 21% of the cases were drug abusers, 4% had received blood transfusions, 2% had been tattooed within six months of the onset of the illness and 5% were hospital staff. 76 of the total cases were from the South East Thames Region.

Hepatitis B Surface Antigen

The association between hepatitis B and hepatitis B surface antigen (HB_sAg, also called Australian Antigen) was first described in 1967[1]. The antigen is found in the serum of patients during the incubation and acute stages of hepatitis B infection. It usually disappears from the serum as the acute stage subsides but may persist for some months or years. It may also be detected in the serum of apparently healthy persons with no history of hepatitis.

Specific antibodies are also found in some patients, but do not always give the protection normally associated with these immunity systems. Any serum which contains the antigen HB_sAg is infectious and can transmit the disease.

Occurrence

The virus is found worldwide, is endemic, and shows little seasonal variation. HB_sAg is present in 5-40% of the population of tropical and some mediterranean countries but is present in only about 0·1% (1 in 1,000) of the population in Britain, North West Europe and North America [2-4]. It is more common among males than among females, and among urban than among rural communities. Populations living in overcrowded or unhygienic conditions tend to have a high prevalence of both antigen and antibody.

The development of a vaccine which would confer active immunity against hepatitis B is still at an experimental stage, although it has already been administered to human volunteers on a very limited scale.

Hepatitis B Risk Groups

1. Health Care Personnel

All health care personnel are at risk of infection with hepatitis B because they may come into contact with blood, some of which will be from carriers.

Screening of all patients who come into contact with the health services would identify antigen-positive patients but the risks of handling the blood would remain, and testing all patients at G.P. surgeries, outpatient clinics and in hospitals would be a very large undertaking.

Because some positive carriers are transient and some "negatives" may become positive shortly after testing, it is generally thought that it is more important to ensure that proper care and precautions are taken in handling all blood and other specimens than to identify carriers.

There is evidence from a study in Sweden,[3] that laboratory technicians who should be at especially high risk, in fact suffer a lower incidence of cases than other hospital staff, presumably because they are more conscious of the risk and therefore take greater precautions. Screening would also result in the unnecessary labelling of antigen-positive patients as infectious and dangerous, which may have a profoundly disturbing effect on them, even long after discharge from hospital. It may also lead to a false sense of security in handling "negative" patients.

It is important that hospital staff should be trained to report any incident where they may have risked infection such as an accidental jab from a used needle or a bite from a patient. Hyperimmune gamma globulin is available at Colindale for this Area for early treatment, if necessary.

Theoretically, hepatitis B carriers among health service personnel could represent an infectious risk to patients under their care. However, there is little evidence that this represents a practical problem and WHO have concluded that, "they do not routinely present a hazard, provided they take special precautions in their professional activities"[4]. Those who may pose a hazard in special circumstances are at present regularly screened, such as workers in renal dialysis units.

2. Renal Dialysis Units

The high risk of infection in renal dialysis units results from the widespread use of blood and extracorporeal circulation techniques.

During the 1960s, there were a number of outbreaks of hepatitis B in units resulting in some fatalities among medical and nursing staff, as well as patients. Since these outbreaks and the publication of the Rosenheim Report, Britain has had an outstanding record in the control of infection in these units compared with other European countries. This has been achieved by rigorous screening for HB_sAg in the blood used in the units, in patients and staff.

A P.H.L.S. survey has shown a fall in the incidence of hepatitis B from 4·9% in 1970 to 1·4% in 1972 in patients, and from 1·3% in 1970 to 0·4% in 1972 in staff.

3. Blood Transfusion Service

Blood transfusions previously represented another major risk of infection with hepatitis B. A survey of hepatitis B with or without jaundice amongst transfused patients before the general introduction of HB_sAg screening revealed a morbidity and mortality equivalent to 27 cases, including 8 deaths, per 10,000 units of blood transfused[7].

In order to minimise such infections, all blood donations are now routinely screened for HB_sAg in accordance with the recommendations of a D.H.S.S. Advisory Group[8], and the incidence following transfusion has been reduced by a factor of 10.

The problem may still persist because other, rarer and, as yet, unidentified, virus apart from those associated with hepatitis A and B appear to cause hepatitis.

4. Residential Institutions

Residents in institutions, especially those for the mentally-handicapped, have a higher risk of infection than the population as a whole.

A recent survey in a 1,000-bedded mental handicap hospital in Hertfordshire found an overall level of 1-2% HB_sAg carriers[9]. Cases were concentrated on young male adult wards. Factors involved in the increased risk appeared to include close physical contact, low levels of hygiene and the use of drugs which are toxic to the liver and which cause bleeding gums.

There were no carriers among the staff in this hospital, but staff working in such institutions, including particularly dentists, are at risk of infection and for such employees hepatitis is now classified as an industrial disease, as it is for all hospital and laboratory staff.

In another study in New Zealand, a prevalence of 5% HB_sAg carriers was found in a survey of a mental handicap hospital[10].

In Kent, special precautions are taken at St. Augustine's and Darenth Park Hospitals during dental treatment when staff wear surgical gloves and gowns and the instruments are autoclaved after use.

5. Drug Addiction and Sexual Promiscuity

Repeated self-injection, using non-sterile syringes, represents an obvious source of infection among drug addicts, and screening for hepatitis B is often, therefore, routine in addicts seeking treatment. Screening is also routine in some venereal disease clinics, although the identification of infectious carriers in such circumstances may, in practice, do little to control the spread of infection.

Conclusion

Hepatitis B is an endemic disease spread mainly by direct injection with infected blood. The frequent exposure to blood in the daily routine of the health service requires careful attention to hygiene. Considerable study has been carried out at a national and local level to reduce the risk of infection, including the discussion of special units for treatment of HB_sAg-positive patients.

The terminology and present situation have been outlined in this paper.

AEL/REP
9.1.77

References

1. Blumberg BS, Gerstley BJS, Hungerford DA, London WT, Sutnick A (1967) Ann. Intern. Med. 66 924.

2. Olumide, EA. The distribution of HB_sAg in Africa and the Tropics. Int.J. Epid. (1976) 5 279-289.

3. Benenson A (1975) Control of Communicable Diseases in Man. American Public Health Association.

4. WHO (1975) Viral Hepatitis. Technical Report Series No. 570.

5. Ringertz O (1976) WHO meeting on Economic Aspects of Viral Hepatitis, Copenhagen, 9-11 Nov.

6. Public Health Laboratory Service. Decrease in the incidence of hepatitis in Dialysis Units associated with prevention programme. Brit. Med. J. (1974) 4 751-754.

7. MRC Working Party on Post Transfusion Hepatitis. 1974.

8. DHSS (1975) Second Report of the Advisory Group on testing for the presence of Hepatitis B surface antigen and its antibody.

9. Central Public Health Laboratory, Colindale. 1977, to be published.

10. Young BJ et al. Survey of HB_sAg in a semi-closed community (1975) N.Z. Med. J. 82 267-9.