Contact tracing in hepatitis B infection

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SUMMARY In an epidemiological study of patients diagnosed as having hepatitis B virus (HBV) infection during a 12 month period in a London health district, 98 (67%) of 144 index cases and 146 (67%) of 218 of their named contacts were interviewed. The problems and benefits of using conventional contact tracing techniques in the management of this infection are discussed. Named contacts in stable relationships were more easily traced than young homosexuals with frequent anonymous contacts, and drug addicts. Information on the disease and the risk of its transmission to others was, however, welcomed by some homosexuals who were concerned to establish ways of identifying chronic carriers, immune men, and those at risk. A self help group was started as a result of this study.

Introduction

For many years the tracing of named contacts of patients with syphilis and gonorrhoea has been regarded as essential for controlling these diseases within the community. In the United Kingdom a well established system exists using health advisers attached to sexually transmitted diseases (STD) clinics. The major role of the health adviser is to identify sexual contacts at risk and to arrange for their examination and treatment, thus interrupting the line of transmission. This approach has been particularly successful in containing syphilis since the long incubation period has facilitated contact tracing. Contact tracing for other STD, particularly in London, has usually been regarded as impracticable on the grounds of cost or inappropriate because no treatment existed for the condition concerned.

Hepatitis B virus (HBV) infection has been recognised as being sexually transmitted since 1973 when Jeffries *et al*¹ and Fulford *et al*² reported a high prevalence of infection in patients attending STD clinics. More recent studies have shown that up to 60% of homosexual men have serological markers of current or previous HBV infection.^{3,4} Although no treatment is currently available for this condition, the possibility that the chain of transmission might be cut

by contact tracing with a view to modifying behaviour has not been previously explored. The long incubation period of HBV infection would encourage such an approach. Furthermore, the development of a vaccine which may give some protection to exposed persons³ and the increasing interest in antiviral drugs⁵ suggest that the possibility of effective treatment is no longer remote.

To study the problems associated with contact tracing of HBV infection, details of all patients who had a positive blood test for hepatitis B surface antigen (HBsAg) resident in a defined geographical area during a designated time were passed to a contact tracer who attempted to interview the patients and trace their contacts.

Patients and methods

The design of the study will be presented elsewhere. It was approved by the ethical committees of the participating hospitals. In essence, a contact tracer was employed solely to study patients resident, or attending hospitals, in the north west health district of the Kensington and Chelsea and Westminster area health authority between 1 April 1981 and 30 March 1982, who had detectable HBsAg. Patients (index cases) were identified as a result of the positive blood test or were referred on clinical suspicion by general practitioners or hospital doctors. A few homosexual men who heard of the project referred themselves. After obtaining the consent of the doctor responsible for the care of the patient, the contact tracer

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attempted to interview the patient, explain the nature of the project, and enrol him in long term follow up studies. The patient was asked to answer a questionnaire when appropriate dealing with various aspects of his social and sexual behaviour which might be related to HBV transmission. He was also asked to name social and sexual contacts who might have been the source of the infection or secondary contacts and to attend once a month for a blood test if such an investigation were not being conducted elsewhere. Named contacts were then sought and a similar procedure followed. Contacts who were, or who became, HBsAg positive were regarded as index cases. Contacts who were HBsAg negative were invited to attend monthly during the study period for serological screening.

Serum specimens were tested for HBsAg by reversed passive haemagglutination (Hepatest, Wellcome Reagents) and confirmed in doubtful cases by radioimmunoassay (Ausria 11-125, Abbott Laboratories). Antibody to hepatitis B surface antigen (anti-HBs) and antibody to hepatitis B core antigen (anti-HBc) were detected by radioimmunoassay (Ausab and Corab, Abbott Laboratories).

Results

During the study period 144 index cases were identified and 98 (68%) of them were interviewed by the contact tracer. The table shows the reasons for failure to interview. The 98 patients interviewed named 218 contacts, of whom 146 (67%) were interviewed. Serum samples were provided on one or more occasions by all the index cases interviewed and by 122 of the contacts.

TABLE *Reasons for failure to interview patients with HBV infection*

Patient refused or failed to cooperate	17
Hospital refused or failed to cooperate	9
Inadequate information to permit tracing	6
Patient left country	6
General practitioner refused	4
Language problem	2
Patient died	1
Contact tracer failed to reach patient	1
Total	46

Of the 81 HBsAg positive patients who submitted more than one serum sample, 39 (48%) became negative during the course of the study. At the first visit nine contacts were already HBsAg positive and 42 contacts had anti-HBs or anti-HBc. It was not known how long these contacts had been antigen or antibody positive before their recruitment to the

study. Three contacts became HBsAg positive and one developed anti-HBs without detectable HBsAg.

Discussion

Despite the employment of an experienced nurse/contact tracer who had considerable interpersonal skills and who was occupied solely with the project, it was possible to interview only 98 (67%) of the 144 index cases and 146 (67%) of the 218 named contacts. In addition, a considerable number of anonymous contacts could not be traced. Stable contacts of homosexual men proved relatively easy to study but since these men were generally older they were less likely to be at risk as many already possessed antibody to HBV. Drug addicts were particularly difficult to study since they often had no fixed address and were reluctant to cooperate in long term follow up. Those theoretically most at risk, young homosexual men having frequent anonymous sexual contacts, were impossible to trace using conventional techniques. Furthermore, contact tracing did not identify any chronic carriers of HBV who were previously unknown, although several index cases were identified who were not receiving appropriate medical care, often because they had no general practitioner.

Nevertheless, provision of a contact tracing service was welcomed by many of the homosexual men who were studied as they found it particularly valuable to discuss their fears in relation to disease in themselves and the risk of transmission to others. Many men had apparently received conflicting advice and some had misunderstood the results of tests. The contact tracer was thus able to clarify some of these points and to advise patients about their potential infectivity, although information about ϵ antigen status was available only after the completion of the study.

As the use of conventional techniques for identifying men at risk from anonymous sexual encounters presents an insoluble problem, and as there is considerable concern among articulate and well informed homosexual men about HBV infection, it may be necessary to find novel methods of identifying chronic carriers or those who are at risk. There is already a well established system of non-verbal signs—using arrangements of keys, jewellery, and articles of clothing—to indicate sexual preferences. Some groups of homosexual men are now extending this system to designate chronic carriers, immune men, or those at risk. For example, some men have had T shirts printed with a logo based on the biohazard warning symbol.

One other beneficial outcome of the study was the establishment of a self help group for chronic HBV carriers to disseminate information to others and to help carriers to come to terms with the implications

of their infection. This group has recently developed a system of contact lists through which members can get in touch with those whom they will not put at risk—namely, the 60% of homosexual men who have, or have had, HBV infection.

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