

Viral hepatitis in Danish health care personnel, 1974-78

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SUMMARY The incidence of viral hepatitis in Denmark, as notified to the National Board of Health during 1974-78, was determined for health care personnel. Compared to the rate for the population as a whole, a fivefold increase was found for physicians and surgeons as well as for laboratory technicians. Dentists also had an increased rate of infection. No increase was apparent for the nursing staff in general, or for psychiatric hospitals or institutions for the mentally retarded.

In hospitals, type B hepatitis was prevalent among doctors and technicians while 55% of the nursing staff did not have B hepatitis.

For many years viral hepatitis has been recognised as an important occupational risk among health care personnel.¹ Series of studies have provided information as to the sources and routes of infection as well as identification of groups at high risk.²⁻⁵ Consequently, a number of prophylactic measures, such as serological screening programmes, patient isolation, and blood handling, have been established.

However, a continuous evaluation of the effect of these measures is rarely undertaken^{6 7} and reliable data on clinical disease rates are not readily available.

The present report attempts to analyse the number and distribution of notified cases of viral hepatitis in health care personnel in Denmark during 1974-78.

Methods

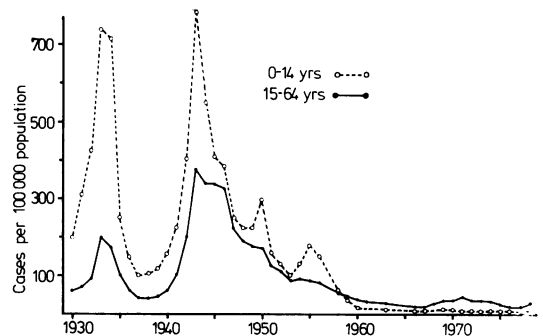
Viral hepatitis has been notified separately in Denmark for the past 12 years and includes the occupation of the patient and the presumed origin of infection. All notifications have been reviewed from 1974 to 1978 and those concerning health care personnel included in the present survey.

A further questionnaire concerning details of occupation, other sources of exposure apart from professional contact, department of work, as well as the result of tests for hepatitis B surface antigen (HBs Ag) by any method was completed by the physician in all cases where these data had not been given in the original notification.

Results

VIRAL HEPATITIS IN THE GENERAL POPULATION

The incidence of viral hepatitis in Denmark during the past 50 years according to age is shown in the Figure. During the last 20 years adults have



Viral hepatitis in Denmark 1930-78: incidence according to age. ○ 0-14 years; ● 15-64 years.

constituted 3/4 of all infected persons, and only minor changes in the overall incidence have occurred, due primarily to infections in drug addicts. The epidemiological distribution of notified cases within the present study period, 1974-78, is shown in Table 1 and the geographical distribution in Table 2. The rate in the metropolitan area was nearly twice the

rate in the rest of the country, due mainly to the concentration of cases associated with drug abuse.

Distribution according to viral type is not generally available from the notifications. In the Copenhagen area, however, 40% of all hospital cases are known to be caused by hepatitis B virus.⁸

Table 1 *Notified cases of viral hepatitis in Denmark 1974-78: distribution according to epidemiological categories*

Category	Total No. of cases	%
Drug addicts	1134	29
Foreign travel	620	16
Hepatitis contact	444	11
Blood transfusion	88	2
Others	121	3
Unknown origin	1502	39
Total	3909	100

Table 2 *Notified cases of viral hepatitis in Denmark 1974-78: annual number of cases and incidence rate (per 100 000 population) in different areas*

Hepatitis category	Greater Copenhagen	All other areas	Total
Drug addicts	140 (11.1)	87 (2.3)	227 (4.5)
All others	190 (15.0)	365 (9.6)	555 (11.0)
Total	330 (26.2)	452 (11.9)	782 (15.5)

VIRAL HEPATITIS IN HEALTH CARE PERSONNEL

In the period 1974-78, 149 out of 3909 reported cases (4%) were working in health care institutions. No major changes in this rate were found within the period, the number of cases per year ranging from 25 to 35. Table 3 shows the overall distribution according to profession and the type of institution.

An increased incidence was seen in hospital laboratory staff, in dentists in private practice, and in hospital physicians compared to the rate in the general population aged 15 to 64 years. Low rates were obtained for the remaining hospital groups, psychiatric hospital personnel and staff in institutions for the mentally retarded. No case of hepatitis was recorded among general practitioners.

An analysis of the possible sources of infection showed that 8% of the cases had had a possible exposure outside their professional work, such as travelling to endemic areas or exposure within the family. These patients were, however, equally distributed irrespective of their profession.

The percentage of hepatitis B antigen positive cases is shown in Table 3. In hospital physicians, laboratory staffs, nursing staffs in psychiatric hospitals, and dentists, 70% of cases were type B infections, while among nurses and porters in

Table 3 *Notified cases of viral hepatitis in Danish health care personnel 1974-78*

Category	Total No. of cases	Annual incidence rate/100 000	Cases in metro-politan area %	HBsAg positive %
Hospital physicians	24	89	42	61
Hospital nurses	39	33	46	41
Hospital laboratory technicians	22	110	64	82
Hospital assistant nurses	24	25	58	52
Hospital porters	9	51	67	43
Hospital cleaning staff	6	22	67	67
Hospital clinical staff total	124	40	53	56
Dentists total (Dentists in private practice)	17	77	59	77
Psychiatric hospital nursing staff	2	5		100
Institutions for the mentally retarded nursing staff	6	13		33

general hospitals 45% were type B. Physicians and laboratory workers had a significantly higher rate (71%) of hepatitis B infection than the nursing staff (45%) ($P < 0.01$).

In Table 4 the incidence of hepatitis in relation to the physician's specialty is shown. Similar high rates were found in surgeons and physicians, while no other specialty exhibited any apparent risk. Four physicians (16%) reported that they had presumably been infected by haemodialysis patients. For hospital nurses the corresponding figure was 3 (8%).

Table 4 *Notified cases of viral hepatitis in Danish physicians 1974-78*

Specialty	Total No. of cases	Annual incidence	HBsAg positive %
Surgery	9	104	66
General medicine	7	108	57
Pathology	1	—	—
All others	7	54	57
General practitioners	0	—	—

As in the general population, a higher risk of infection within the metropolitan area was demonstrated for some hospital personnel and for dentists. In Copenhagen dentists in private practice the incidence was 170, compared to 75 for those in the rest of the country; for hospital workers the corresponding figures were 65 and 29 respectively. In the physician group no geographical diversity was observed.

Discussion

The occupational risk of viral hepatitis in the health care profession has been extensively documented by serological studies of hepatitis B antibodies in various groups of personnel and has clearly related infection to blood exposure rather than to physical contact with patients.^{3 4 9}

However, such data do not provide incidence rates and may reflect past contamination rather than present risk. Also these surveys show a majority of subclinical infections which, although indicative of risk areas, may be beneficial as they provide long-lasting immunity. Thus serological surveys should be supplemented with data on clinical attack rates in order to achieve a rational basis for improved preventive measures.

Data similar to those given in the present report are sparse but do suggest that hepatitis B, and not hepatitis A, is the major concern of the health care professions.^{1 5 7 10 11} Blood handling in surgery and in laboratory work is the main hazard, especially when dealing with infected haemodialysis patients. However, in the present series there were few cases among staff associated with haemodialysis, corresponding to the low rate of infected units in Denmark.¹²

In the present survey it could be shown that 70% of cases in the high-risk groups—laboratory staffs, hospital physicians, and dentists—were associated with hepatitis B.

However, 55% of those cases in nursing staff with physical patient contact had non-B infections. Although the overall incidence was low for this group, it is possible that a risk of hepatitis A virus infection is present for some of these groups, and specific serological studies of anti-HAV among nurses and assistant nurses might be of interest.

A major determinant of the risk of infection for hospital workers as well as for dentists was the geographical association with the metropolitan area. However, in none of the subgroups was there a risk of more than 2 cases per 1000 per year, giving little justification for a more extensive prophylactic programme except for possible local high-risk settings not shown in the present survey.

A major problem in this type of evaluation is the reliability of the notification figures. The distribution in relation to the population data are probably realistic, but estimates of absolute risk figures may be less so. The number of notified cases of hepatitis in Denmark in 1977 and 1978 comprised only 75% of the number of hospital inpatients with this diagnosis (P Skinhøj, unpublished data). To assess this bias in the present study, all notified cases among laboratory staff were compared to a recent

survey based on registrations made by the employers.¹³ Ten out of 15 cases known to have had viral hepatitis during the study period were also notified by the physicians and included in the present survey.

Assuming similar notification rates for the remaining personnel groups, it appears safe to conclude that an increased risk of hepatitis B infection still exists for some metropolitan hospital employees and for dentists, whereas the problem does not at present warrant further preventive measures in general. Furthermore, recent long-term surveys^{13 14} indicate that present awareness of the occupational risk of hepatitis has led to an acceptable diminution of hepatitis B attack rates in laboratory staff.

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