

Surveillance of hepatitis B virus infection in Scotland, 1973–1982

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SUMMARY

Since 1973 epidemiological surveillance of laboratory-confirmed hepatitis B virus infection has been undertaken in Scotland. During the ten-year period, 1973–82, 2893 persons with laboratory evidence of infection were reported and the number increased by almost threefold between the beginning and the end of this time. Males accounted for 66% of the patients and intravenous drug abuse was the most commonly encountered risk factor. The low risk to laboratory staff is confirmed, but among National Health Service hospital staff nurses accounted for 54% of those reported.

Since 1973 epidemiological surveillance of laboratory-confirmed hepatitis B virus infection has been undertaken in Scotland. The mainstay of this programme has been the weekly reporting by the virus laboratories, on a voluntary basis, of details of hepatitis B infections to the Communicable Diseases (Scotland) Unit at Ruchill Hospital, Glasgow.

On receipt of a laboratory report of hepatitis B infection at the Unit a standard form to record epidemiological information is sent to the reporting laboratory (or other appropriate source of information, e.g. the clinician or community medicine specialist concerned) and an endeavour made to obtain relevant details (e.g. possible source of infection – recent surgical operation, blood transfusion, dental procedure, immunization, drug abuse, the patient's occupation and any other appropriate information). The form is then returned to Ruchill Hospital.

The criterion for the inclusion of a case in the surveillance scheme was based on the demonstration of hepatitis B surface antigen (HBsAg) in a single serum specimen. Although other markers (e.g. hepatitis B e-antigen and its antibody (HBeAg and anti-HBe) and hepatitis B core antibody (IgG and IgM)) were often subsequently sought by investigating laboratories, these were not considered

Table 1. *Hepatitis B infection according to Health Board area of residence*

Year	Argyll and Clyde	Ayrshire and Arran	Borders	Dumfries and Galloway	Fife	Forth Valley	Grampian	Greater Glasgow	Highland	Lanarkshire	Lothian	Orkney	Shetland	Tayside	Western Isles	Unspecified	Total
1973	10	15	—	1	5	7	17	53	4	14	31	—	—	6	—	4	163
1974	8	7	—	3	2	8	14	61	—	27	27	—	—	6	—	4	163
1975	9	15	—	—	6	5	24	81	9	15	38	1	1	21	—	—	225
1976	5	16	—	2	2	6	55	114	13	14	59	—	—	18	1	—	305
1977	11	11	1	3	—	7	48	98	10	14	48	—	—	18	1	—	270
1978	11	8	—	8	—	5	38	79	13	27	51	—	—	26	1	—	267
1979	7	7	1	4	3	5	56	77	20	34	57	1	—	13	—	—	285
1980	17	6	1	5	5	6	34	93	15	38	83	—	2	24	—	—	329
1981	10	9	1	3	2	13	37	113	30	28	113	1	1	60	—	—	421
1982	13	6	2	5	6	14	51	138	12	18	117	—	1	74	—	—	457
Total	101	100	6	34	31	76	374	907	126	229	624	3	5	266	3	8	2893

essential for inclusion in the programme. During the ten-year period under review various laboratory tests have been used (immunodiffusion, complement-fixation, immuno-electro-osmophoresis and reversed passive haemagglutination), but more recently, positive radio-immunoassay or enzyme immunoassay were the usual laboratory tests reported. Because entry to the surveillance scheme was based primarily on laboratory findings, the patients reported here consist of both those who had clinical features of hepatitis and those in whom serological evidence of infection was an incidental finding. The data obtained between 1973 and 1982 have been analysed with particular reference to the period 1979–82, when a more detailed study has been undertaken.

Laboratory evidence of hepatitis B virus infection was obtained from 2893 persons in Scotland between 1973 and 1982; 38% were asymptomatic. During this period there was a sustained (almost threefold) increase in the number of reports. There was a slight lessening in the trend between 1977 and 1978, but this was followed by an increase which is still occurring. Analysis of the cumulative monthly reports for the ten-year period showed that there were between 195 and 270 cases in each 4-week period, with no evidence of seasonal clustering. Most of the reports related to persons living in urban areas, especially Glasgow (31%) (Table 1).

The more detailed epidemiological analysis for the four-year period 1979–82 is given in Tables 2 and 3. Of the 1492 cases reported during this time full information was available for 1332; 784 patients (59%) presented with explicit clinical features of hepatitis of various degrees of severity. The remaining 548 (41%) were incidental findings made during the screening of potential blood donors, routine blood tests on ante-natal patients or following laboratory tests in patients presenting with other conditions. The majority of reports related to adolescents or adults: 42% were aged between 15 and 24 years and 45% between 25 and 59 years. Males

Table 2. Hepatitis B infection according to possible source of infection in 488 patients

Possible source	Number (%) of reports
Intravenous drug abuse	385 (78)
Tattooing or ear-piercing	20 (4)
Occupational	41 (8.5)
Homosexual contact	16 (3)
Blood products	5 (1)
Other	21 (4.5)

Table 3. Hepatitis B infection in National Health Service staff

	1979	1980	1981	1982	Total
Physicians	1	1	1	3	6
Laboratory Technicians	1	1	—	—	2
Nursing Staff	4	4	5	9	22
Hospital Porter	—	1	—	—	1
Domestic Staff	—	1	1	2	4
Dentists	2	1	2	—	5
Pathologist	—	1	—	—	1
Total					41

accounted for 67% of the reports. A specified probable source of infection was given in 488 instances (Table 2). By far the commonest source implicated was intravenous drug abuse (78%); 20 (4%) had a recent history of tattooing or ear-piercing and 16 (3%) were homosexual contacts. Forty-one (8.5%) patients were National Health Service staff (Table 3); nursing staff accounted for 22 (54%) of these.

During the past decade various social and cultural changes have occurred in the United Kingdom and elsewhere which have affected the natural history and importance to the community of hepatitis B virus infection. The increase in intravenous drug abuse, especially in the urban environment, has been of prime importance in causing infection, especially among young adults. On the other hand, screening procedures have resulted in greater safety of blood and blood products for transfusion and there is even greater awareness among laboratory personnel of the need to observe precautions when handling infected material. The recent availability of hepatitis B vaccine should further produce benefit in diminishing the number of infections in susceptible groups.

Although the risk of hepatitis B infection to hospital staff previously experienced, especially in renal units (Public Health Laboratory Service, 1976; Marmion *et al.* 1982), is now fortunately very much smaller, nevertheless it would appear that nursing staff are at some risk – 22 cases were reported in Scotland during the period 1979–82. Laboratory staff, on the other hand, are now much less vulnerable – only two cases were noted, and this finding correlates with that of the surveys organized for the Association of Clinical Pathologists by Professor Grist (Grist, 1976, 1978, 1980, 1981, 1983), when an abrupt drop in hepatitis was reported after 1974.

suggesting improved safety consciousness and bench techniques among laboratory workers.

A national laboratory-based surveillance scheme to detect cases of hepatitis B has many drawbacks: increased interest in the disease may in turn produce an increase in the number of notified cases, and more sensitive laboratory techniques may be developed which will produce more positive reports. However, an enquiry by the Public Health Laboratory Service (Polakoff & Tillett, 1984) which assessed the validity of laboratory reports as indicators of incidence of hepatitis B in England and Wales showed that there was a high rate of laboratory identification and reporting of infection and that evidence of bias was not found. It is only by active surveillance using laboratory and epidemiological results that correct and rational decisions can be made in order to identify high-risk groups and subsequently control infection.

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