Hepatitis and other infections in clinical laboratory staff, 1979

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SUMMARY In 1979, British laboratories participating in the Association of Clinical Pathologists' survey reported five cases of tuberculosis, four of chickenpox, four of salmonellosis or shigellosis, one malaria, and one hepatitis A infection. Microbiology workers were most affected, but at least six infections were not attributable to work. All cases recovered.

In a survey carried out with the co-operation of ACP members, the number of reported cases and the calculated attack rates of hepatitis in laboratory staff decreased markedly over nine years; this decline was abrupt after 1974.¹⁻⁴ In recent years few cases have been reported and enquiries have shown that even these were not all true cases of hepatitis and that many could not be attributed to occupational exposure.^{4,5} Continuing surveillance of hepatitis alone seemed scarcely worth while except as a precautionary monitoring measure. In 1979, therefore, we proposed a pilot extension of the study to include infections of all kinds for one year only, in view of the unknown magnitude and complexity of data which might be reported.

Material and methods

As in previous surveys, respondents were asked to report all cases of infection in their laboratory staff without making the distinction as to whether these were thought to be of occupational or other origin. The questionnaire resembled previous versions but omitted questions about the type of work done by the laboratory (which had proved relatively unhelpful in earlier surveys). Instead, the space was used to collect information about cases of any infection with brief details to help interpretation. The form is illustrated in the figure. While ensuring confidentiality and anonymity for individuals, the form provided for entering the numbers of staff in various categories from which denominators could be derived and attack rates calculated per 100 000 person-years exposure, counting half the sum of the full-time staff as at January 1978 and 1979 plus a

quarter of the sum of part-time staff on these two dates as the average population for the year.

Results

Returns were received from 208 laboratories in the UK. As usual, a few received from other countries were excluded to avoid bias, as were also the very few double-reports from single laboratories.

The results are summarised in Table 1. The decline in reported cases of hepatitis continued, 1979 being the first year in which no case of laboratory-acquired hepatitis or hepatitis B was reported. The single case was negative in tests for hepatitis B; clinically it was a case of hepatitis A resulting from a visit to the Middle East six weeks beforehand.

Nine airborne infections were reported (Table 2). Four of these were cases in a chain of person-to-person infection by chickenpox originating from exposure outside work. Of the five tuberculosis infections, one was attributed to work in a mycobacterial animal house with defective ventilation, one could have been acquired from exposure while conducting a necropsy examination, and one was attributed to exposure to a co-worker with pulmonary tuberculosis. The origin of the others was less clear: one was an Asian who might have had pre-existing infection; the other was a medical haematologist with no history of laboratory accident. Three infections with salmonella and one with shigella affected microbiology MLSOs (medical laboratory scientific officers) working with these bacteria (Table 3), though in several instances they had concurrent exposure away from as well as in the laboratory. One medical microbiologist accidentally acquired falciparum malaria by self-inoculation while undertaking diagnostic examination of blood from a febrile patient from Africa.⁶

CONFIDENTIAL A.C.P. HEPATITIS ENQUIRY

RESPONDENT'S NAME (BLOCK)

LABORATORY ADDRESS

PART I - STAFF NUMBERS

Grade	Main Discipline	Full-time on January 1st		Part-time on January 1st	
		1979	1980	1979	1980
Medical	Morbid Anatomy				
	Haematology				
	Biochemistry				
	Microbiology				
	Immunology				
	Other (specify) *				
Scientist	Morbid Anatomy				
	Haematology				
	Biochemistry				
	Microbiology				
	Immunology				
	Other (specify) *				
M.L.S.O.	Morbid Anatomy				
	Haematology				
	Biochemistry				
	Microbiology				
	Immunology				
	Other (specify) *				
Phlebotomists					
Porters, storemen, drivers					
Domestics, washers					
Office staff, administrators					
Others (specify) *					

PLEASE RETURN COMPLETED FORM TO

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PART II—LABORATORY INFECTIONS IN 1979 (IF ANY)

Enter details of each case in one
separate vertical column

Type of infection:					
Hepatitis A					
Hepatitis B					
Viral hepatitis (other/N.K.)					
Tuberculosis					
Other (please specify) *					
Grade	Medical				
	Scientist				
	M.L.S.O.				
	Other (specify) *				
Main Discipline:					
	Morbid Anatomy				
	Haematology				
	Biochemistry				
	Microbiology				
	Immunology				
	Other (specify) *				
Epidemiology:					
	Age (years)				
	Sex				
	Outcome: Fatal				
	Disability				
	Recovered				
	Lab. accident				
Other suspected source of infection *					

*If necessary, add further details on the other side of this form.

Questionnaire used in the ACP survey of hepatitis and other infections in clinical laboratory staff, 1979.

Discussion

It is most unlikely that any case of hepatitis in laboratory staff in recent years would have escaped notice. In a laboratory with ACP staff, the case should appear in the surveys. Indeed, I invite any reader with knowledge of a case of acute viral hepatitis in a clinical laboratory worker in 1975-79 other than those listed since 1974³⁻⁵ to let me know sufficient details to check against the records. In fact, further searches since this analysis was completed have revealed two additional cases of hepatitis in 1979 in clinical laboratories not participating in the survey. The reports concerned one MLSO working in biochemistry and another MLSO working in nuclear medicine. Neither case was associated with a laboratory accident, and infection in both cases was probably acquired "socially." Laboratory findings in one case were compatible with acute hepatitis B; antigen was not detected but antibodies to both core and surface antigens were found in January 1980. The other MLSO was a known carrier of HBsAg (former consort of a drug addict who had hepatitis B some years previously), negative in tests for HB core antibody and for hepatitis A IgM at the time of the illness in 1979 which was presumably due to

some other agent. Both recovered from their illnesses. Although no hepatitis attributable to work was reported in the 1979 survey, occasional cases (originating outside work) will inevitably occur in laboratory staff who are subject to the same exposure as the rest of the community.

It appears that the improvement in awareness and techniques after the publication of early reports⁷ removed most or all of the hepatitis risks except from some workers in haematology and biochemistry who are less well trained in and less aware of infection risks than their colleagues in other disciplines. Recent reminders^{10 11} of the potential extent of surface contamination particularly in relation to automated apparatus, should have alerted workers to the dangers of inapparent parenteral infection and to the value of simple measures such as cleanliness and the proper use of disposable gloves.

The other serious infections reported in 1979 were all treatable and recovery ensued in all cases. It is significant that they arose mainly in occupational groups other than those most affected by hepatitis in past surveys. Although several bowel infections (see Table 3) may well have been acquired outside work, it is hard to avoid speculating that microbiologists are susceptible to occupational exposure

Table 1 Cases and attack rates of various infections in laboratory staff, 1979

Occupation/discipline*	Population	No of infections reported (attack rates in parentheses)†				
		Hepatitis	Tuberculosis	Chickenpox	Salmonellosis and shigellosis	Malaria
Medical						
Morbid anatomy	412	0	1 (243)	0	0	0
Haematology	274.5	0	1 (364)	0	0	0
Biochemistry	128	0	0	0	0	0
Microbiology	272.5	0	0	0	0	1 (367)
Immunology	13	0	0	0	0	0
Other	3.5	0	0	0	0	0
Science						
Morbid anatomy	73.5	0	0	0	0	0
Haematology	62.5	0	0	0	0	0
Biochemistry	400	0	0	0	0	0
Microbiology	142.5	0	0	0	0	0
Immunology	30.5	0	0	0	0	0
Other	1.5	0	0	0	0	0
MLSO						
Morbid anatomy	1069	0	0	0	0	0
Haematology	1988	1 (50)	0	1 (50)	0	0
Biochemistry	1896.5	0	0	0	0	0
Microbiology	2256	0	1 (44)	3 (133)	4 (177)	0
Immunology	65	0	0	0	0	0
Other	41.5	0	1 (2410)	0	0	0
Porters, assistants, etc.	648.5	0	1 (154)	0	0	0
Domestics, washers	489	0	0	0	0	0
Office, administration	1194	0	0	0	0	0
Phlebotomists and donor nurses	476	0	0	0	0	0
Others	36.5	0	0	0	0	0
Total	11974	1 (8)	5 (42)	4 (33)	4 (33)	1 (8)

*Morbid anatomy includes cytology, cytogenetics, mortuary technicians. Haematology includes blood transfusion. Microbiology includes virology and parasitology.

†Attack rates calculated per 100 000 person-years.

Table 2 Airborne infections in laboratory staff, 1979

Infection	Occupation/discipline	Comments on possible cause
Tuberculosis	Porter, animal house	Mycobacteriology laboratory; defective ventilation.
"	Medical, morbid anatomy	Necropsy examination?
"	Medical, haematology	No accident; cause unknown
"	MLSO, microbiology	Asian
"	MLSO, circulating*	Contact with co-worker with pulmonary tuberculosis
Chickenpox	MLSO, haematology*	Contacts at work, and of infected girl friend/spouse
"	MLSO, microbiology*	
"	MLSO, microbiology*	
"	MLSO, microbiology*	

*Infection from exposure to co-workers in 5 instances.

MLSO = medical laboratory scientific officer.

Table 3 Infections with enteropathic bacteria

Infection	Occupation/discipline	Comments on possible cause
<i>Salmonella typhimurium</i>	MLSO, microbiology	Community outbreak?
"	MLSO, microbiology	Laboratory accident?
<i>Salmonella virchow</i>	MLSO, microbiology	Salmonella laboratory
<i>Shigella sonnei</i>	MLSO, microbiology	Stool bench?

MLSO = medical laboratory scientific officer.

and the figures emphasise the need to observe strictly the high standards of microbiological tech-

nique appropriate to work on the stool bench. Four cases of chickenpox and at least one case of tuber-

culosis remind us that infections can be caught from fellow workers as well as from fellow travellers and social contacts. Other cases of tuberculosis exemplify well-known risks and again emphasise the need for proper precautions, facilities, and ventilation in the post-mortem room and animal house.

Finally, the case of malaria gives a salutary reminder that hepatitis is not the only infection which workers risk from parenteral exposure. Overpreoccupation with the risk of hepatitis may be dangerous if it diverts the attention away from a broader vigilance.

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