

Communicable

Diseases Intelligence

Virus reports this period - 933, with reports from one laboratory having disappeared "en-route".

Reports of interest:

- a possible case of lymphocytic choriomeningitis (LCM) in a 27 year old male student suffering from fever, meningitis and generalised lymphadenopathy. The State Health Laboratory, Brisbane, reports that no antibodies were detected by CFT in serum taken on 13 July, but the titre rose to 1:8 on 10 August and 1:16 on 16 August.

This is the only report of the disease received by CDI in the last two years.

LCM is a zoonotic disease normally occurring in mice, and only occasionally infecting man.

- Rotavirus - over half of the 23 isolations from Prince Henry Hospital in Sydney were from infants aged between one and nine days, in a ward at another Sydney hospital.
- Influenza A. A/Brazil/11/78-like strains are still being isolated in Melbourne and Sydney. The latter included an isolate from an autopsy lung specimen from an 18 year old female.

Campylobacter infections

Dr D.E. Smith, pathologist, of Penrith, N.S.W., has reported six isolations of Campylobacter spp at his laboratory from non-hospitalised patients referred by general practitioners in the area, during the 2½ month period to the end of August 1979. Three were from teenagers with bloody diarrhoea (one specimen also containing mucus), two other specimens were without blood and one normally formed faeces.

Over the same period the laboratory had one shigella and five salmonella isolations.

It is recommended that the Campylobacters be considered when diagnosing diarrhoea. Reports to the CDI suggest that the organism is prevalent in Australia, and laboratory diagnosis is not difficult (Ref. MJA 8 September 1979 p.260 - correspondence).

Legionnaires' Disease

Confirmation has been received of the death in Adelaide on August 28, 1979, of a 34 year old man from Legionnaires' Disease (LD). He had worked in a printing business. Investigations at the workplace have not revealed any increased absenteeism due to acute pneumonia. Other investigations are proceeding. This was the third reported death from LD in Australia this year. The two others occurred in March amongst Telecom workers in Melbourne (one case reported in CDI 79/11).

In view of the continuing publicity concerning LD, a brief review is of interest. The review draws heavily on the proceedings of an international symposium held in Atlanta, Georgia, in November 1978, subsequently published in the April 1979 issue of *Annals of Internal Medicine*, and on a recent review of the symposium¹.

Since LD and Legionella pneumophila were first recognised in 1976, there have been many reports on them. L.pneumophila has been implicated both in a number of recent outbreaks and also retrospectively in some pre-1976 episodes². The earliest-known such episode was in 1947. A rickettsia-like agent isolated from the blood of a laboratory worker with an upper respiratory infection, and then considered to have been a non-human rickettsia, is now believed to have been L.pneumophila³.

Clinical cases present as an acute pneumonia with fever, and sometimes with gastro-intestinal symptoms, myalgia and encephalopathy. Pneumonia may be severe, and lead to respiratory failure and death. Cough is often non-productive. Radiological examination of the lungs may show either lobar or multilobar consolidation. Leucocytosis, abnormalities of serum levels of liver enzymes, haematuria and proteinuria may occur. However all these features do not distinguish LD from other acute pneumonias. LD may also be a mild disease consisting of fever and cough alone and antibody studies (see below) indicate that subclinical infection may be common.

Outbreaks and sporadic cases have been documented as well as nosocomial infections in which setting LD may be an opportunistic infection. Up till mid-November 1978, 486 sporadic cases and approximately 560 outbreak-associated cases had been confirmed in the USA; case fatality rates varied from 14% (outbreaks) to 19% (sporadic cases)⁴. LD has also been reported from Australia, Canada, Denmark, England, Israel, the Netherlands, Scotland and Sweden. Despite the large number of reports the epidemiology remains obscure.

LD occurs predominantly in summer and autumn, is more common in males (possibly due to increased exposure) and in some epidemics is strikingly associated with smoking². The incubation period is usually 2 to 10 days. The age of patients has ranged from 10 months to 84 years with the median age being in the mid-fifties^{4,5}.

Airborne transmission seems established. Although person to person spread has been suggested⁶ it has not been confirmed.

Knowledge of the reservoir and distribution of the organism in nature is still somewhat speculative although it is thought to be widespread. Soils and/or water have been incriminated in the majority of outbreaks. The organism has been isolated from cooling towers and evaporative condensers of airconditioning units, from mud and from creek water⁷. Hospitals, golf clubs, hotels and industrial premises have all been associated with more than one outbreak.

In a hospital in Memphis, USA, L.pneumophila-like organisms were isolated from the cooling tower water of an auxiliary airconditioning unit which had been brought into use for one month⁸. In another hospital in Washington excavations were in progress in the grounds and access to the grounds and sleeping by an open window were associated with increased risk of infection⁹. In one golf club outbreak, in the UK, accommodation was provided in a hotel some 10 miles from the club and it is not certain whether it was the club or the hotel which might have been associated with the outbreaks; serological tests on staff at both were negative¹⁰. In the second golf club outbreak, in Atlanta, the club's airconditioning outlet was approximately 45 metres from the 10th tee¹¹.

Amongst the outbreaks associated with hotels or similar accommodation L.pneumophila-like organisms were isolated from the airconditioning cooling tower of the Indiana Memorial Union in 1978. However the air cooling system was out of action during the presumed "infection" period, so other factors must presumably have been involved⁷.

Following isolations of the organism from cooling tower and evaporative condensers of air cooling systems at the site of some epidemics, these systems have been considered to be possible 'amplifiers' as well as delivery systems of L.pneumophila². However, whether the organisms will grow to high titre in cooling tower water at the temperature encountered is not clear. Proximity of the air intake of the system to the condensers or cooling towers could be a factor.

Work is proceeding on antiseptic agents suitable for decontamination of airconditioning systems¹². A compound with 50% didecyl dimethyl ammonium chloride (a quaternary ammonium compound), 20% isopropanol, and 30% inert ingredients has been shown to be effective at concentrations of 70, 140, and 630 ppm in preventing recovery of L.pneumophila from hypochlorite free sterile tap water inoculated with the organisms. Calcium hypochlorite and 2, 2-dibromo-3-nitrilopropionamide also appear effective, but final results of the testing are not available. The efficacy of these compounds or of routine preventive measures aimed at controlling slime, scale, algae, and bacterial growth in airconditioning units and thus preventing LD, remains to be determined.

As yet, little is known of the infectious dose of LD bacterium or of host defenses against the organism. However, immunity, at least as measured by seropositivity², has been developed by many employees at places of some outbreaks.

L.pneumophila in tissue does not readily react with Gram stain, but it can be shown by other stains and by direct immunofluorescence¹³. It is a slow growing aerobic, gram negative rod that can be cultivated on relatively simple laboratory media. Sources of iron and L. cysteine appear to be critical¹³. Pigment production is related to tyrosine in the medium.

In vitro studies suggest susceptibility to all antibiotics except vancomycin but clinically erythromycin appears to be the drug of choice. In severe cases a combination of rifampicin and erythromycin may be indicated.

Isolation of the bacterium during life of patients with LD has been achieved from pleural fluid, blood culture, and lung biopsy, but the yield from these sources has been small. Rarely, organisms consistent with LD bacterium have been observed from transtracheal aspirates. Attempts to culture the organism from sputum have been unreliable.

The organism can be propagated in yolk sacs of embryonated eggs. The yolk-sac antigen enabled the development of a serological test for the detection of antibodies. There are at least four basic serotypes. Diagnosis has depended largely on serological test findings and demonstration of the bacterium in tissue and occasionally on isolation. Mass spectrophotometry of the fatty acids in the cell wall of the bacillus appears to be a useful confirmation¹⁴ as the bacterium produces a unique branched-chain fatty acid profile¹³.

Confirmation of the diagnosis is based on a four-fold change in titre or greater, or of a single titre of at least 1:128 in patient's serum in an indirect fluorescent antibody test¹. However it has been estimated that 2% of the population exhibit a titre of this magnitude. Therefore when only convalescent sera are available a titre equal to or greater than 1:256 is required. Even this level can be due to a sub-clinical infection. A rise in antibody may not be detected for up to 6 weeks after onset of the disease. Patients who exhibit a four-fold rise in titre to a particular serotype may also exhibit a much greater rise to one of the other serotypes.

Although the specificity of the procedure seems adequate, similar or greater increases in indirect fluorescent-antibody titres have also been noted in patients with psittacosis, plague, tularaemia and leptospirosis^{15,16}. The possibility of cross-reactivity in patients with Mycoplasma pneumoniae has also been raised¹⁷. There is thus a need for the development of a rapid diagnostic test free of cross reactions.

Fairfield Hospital, Melbourne, provides facilities for the microbiological diagnosis of LD. Specimens, other than sputum, from patients in whom the disease is suspected and in whom it is considered important to establish the diagnosis, may be sent to the Bacteriology Department of that hospital.

Staff of the Fairfield Hospital, Melbourne, assisted in the preparation of this review.

References

- 1 N Engl J Med (1979) 300 : 654-656
- 2 Ann intern Med (1979) 90 : 499-502
- 3 Ibid., 659-661
- 4 MMWR (1978) 27 : 439-441
- 5 Ann intern Med (1979) 90 : 603-606
- 6 Ibid 601-603
- 7 MMWR (1978) 27 : 191,216,283-285
- 8 MMWR (1978) 27 : 368-369
- 9 J infect Dis (1978) 138 : 512-519
- 10 Communicable Diseases Report, Colindale, London (1979)
No. 28(Insert)
- 11 MMWR (1978) 27 : 415-416
- 12 MMWR (1979) 28 : 286-287
- 13 Ann intern Med (1979) 90 : 502-505
- 14 Lancet (1979) 2 : 323-325
- 15 N Engl J Med (1977) 297 : 1197-1203
- 16 Ann intern Med (1978) 89 : 413-414
- 17 Ann intern Med (1979) 90 : 607-610

Follow-up on Ross River Virus Infections from Fiji

Since the report on the importation of 7 cases of Ross River Virus infection from Fiji in CDI 79/15, a further 6 cases have been reported, 3 by the State Health Laboratory, Brisbane, 2 by Fairfield Hospital, Melbourne, and 1 by the Institute of Medical and Veterinary Science, Adelaide. Sample collection dates varied from June till mid-July this year. An additional possible case - sample date August 1 - had a titre of 1:320 to the Ross River Virus, but was IgM negative. All the others were IgM positive.

A communication recently received from the Programme Coordinator of the WHO South Pacific area states that the epidemic consisted of cases of influenza, dengue fever and epidemic polyarthrititis, and that by the end of July it was considered that the epidemic was over.

β -lactamase producing *N. gonorrhoeae*

Three new isolations have been reported for the months of July and August 1979, all from males whose disease was said to have been contracted in Bangkok. Two of the reports were from Victoria and the other from Queensland.

No further reports of isolations prior to the end of June 1979 have been received, so currently available figures for the number, sex and State distribution of cases in Australia, reported up to June 30, 1979, are as follows:

β -lactamase producing *N. gonorrhoeae*
isolations reported - Australia

	Sex	WA	SA	NSW	VIC	ACT	TAS	NT	QLD	Total
Jan/June 1976	M	1	1							2
	F		1							1
July/Dec 1976	M	2		2	1					5
	F				1					1
Jan/June 1977	M			7	4	1	1			13
	F			3	1					4
July/Dec 1977	M	7	1	3	4	3	1			19
	F	5								5
Jan/June 1978	M	1	1	8	6			4	1	21
	F	1			1			1		3
July/Dec 1978	M		3	5		2		1	3	14
	F		1	2					1	4
Jan/June 1979	M	2	3	2	8	2	1		5	23
	F		2	2						4
<u>Total</u>	M	13	9	27	23	8	3	5	9	97
	F	6	4	7	3	0	0	1	1	22

Smallpox vaccination during pregnancy

An investigation was undertaken in the Microbiological Unit of the School of Public Health and Tropical Medicine in Sydney, of a case of deafness in an infant aged 18 months whose mother had been vaccinated against smallpox early in the pregnancy. Two years after the vaccination the mother had a neutralizing titre of 1/200. The infant had a titre of 1/10. This does not suggest an intrauterine vaccinal infection.

AUSTRALIA - COMMUNICABLE DISEASES INTELLIGENCE

REPORTING PERIOD - 23-8-79 . 5-9-79 BULLETIN NUMBER 79-18

VIRAL IDENTIFICATIONS FROM CONTRIBUTING LABORATORIES

VIRUS OR VIRAL ANTIGEN	ICPMR		PHH/	FAIR-			STATE	STATE	Total
	(NSW) / WVH (ACT)	RAHC (NSW)	POW (NSW)	FIELD (VIC)	RCH (VIC)	IMVS (SA)	LAB (QLD)	LAB (WA)	
0100 ADENOVIRUS NOT TYPED.....	2	1	3			5	5	2	18
0101 ADENOVIRUS TYPE 1.....						3			3
0102 ADENOVIRUS TYPE 2.....	2		1			6		1	10
0103 ADENOVIRUS TYPE 3.....						1			1
0104 ADENOVIRUS TYPE 4.....						1			1
0105 ADENOVIRUS TYPE 5.....						2			2
0107 ADENOVIRUS TYPE 7.....						4			4
0119 ADENOVIRUS TYPE 19.....								6	6
0199 ADENOVIRUS TYPING PENDING.....			4		2	1			7
0201 INFLUENZA A VIRUS.....	28	4	7		3	1			43
0203 INFLUENZA B VIRUS.....						1	1	16	18
0301 PARAINFLUENZA VIRUS TYPE 1.....							4		4
0302 PARAINFLUENZA VIRUS TYPE 2.....					1				1
0303 PARAINFLUENZA VIRUS TYPE 3.....		1	1		6	7	3	3	21
0399 PARAINFLUENZA VIRUS TYPING PENDING.....						2			2
0400 RESPIRATORY SYNCYTIAL VIRUS (RS)....	12	10	13		43	31	24	6	139
0500 RHINOVIRUS (ALL TYPES).....					4	4	1		9
0600 MYCOPLASMA PNEUMONIAE.....	15		11			9	5	2	42
0700 ORNITHOSIS-PSITTACOSIS.....	1		1						2
0902 COXSACKIEVIRUS B2.....							6		6
0903 COXSACKIEVIRUS B3.....						2			2
0904 COXSACKIEVIRUS B4.....								2	2
1003 ECHOVIRUS TYPE 3.....								1	1
1011 ECHOVIRUS TYPE 11.....					2	15		4	21
1015 ECHOVIRUS TYPE 15.....	2								2
1022 ECHOVIRUS TYPE 22.....			1		1				2
1030 ECHOVIRUS TYPE 30.....							2		2
1101 POLIOVIRUS TYPE 1.....						2	1		3
1102 POLIOVIRUS TYPE 2.....						5	2		7
1103 POLIOVIRUS TYPE 3.....							1		1
1104 POLIOVIRUS-VACCINAL STRAIN.....			3		6				9
1200 MUMPS VIRUS.....	10	1	3				1		15

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REPORTING PERIOD - 23-8-79 . 5-9-79 BULLETIN NUMBER 79-18 2
 VIRAL IDENTIFICATIONS FROM CONTRIBUTING LABORATORIES-CONTINUED

VIRUS OR VIRAL ANTIGEN	ICPMR		PHH/	FAIR-			STATE	STATE	Total
	(NSW) / WVH (ACT)	RAHC (NSW)	POW (NSW)	FIELD (VIC)	RCH (VIC)	IMVS (SA)	LAB (QLD)	LAB (WA)	
1300 HERPES VIRUS GROUP-NOT TYPED.....	1					3		3	7
1301 HERPES SIMPLEX VIRUS-NOT TYPED.....	21		13			2	26	34	96
1303 VARICELLA-ZOSTER VIRUS.....	3		6			1			10
1306 HERPES SIMPLEX TYPE 1.....	11					15			26
1307 HERPES SIMPLEX TYPE 2.....	52					16			68
1399 HERPES VIRUS TYPING PENDING.....						3		1	4
1401 COXIELLA BURNETI.....	6		1			3	15		25
1521 MEASLES VIRUS.....			1			2	5		8
1522 RUBELLA VIRUS.....					1	8	1	4	14
1530 HEPATITIS A VIRUS.....								1	1
1532 HEPATITIS B ANTIGEN.....	2		5			8	9	9	33
1535 HEPATITIS A ANTIBODY.....						1			1
1541 CHLAMYDIA A - TRIC TYPE.....	4							31	35
1553 LCM - LYMPHOCYTIC CHORIOMENINGITIS VIRUS.....							1		1
1556 CMV - CYTOMEGALOVIRUS.....	14	2	3		3	3	4	5	34
1562 REOVIRUS (ALL TYPES).....	1					2			3
1564 ROTAVIRUS.....	23		23		2	57		4	109
1599 ENTEROVIRUS TYPING PENDING.....			4		10	10			24
ROSS RIVER VIRUS.....							14	3	17
PARVOVIRUS (LIKE).....	4					12			16
Total.....	214	19	104		86	246	131	138	938

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VIRAL IDENTIFICATIONS CATEGORISED INTO SOURCE SPECIMENS

VIRUS OR VIRAL ANTIGEN	PA	BL	NA	CS	SK	EY	UR	BR	GE	OT	TOTAL
0100 ADENOVIRUS NOT TYPED	7	9	2								18
0101 ADENOVIRUS TYPE 1.....	1		1							1	3
0102 ADENOVIRUS TYPE 2.....	6		3				1				10
0103 ADENOVIRUS TYPE 3.....	1										1
0104 ADENOVIRUS TYPE 4.....	1										1
0105 ADENOVIRUS TYPE 5.....			2								2
0107 ADENOVIRUS TYPE 7.....	3					1				1	5
0119 ADENOVIRUS TYPE 19.....						1			5		6
0199 ADENOVIRUS TYPING PENDING.....	4		2			1					7
0201 INFLUENZA A VIRUS.....		37	4					1		1	43
0203 INFLUENZA B VIRUS.....		11	7								18
0301 PARAINFLUENZA VIRUS TYPE 1.....		4									4
0302 PARAINFLUENZA VIRUS TYPE 2.....			1								1
0303 PARAINFLUENZA VIRUS TYPE 3.....		4	17								21
0399 PARAINFLUENZA VIRUS TYPING PENDING..			2								2
0400 RESPIRATORY SYNCYTIAL VIRUS (RS) ...	1	17	116					3			137
0500 RHINOVIRUS (ALL TYPES)			9								9
0600 MYCOPLASMA PNEUMONIAE.....		40									40
0700 ORNITHOSIS-PSITTACOSIS.....		2									2
0902 COXSACKIEVIRUS B2.....			6								6
0903 COXSACKIEVIRUS B3.....	2										2
0904 COXSACKIEVIRUS B4.....			2								2
1003 ECHOVIRUS TYPE 3.....	1										1
1011 ECHOVIRUS TYPE 11.....	12		6	5		1					24
1015 ECHOVIRUS TYPE 15.....				1			2				3
1022 ECHOVIRUS TYPE 22.....	1		2								3
1030 ECHOVIRUS TYPE 30.....			1	2							3
1101 POLIOVIRUS TYPE 1.....	2		1								3
1102 POLIOVIRUS TYPE 2.....	7										7
1103 POLIOVIRUS TYPE 3.....	1										1
1104 POLIOVIRUS-VACCINAL STRAIN.....	7		4								11
1200 MUMPS VIRUS.....		9	3	3							15
1300 HERPES VIRUS GROUP-NOT TYPED.....					6				3		9

AUSTRALIA - COMMUNICABLE DISEASES INTELLIGENCE

REPORTING PERIOD - 23.8 - 79 . 5.9 - 79 BULLETIN NUMBER 79.18
 VIRAL IDENTIFICATIONS CATEGORISED INTO SOURCE SPECIMENS-CONTINUED

VIRUS OR VIRAL ANTIGEN	FA	BL	NA	CS	SK	EY	UR	BR	GE	OT	TOTAL
1301 HERPES SIMPLEX VIRUS-NOT TYPED.....	1	14	15	1	29	3			34	1	98
1303 VARICELLA-ZOSTER VIRUS.....		9			1						10
1306 HERPES SIMPLEX TYPE 1.....			7		17	2					26
1307 HERPES SIMPLEX TYPE 2.....			1		1				66		68
1399 HERPES VIRUS TYPING PENDING.....					2				2		4
1401 COXIELLA BURNETI.....		25									25
1521 MEASLES VIRUS.....		8									8
1522 RUBELLA VIRUS.....		12	2								14
1530 HEPATITIS A VIRUS.....		1									1
1532 HEPATITIS B ANTIGEN.....		33									33
1535 HEPATITIS A ANTIBODY.....		1									1
1541 CHLAMYDIA A - TRIC TYPE.....						1			34		35
1553 LCM - LYMPHOCYTIC CHORIOMENINGITIS VIRUS.....		1									1
1556 CMV - CYTOMEGALOVIRUS.....		19	6				6		3		34
1562 REOVIRUS (ALL TYPES).....	3										3
1564 ROTAVIRUS.....	109										109
1599 ENTEROVIRUS TYPING PENDING.....	11		13	1							25
ROSS RIVER VIRUS.....		17									17
PARVOVIRUS.....	16										16
Total.....	197	273	235	13	56	10	9	4	147	4	948

DISEASE	Total	N.S.W.	VIC	QLD	S.A.	W.A.	TAS.	N.T.	A.C.T.	CUMULATIVE TOTAL TO DATE FOR YEAR
Salmonella infections	67		7	6	27	11	2	11	3	* 1341
Shigella infections	39		3	4	2	13		17		357
Smallpox										-
Syphilis	465	67	7	324	15	13		39		* 1782
Tetanus	1				1					1
Trachoma										
Tuberculosis (all forms)	134	39	39	32	10	6	4	1	3	* 989
Typhoid fever										17
Typhus (all forms)										2
Vibrio parahaemolyticus infections										-
Yellow Fever										-
Yersinia enterocolitica infections										

Data collected under the Notifiable Diseases Returns may bear little or no correlation to that collected under the CDI Laboratory scheme. Whilst the latter is a sampling program, the Notifiable Diseases data is dependent upon voluntary reporting by medical practitioners etc.

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Ankylostomiasis + 10 cases for the N.T. since the last report. Total is now 107 instead of 97.

Gonorrhoea + 11 cases for S.A. since the last report. Total is now 7469 instead of 7458.

Hepatitis B + 5 cases for S.A. since the last report. Total is now 491 instead of 486.

Malaria + 1 case for the N.T. since the last report. Total is now 225 instead of 224.

Q. Fever + 89 cases for Qld. since last report. Total is now 413 instead of 324.

Salmonella Infections + 2 cases for S.A. and + 2 cases for W.A. since last report. Total is now 1341 instead of 1337.

Syphilis + 15 cases for S.A. since last report. Total is now 1782 instead of 1767.

Tuberculosis - 1 case for W.A. since last report. Total is now 989 instead of 990.