A cluster of leptospirosis among abattoir workers

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Abstract

In early December 1998, the Northern Rivers Public Health Unit (north-eastern New South Wales) was alerted to a possible cluster of leptospirosis cases by the supervising scientist of the Western Pacific Region World Health Organization/Food and Agricultural Organization Collaborating Centre for Reference and Research on Leptospirosis. Investigation revealed a cluster of eight leptospirosis cases diagnosed during Octob er and November 1998. All were employees of a local meat works. *Leptospira* serovars isolated included pomona and hardjo. Symptoms included headache, fever, muscle pain, sore eyes, abdominal pain, vomiting, jaundice, and rash. Five of the eight cases were hospitalised. The infection could not be traced to any particular source. Unfo rtunately, records of stock killed during the exposure periods were not available. All cases reported exposure to large volumes of animal urine during the course of their work. Protective clothing provided included an apron, gloves, and rubber boots. All of the patients said they wore rubber boots and seven of the eight wore the apron provided. Only two patients reported wearing gloves, the remainder thought these were too difficult to work in. *Commun Dis Intell* 2000;24:158-160.

Keywords: leptospirosis, surveillance, occupation, abattoir, urine, cattle

Introduction

Leptospirosis is a zoonosis with worldwide distribution resulting from infection with the spirochaete *Leptospira*. In excess of 200 leptospira serotypes are currently known to be pathogenic. The illness usually develops about 7 to 12 days (range 2 to 20) following exposure to the urine of infected animals. [1] Exposure may be direct or indirect via water, moist soil, and vegetation. [2] The clinical presentation and course of the illness is variable. Subclinical infection, although rare, has been shown to occur in occupational settings. [3] The illness is usually characterised by a sudden onset of fever, headache, and myalgia. Some patients suffer a more severe illness that progresses to include hepatic, renal, and vascular dysfunction.[3]

Leptospirosis is a notifiable disease in all Australian States and Territories, occurring throughout the country with the highest reported incidence in Victoria and Queensland. [4] In 1998 there were 50 cases of leptospirosis reported for New South Wales (NSW) compared with 34 in 1997. (Notifiable Diseases Database, New South Wales Health Department; personal communication).

Leptospirosis serology is carried out by a number of pathology services within the north coast area of New South Wales. Confirmatory serology and *Leptospira* serovar identification is done either by the Institute of Clinical Pathology and Medical Research (ICPMR), at Westmead Hospital, or by the Queensland Health Scientific Services, World Health Organization/Food and Agricultural Organization (WHO/FAO) Collaborating Centre for Reference and Research on Leptospirosis.

Methods

Sporadic leptospirosis cases are not usually followed up by the Northern Rivers Public Health Unit (NRPHU). However in early December 1998 the notifying laboratory scientist alerted the Unit, located in north-eastern New South Wales, to an increase in leptospirosis among employees of an abattoir within the Northern Rivers Area. An investigation of this suspected cluster was implemented in consultation with the Occupational Health and Safety Officer at the abattoir, with Worksafe, and with local general practitioners. In all, eight cases of leptospirosis had been confirmed during October and November 1998, compared with six cases for the 8 months prior to October.

A questionnaire was developed and administered by telephone to all cases identified as abattoir employees with illness onset dates after 25 August 1998. Interviews were conducted by the Public Health Nurse and the Public Health Officer over three days from 8-10 December. The following information was sought:(1) information relating to previous history of leptospirosis, (2) job particulars within the abattoir during the incubation period (7-20 days prior to onset of illness) including exposure to animal urine, (3) details of protective apparel worn at work, (4) details relating to symptoms and hospitalisation, and (5) contact with possible sources of infection outside the workplace.

Additional cases were sought by examination of the abattoir absentee lists. All employees with a history of an influenza-like illness lasting longer than two days, unconfirmed leptospirosis, or confirmed leptospirosis with an onset date later than 25 August 1998 were identified for follow up. A fact sheet was distributed to abattoir employees which included information relating to symptoms and a

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request to seek medical advice in the event of recognition of symptoms.

General practitioners in the town were informed of the cluster by mail and asked to notify the NRPHU on suspicion of further cases. Active surveillance was continued for all cases of leptospirosis notified to the NRPHU for the remainder of 1998.

The Occupational Health and Safety Officer assisted in an inspection of the work-site; this was undertaken after the day's kill had been completed. Information relating to details of stock processed during the illness incubation period was also sought.

Results

Overall there were 50 cases of leptospirosis reported in New South Wales during 1998, an increase from 34 and 33 respectively during the previous two years. Of these 50 cases, 17 (34%) were notified to the NRPHU - the highest number of cases reported to this Unit since 1992, when six cases were reported (Table1) (Notifiable Diseases Database, New South Wales Health Department; personal communication).

Eight (47%) of the case reports received during 1998 were reported during October and November. All of these cases were employees of the local abattoir and when contacted all agreed to participate in a telephone interview. No additional cases were identified by active case finding within the abattoir, or by local general practitioners.

The cases ranged in age from 16 to 53 years; all were males employed in the slaughtering section of the abattoir. The *Leptospira* serovars identified were hardjo (4 cases) and pomona (4 cases). All eight patients reported fever, headache and muscle pains. Other symptoms reported included sore eyes (4 cases), abdominal pain (6 cases), jaundice (5 cases) and rash (4 cases). Five of the eight cases were hospitalised and all cases were ill and away from work for more than two weeks. Four of the cases had not recovered at the time of the interview.

The work areas where the patients were employed included the killing area, known as the 'stick hole', the beef slaughter floor, the condemned room, and the small stock slaughter floor. All the cases reported exposure to animal urine during the course of their work. Table 2 shows illness onset dates, infecting serovar, and work area for each of the cases involved in this investigation.

Protective clothing supplied included gumboots, plastic knee length aprons, and gloves. All of the individual cases reported wearing gumboots, seven of the eight wore aprons, and two of the eight wore gloves while working. Each work station had individual access to hand-washing facilities.

A majority (6) of the cases involved in this cluster had been employed at the meat works for at least three years. One case commenced work 12 months prior to his illness. For one, information relating to length of employment was not obtained. Two of the men reported a previous diagnosis of leptospirosis. Three reported contact with farm animals away from work.

Table1. Leptospirosis cases reported to the Northern Rivers Public Health Unit, 1990 to 1998[1]

Year	Cases reported to NRPHU	Cases reported: NSW	% NSW cases reported to NRPHU
1990	4	42	9.5
1991	3	28	10.7
1992	6	19	31.6
1993	3	18	16.7
1994	5	14	35.7
1995	2	6	25.0
1996	5	33	15.1
1997	3	34	8.8
1998	17	50	34.0
1999	28	56	50.0

1. Source: Notifiable Diseases Database, New South Wales Health Department

Table 2. Frequency of leptospirosis among abattoir workers reported to the Northern Rivers Public Health Unit, October and November 1998, by onset date, work area, and serovar

	Case incidence and work area			
Date of onset	Beef slaughter floor	Small stock slaughter floor	Condemned area	Serovar
14/09	1			hardjo
18/09	1			hardjo
21/09	1			pomona
9/10		1		hardjo
26/10	1			pomona
4/11	1			pomona
8/11			1	pomona
16/11		1		hardjo

Discussion

The abattoir supplies the export market and is only involved in processing cattle. Pigs had previously been slaughtered, but this had ceased some years previously. The cattle are purchased from a wide geographical area and records of the origin of the cattle killed during the exposure periods were not available to assist in this investigation. This made it impossible to trace possible sources of infected cattle. Anecdotal evidence supplied during case interviews suggests a large number of cattle from flooded areas of Queensland had recently been killed. This may have resulted in the processing of a significant number of infected cattle. The fact that there were no further cases of leptospirosis identified among the workers at this abattoir for

the remainder of 1998 may lend some support to this possibility.

The increase in notifications continued into1999 for both the Northern Rivers Area (n=28) and NSW (n=56). No further clusters were identified during 1999 and cases were distributed throughout the northern rivers area. The increase in case notifications may be as a result of increased rainfall, and higher mean temperatures over the northern half of New South Wales and southern Queensland during 1998-99.[5] There may also have been an increased awareness of this disease by clinicians.

The most commonly reported symptoms were similar to those described for the Queensland cases reported in 1997.[4] However, the symptoms reported by the cases are suggestive of moderately severe leptospirosis illness, since five reported jaundice which is indicative of a more severe form of the disease.[3] There was no apparent difference in the severity of disease caused by the two serovars.

The serovars isolated from this cluster were among those leptospires most commonly associated with humans in Queensland during 1997. Those most commonly infected with these serovars were also meat workers.[4]

It is noteworthy that all the cases involved in this cluster reported significant exposure to animal urine during their work and, although gloves were supplied, only two of the eight cases wore them. One of the cases - who worked in the condemned area - told the interviewer he was often exposed to large amounts of urine as a result of cattle bladders bursting as they hit the bottom of a chute in the conveying system of the abattoir.

The severity of the illness, and the associated compensation and health costs associated with this cluster, highlight a need for continued efforts at prevention. The use of protective clothing for abattoir workers should be encouraged. General preventative measures involve vaccination of cattle and other domestic animals - but this is not compulsory in Australia and it is thought that beef cattle are generally not vaccinated. (Lee Smythe, WHO/FAO Collaborating Centre for Research on Leptospirosis, Western Pacific Region, Queensland Health Scientific Services; personal communication).

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Erratum

The graph published in issue 24(5):137, in the Communicable Diseases Surveillance report: National Influenza Surveillance, 2000, as:

Figure 10. Laboratory reports of influenza, 2000, by type and week of specimen collection

is incorrect. It is to be replaced by the following graph:

Figure 10. Laboratory reports of influenza, 2000, by influenza type and week of specimen collection