



PERSPECTIVE ON THE PRIMARY CARE TREATMENT OF LEPTOSPIROSIS

Introduction

Acute Leptospirosis is one of New Zealand's most commonly acquired occupational zoonotic diseases. It has a substantial morbidity rate. Mortality is high overseas and there have been fatalities in New Zealand. There are 3 consecutive phases during Leptospirosis:

Incubation Phase: There is usually a delay of 2 - 7 days before symptoms initially occur.

Septicaemic Phase: For the next 7 days, Leptospire can be found in the blood, CSF, urine and most tissues.

Immune Phase: The body reacts by creating antibodies. This phase can last up to 30 days, when Leptospire can only be found in the kidneys, urine and aqueous humor. This summary suggests that general practitioners should:

- be on the alert for the disease – especially in patients with known occupational exposures such as in meat processing plants and on farms – and consider prompt treatment on clinical suspicion
- be aware of the pitfalls in traditional serology screening (see below) and be aware of a new PCR (Polymerase Chain Reaction) test which may aid diagnosis
- give basic advice about prevention
- use correct reporting procedures.

Department of Labour guidelines about the prevention of Leptospirosis by farmers and meat processing companies in 2001 are a useful source of information for patients.

In most parts of New Zealand the disease is confined to people working in industries with exposure to animals or freshly slaughtered carcasses. Workers most at risk of exposure are those exposed to infected animal urine and kidneys. This includes (but is not exclusive to) meat workers in slaughter, gutting, and kidney processing; farmers and their families; vets; sale yard workers and stock truck drivers; septic tank cleaners; sewerage workers; and pest control workers.

The Department of Labour suggests that the role of general practitioners is to:

- Identify Leptospirosis and treating the patient as promptly as is possible by ensuring an accurate diagnosis and instituting appropriate treatment
- Provide appropriate documentation to DoL through NODS (Notifiable Occupational Disease System) forms, and to ACC
- Provide advice to employees and their employers about prevention strategies.



Treatment

Antibiotic treatment of acute Leptospirosis is only effective if undertaken within the first 7 days of symptom onset.

The Department of Labour recommends:

1. Having a high index of suspicion in people who work with farm animals and meat processing employees – who present with flu like symptoms.
2. Carry out two sets of leptospiral titres a minimum of three weeks apart, regardless of the progression or otherwise of the clinical illness or the result of the first sample. Do the first set of titres on the day of the first consultation, before any treatment.
3. Perform the PCR test (See below) as well as the more usual Serology test.
4. Prescribe a course of either Tetracycline or penicillin.
5. Monitor patients for signs of complications, of which renal failure is the most common.

Blood testing

1. Serology

IgM (Immunoglobulin M) becomes detectable within the first week of illness and can persist for months. IgM screening assays can be useful in settings where MAT (Micro Agglutination Test) and PCR are not readily available and when treatment initiation before result confirmation benefits the patient.

There is a need for acute and convalescent samples to be tested in parallel by MAT. A four-fold or greater rise in titre or a demonstrated seroconversion is indicative of current or very recent infection. A single high titre of ≥ 800 in the MAT together with a clinically compatible illness was thought to be diagnostic in endemic countries like NZ; however, this titre has been questioned as being too low in high endemic areas.

Cross reactivity occurs between different serovars.

MAT is currently needed for serotyping and epidemiological studies.

2. Polymerase Chain Reaction testing

PCR has the highest sensitivity of all available diagnostic tests for Leptospirosis. The timing of the appropriate specimen is essential for a correct diagnosis.

Leptospire can be excreted intermittently in the urine. Therefore, a negative result in the context of a compatible clinical illness cannot exclude the diagnosis of Leptospirosis.

In cases of high clinical suspicion a second urine sample should be submitted if the initial specimen tested negative by PCR.

Note: MAT - Patient sera are tested against suspensions of leptospiral antigens of different serovars.

Prevention

Prevention is based around reducing or eliminating exposure to infected animal body fluids (urine). Full details are available in the Department of Labour publication on Leptospirosis or the Department of Labour's website (www.dol.govt.nz). The prevention message to give to at risk people is:

1. Immunisation of herds PLUS stock control is very effective for some species (cattle, deer, and pigs but unproven for others).
2. Animal care workers need to avoid urine splashes or contact with potentially contaminated water by wearing appropriate clothing, covering open cuts and scratches and frequent hand washing.
3. Meat processing plants can control exposure by the means of shields over parts of the process line where urine or other body fluid splashes occur, the provision of appropriate personal protective equipment (PPE) such as face shields and gloves and frequent hand washing.

4. Meat processing plants and the like have a duty of information to their employees about the causation and symptoms of Leptospirosis and the need to consult a doctor promptly if the employee develops flu like symptoms.
5. Employees have a duty to comply with company requirements for using PPE.
6. Employees with open wounds or eczema, expectant mothers and those women hoping to become pregnant should avoid working in areas of known Leptospirosis risk.

Notification

1. Leptospirosis is a Notifiable Disease.
2. If the exposure to *Leptospira* was work related the patient should be invited to sign a NODS card and forward it to the Department of Labour for investigation. Information on the NODS system can be found at <http://www.osh.govt.nz/order/catalogue/181.shtml> and the NODS form can be found here: <http://www.osh.govt.nz/order/catalogue/forms.shtml>

If you are in any doubt about the diagnosis, the Department of Labour suggests you seek advice from your local DoL Departmental Medical Practitioner or the Medical Officer of Health and for questions of treatment and prognosis a specialist infectious disease physician.

