Leptospirosis
A General Practitioner Perspective
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Te Kuiti and Districts

- Population 10,000
- 80 km from Hamilton
- District extends to south, west and east
- 50% population live rurally
- Farming - sheep and beef, increasing dairy
- 3 abattoirs - 1 beef
  - 2 sheep, goats, bobby calves
  - main urban employers
  - 600 employees
Aims

• Overview diagnosis and treatment

• Case histories

• Difficulties in diagnosis

• Implications for ACC and work compensation

• A standardised approach to management
Leptospirosis – Clinical Presentation

- Fever $> 38$ degreesC
- **Headache**
- Lethargy
- Rigors - (shaking)
- Anorexia, nausea, vomiting
- Skin rash
- Jaundice
Clinical Presentation (con’t)

• Brought by someone else
• Not usually sick (younger, male, healthy)
• Male
• Dehydrated
• Wants to stay in bed
• At risk group (farmer, freezing worker)
• Think they may have leptospirosis
Investigations

- Slightly raised White cell count
- Slightly deranged liver function tests
- Creatinine slightly elevated – kidney function
- Blood cultures – rarely done
- Leptospirosis PCR - narrow window
  - positive approx 50%
- Serology - often negative in early stages
  - up to 4 weeks for final result
  - doesn’t always rise to definitive levels
- may be affected by early treatment
Differential Diagnosis

- Number of illnesses can cause similar picture:
  - Influenza
  - Glandular fever
  - Hepatitis
  - Liver infections (cholecystitis)
  - Meningitis
  - Septicaemia
  - Murine typhus
Management

- 50 % suspected cases admitted to hospital
  - symptom control (fever, headache)
  - rehydration
  - IV antibiotics (amoxycillin, ceftriaxone)
  - further investigation for alternative causes

Those managed in the community treated with oral doxycycline with review in 1 – 2 days
Sequelae

- Very variable course
- Most improve in 1 – 2 weeks
- Some take 2 – 3 months – ongoing lethargy and inability to work
- Often 4 weeks to get a definite diagnosis so there is a long period of uncertainty which can have implications for work related compensation (ACC)
Case History 1

• 40 year old male stock agent
• unwell 4 days - concerned about leptospirosis
• No fever or other significant findings
• Rx Doxycycline
• +2 days - high fever, Muscle aches, headache, raised LFTs, normal WCC. PCR done
• +4 days – serum PCR pos.
• 1st sero neg, second Pomona 1:200
• Returns to work 1 week later
Case Hx 2

- 58 year old male sheep and beef farmer
- Unwell 4 days lethargy, fever, headache
- 40 deg C, deranged LFTs (2X n), dehydrated
- IV fluids, amoxycillin
- PCR positive
- 3 days hospital. Back to work after 10 days
- Serology Hardjo 1:100 @ 2 weeks
  - 1:50 @4 weeks
Declined ACC Cover
Case Hx 3

- 66 year old sheep and beef farmer also doing rat bait stations
- Unwell 4 days, fever (mild), headache.
- +2 days worse. Dehydrated. Abnormal LFTs
  - admit WPH to a surgical ward – cholangitis
  - CT of abdomen
  - IV fluids and Amoxycillin 4 days
    Retuned to full work after 1 month
No PCR available (? Performed)
Serology - Canicola 1:400 at 3 weeks
Accepted ACC
Case Hx 4

- 50 year old female freezing worker (offal)
- 24 hr Hx fever, vomiting, rigors
- +3 days admitted hospital with presumed septicaemia. Deranged LFTs
- IV fluids, Ceftriaxone and doxycycline
- +5 days PCR positive
- Off work 1 month
- Hardjo 1:25 at 2 weeks, neg at 4 weeks
- ACC claim not accepted
- + 2 months – still tired and finding work difficult
Case Hx 5

• 50 year old male dairy farmer
• Lethargy 2 – 3 days. Mild headache. No fever
• Jaundiced with markedly deranged LFTs
• Rash over trunk and legs
• + day 4 serum PCR positive and urine weakly positive – delay as over Xmas
• IV ceftriaxone 1 week -intollerant doxycycline
• AST and ALT 10 x normal for 1 month then normalised over next month
• Billirubin peaked at 280 around 3 weeks then normal by 2 months
Case Hx 5 (con’t)

- All serology negative
- Liver biopsy – non-specific inflammatory changes
- +10 weeks - no leptospirosis DNA in 1st sample
- presumed false positive secondary to cross-contamination
- Moderately affected by the illness – light work only
- Declined by ACC
ACC Implications

• Only applies where infection is acquired through occupation
• 4 fold rise in titre or single titre of 1:800
• Takes up to 4 weeks to have the serological proof to submit a claim
• Long period of uncertainty for clinician and patient
• Significant financial implications for the patient
• Positive PCR alone not sufficient – does not identify specific serovars so cannot confidently be attributed to occupational source
A Standardised Approach

- No clear protocols for diagnosis and treatment
- Large number of mild cases are probably missed
- Opportunities lost to treat illness at the early stages – may increase morbidity
- Reluctant to perform serology in less obvious cases because of the complexity
Proposal

• Low threshold for treatment in at risk groups – farmers, freezing works, veterinarians
• Oral doxycycline for 7 -10 days if fever > 38 and symptoms broadly consistent with leptospiroisis
• Low threshold for performing PCR
• Serolgy only for those have positive PCR or index of suspicion is high
In Conclusion

• Diagnosis can be difficult and results confusing
• Several weeks to make a confirmed diagnosis which is unsatisfactory for both patient and clinician
• Current ACC practice means that some/many people are not receiving appropriate compensation
• Rural clinicians would benefit from a standardised approach to diagnosis and treatment