The Scottish View on Lyme Disease

Dr Roger Evans
National Lyme borreliosis testing laboratory, Inverness
Highlands: ‘tick heaven’
Development of Lyme disease testing at Inverness

Samples and cases of Lyme disease in Scotland
1996 to 2014

Year

Number of cases
Number of samples

Cases
Samples
- 2010-2011
- 1440 blood donors
- Screened by EIA
- EIA positive or equivocal samples confirmed by immunoblot (IB)
- 60/1440 (4.2%) IB positive

Munro et al (2015)
Transfusion Medicine (in press)
Public health impact of Lyme disease?

- The public health impact of Lyme borreliosis in Netherlands 2010 (Hofhuis et al Parasites and Vectors (2015) 8:161)

<table>
<thead>
<tr>
<th>Stage of Lyme disease</th>
<th>Incidence</th>
<th>Disability Adjusted Life Years</th>
<th>Cost of infection (Euros)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erythema migrans</td>
<td>21 802</td>
<td>99</td>
<td>5M</td>
</tr>
<tr>
<td>Disseminated Lyme borreliosis</td>
<td>1 268</td>
<td>143</td>
<td>3.5M</td>
</tr>
<tr>
<td>Lyme-related persisting symptoms</td>
<td>905</td>
<td>1506</td>
<td>11.5M</td>
</tr>
</tbody>
</table>
What are we doing in Scotland?

• Cost
  – Measure accurate figures of cost of Lyme disease in Scotland

• Prevention
  – Reduce number of people who become infected

• Diagnosis
  – Improve current laboratory diagnosis
Cost of Lyme disease

- Highland GPs estimate only 20-40% of cases are referred
  - Current study examining GP records and cross referring with laboratory records to produce accurate figure of early LB
- Investigate human and financial cost of Lyme disease in patients referred to secondary care (hospitals)
- Extrapolate nationally
Prevention

- LymeMAP will be a real time map using apps and website to identify areas of risk in the Highlands and Islands for Lyme borreliosis
- Collaborative venture with NHS Highland, Vets, Epidemiologists, Geographers funded by European Space Agency
- Incorporates
  - Satellite information of temperature,
Diagnosis

• Earlier diagnosis
  – Current screening tests not sufficiently sensitive
  – Rash can present atypically
  – Some clinicians not familiar with erythema migrans
  – Developing novel EIA method to fill this gap in diagnosis
Diagnosis

- Need for markers to identify current/active infection
- Investigate the use of avidity immunoblot to determine marker(s) of past or current (early/late) Lyme borreliosis
- PhD thesis student final year
Diagnosis

• Future proposal
  – Discussions of collaborative project between Inverness and Porton Down
  – Investigate different methodologies for diagnosis of early and late Lyme borreliosis
Conclusions

• Lyme disease is an increasing problem
• No accurate figures for Lyme disease in Scotland
• Need for Lyme disease to be a notifiable disease
• Research and development should be appropriately resourced
• Common aim by all interested parties to reduce the morbidity of Lyme disease