**AVIAN TUBERCULOSIS in MAMMALS**

<table>
<thead>
<tr>
<th>ANIMAL GROUP AFFECTED</th>
<th>TRANSMISSION</th>
<th>CLINICAL SIGNS</th>
<th>FATAL DISEASE?</th>
<th>TREATMENT &amp; CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primates: Cercopithecidae, rarely Hylobatidae or New World monkeys. Ungulates, ...</td>
<td>Primarily perorally, occasionally cutaneously or aerogenously</td>
<td>Continuous or intermittent diarrhoeas, weight loss, debilitation. In cutaneous infections skin ulcerations, in pulmonary infections dyspnoea.</td>
<td>Occasionally (associated with HIV, SIV or SRV infections!)</td>
<td>Usually none, in very valuable animals. Cycloserine or Clarithromycin or a combination of Mefloquine, Moxifloxacin and Ethambutol.</td>
</tr>
</tbody>
</table>

### Fact sheet compiled by
Manfred Brack, formerly German Primate Center, Göttingen / Germany,
Alexis Lécu, DVM, Paris Zoo

### Last update
March 2009

### Fact sheet reviewed by
W. Rietschel, Wilhelm Zoologischer-Botanischer Garten, Stuttgart, Germany
C. Furley, Howletts Zoo, Bekesbourne, United Kingdom

### Susceptible animal groups
Primates: Cercopithecidae, rarely Hylobatidae or New World monkeys. Reported also in lemurs (mouse lemurs). Ungulates: deer, bovids, ...

### Causative organism
*Mycobacterium avium-intracellulare* complex with 28 serotypes.

### Zoonotic potential
Theoretically yes. (HIV positive humans are most at risk)

### Distribution
World – wide.

### Transmission
Primarily perorally, occasionally cutaneous or primary pulmonary infections observed. *M. avium-intracellulare* in contrast to *M. tuberculosis* / *bovis* is rarely transmissible between animals but causes environmental (soil, water, structures) contaminations!

### Incubation period

### Clinical symptoms
Continuous or intermittent diarrhoeas, weight loss, debilitation, sometimes lymphadenopathy. In cutaneous infections skin ulcerations, in pulmonary infections dyspnoea.

### Post mortem findings
Irregular yellowish-white thickening of the intestinal wall (often caecum) due to chronic granulomatous enteritis with infiltration by large, foamy, eosinophilic epitheloid cells or macrophages. Necrosis, fibrosis and calcifications are usually lacking in the enteric lesions. Prominent mesenteric lymphatic channels have been reported. In primary lung infections micro- and macrogranulomas with extensive necrosis were observed.

### Diagnosis
Type of morphologic lesions,
Acid fast staining of the agents usually present in huge numbers,
Tuberculinization, using avian tuberculin,
Cultivation of the mycobacteria (slowly growing, thin, transparent, smooth colonies),
PCR (misleading in AIDS-patients!).

### Material required for laboratory analysis
Faeces, morphological lesions.
EAZWV Transmissible Disease Fact Sheet

OIE Reference Laboratory
- Dr I. Pavlik
  Veterinary Research Institute
  Hudcova 70, 62132 Brno
  CZECH (Rep.)
  Tel: (420.5) 33.33.16.01 Fax: (420.5) 33.33.12.29
  Email: pavlik@vri.cz

Relevant diagnostic laboratories
AFSSA - Mycobactéries
22 rue Pierre Curie,
BP 67, 94703 Maisons-Alfort Cedex
FRANCE
Tel: 01 49.77.13.21 Fax: 01 49.77.13.44 Email: ml.boschirol@afssa.fr

Nationales Referenzzentrum für Mykobakterien am Forschungszentrum Borstel
D 23845 BORSTEL, Germany
Tel.: 04537 188 213
Fax: 311

Local medical laboratories.

Treatment
Usually euthanasia, in exceptional cases surgery (granuloma excision) associated with cycloserine or clarithromycin (M.avium – intracellulare is resistant to most tuberculostatic!). In Clarithromycin-resistant strains a combination of Mefloquine (40 mg/kg), Mexifloxacin (100 mg/kg) and Ethambutol (100 mg/kg) for 4 weeks has been recommended.

Prevention and control in zoos
Indoor housing of the animals, desinfection of all materials coming in from the environment, strict quarantine and testing program. UV at usual energy/time contact used for drinking water is effective.

Suggested disinfectant for housing facilities

Notification

Guarantees required under EU Legislation

Guarantees required by EAZA Zoos

Measures required under the Animal Disease Surveillance Plan

Measures required for introducing animals from non-approved sources

Measures to be taken in case of disease outbreak or positive laboratory findings

Conditions for restoring disease-free status after an outbreak

Experts who may be consulted
Frau Dr. S. Rüsch-Gerdes, Nationals Referenzzentrum Borstel.

References


