Capybaras and Brazilian Spotted Fever: Technical Guidelines for Population Management in the State of Sao Paulo

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Brazilian Spotted Fever

Zoonosis

*Rickettsia rickettsii* - obligate intracellular Gram-negative bacterium

Incubation period - seven days

Agent proliferation in the endothelium - thrombus, hemorrhage, perivascular infiltration and focal necrosis

Clinical signs - fever, nausea, vomit, migraine and myalgia

> Spots the palm of the hands and sole of the feet

Antibiotic therapy immediately when clinical suspicion

Lethality can achieve 80%

São Paulo: Lethality last 5 years ~50-60%
Confirmed cases of Brazilian Spotted Fever in the State of São Paulo – 2007 to 2020*
*until feb/2020
SINAN-NET
http://www.saude.sp.gov.br/cve-centro-de-vigilancia-epidemiologica-prof.-alexandre-vranjac/areas-de-vigilancia/doencas-de-transmissao-por-vetores-e-zoonoses/agavos/febre-maculosa/dados-estatisticos
The tick

*Amblyomma sculptum*

- “Star tick” or “Horse tick”

Low host specificity
Great number of natural reservoirs
Wide geographic distribution

Natural reservoirs and vectors of the disease
Vertical transmission
Transtadial transmission
Naturally infected ticks – reproduction affected by disease
Capybaras

*Hydrochoerus hydrochaeris*

Largest living rodent  
Semi-aquatic  
High prolificacy  
Rapid growth rate  
Herbivorous diet  
Social behavior  
Relative tameness  

Agent reservoir in nature  
No clinical signs of disease
Capybaras

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Epidemiological cycle
Capybaras in São Paulo

Degraded environments
  +
  High reproductive rate
  +
  Lack of predators
    (including poaching and hunting)
  +
  Wide food supplies
    (sugar cane)

= High population growth
Capybaras in São Paulo
Resolution SMA/SES n° 01/2016

Criterias (qualitative analysis):

- Presence of ticks *Amblyomma*

- Presence of the etiologic agente *Rickettsia ricketsii*

- Presence of vertebrate hosts

- Human frequency
Resolution SMA/SES n° 01/2016

- Alert Area
- Predisposed Area
- Risk Area
- Transmission Area
Resolution SMA/SES nº 01/2016

**Recommended measures:**

- Information
- Individual safety equipments
- Environmental management
Resolution SMA/SES n° 01/2016

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**Recommended measures:**

- **Population control:**
  - Removal (euthanasia)

- **Surgical sterilization**
Secretaria de Infraestrutura e Meio Ambiente

➢ Normas Específicas

➢ Manejo de Retirada Parcial

➢ Manejo Reprodutivo
Next challenges

Add new scientific knowledge about the disease to the Resolution SMA/SES nº 01/2016

Establish long-term reproductive management procedures in open areas

Landscape analysis to identify capybaras source population

Regional management of capybaras to prevent new human cases of the disease

Promote human-wildlife coexistence
Reduction of the capybara birth rate needed to eliminate *Rickettsia rickettsii* in 4 years.

Polo G, Mera Acosta C, Labruna MB, Ferreira F (2017), Transmission dynamics and control of *Rickettsia rickettsii* in populations of *Hydrochoerus hydrochaeris* and *Amblyomma Sculptum*.
Reduction of the capybara birth rate needed to eliminate *Rickettsia rickettsii* in 2 years.

Polo G, Mera Acosta C, Labruna MB, Ferreira F (2017), Transmission dynamics and control of *Rickettsia rickettsii* in populations of *Hydrochoerus hydrochaeris* and *Amblyomma Sculptum*. 
Diagnosis of the capybaras population in the Campinas Health Region

i. Structured questionnaire; and
ii. Collaborative map.
Definition of priority areas for each city considering the risk of transmission

i. Large groups of capybaras;
ii. Water collection;
iii. Food supplies;
iv. Human frequency.

- Landscap analysis
- Field survey
Thank you!

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