Rinderpest
an overview

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Content

- History
- From control to eradication
- Clinical signs / necropsy
- Transmission
- Etiologic agent
- Diagnostic
- Sampling and biosafety
- Sample shipment
History (1)

– Ancient infectious disease of Artiodactyl
  • Known since the 3rd millennium (Blancou, 1994)
– Associated with war and movement of armies
  • 1184 BC: the siege of Troy
  • 810 AD: Charlemagne’s army bring it back to France
  • 1889: pandemic in Africa through Ethiopia following the war with Italian army
  • WWI: Balkans, Russia, Poland
  • 1969-1973: pandemic in the Middle East (civil war in Lebanon)
Rinderpest over the XX\textsuperscript{th} century

– Europe:
  • Occasional outbreaks, but mainly free of RP due to strict sanitary measures

– America/Australia
  • Occasional outbreaks following live animal importation

– Middle East and Asia:
  • 1969-1973: Lebanon, Israel, Syria
  • 1990’s: Sri Lanka, Russian – Mongolian border, Turkey (Gulf war)

– Africa:
  • 1976: end of the JP15 vaccination program
  • 1979-1984: second African pandemic (first one 1885): 1 million bovine dead

– 1992:
  • Global Rinderpest Eradication Program (GREP)

– 2011: RP is the second disease to be officially declared as eradicated (after small pox in 1980)
Rinderpest control: eradication programs over the time

Chronological table of global and regional vaccination and eradication campaigns

Rinderpest control in Africa and Asia: eradication programs

- Global Rinderpest Eradication Program (GREP, since 1993)

FAO understanding of epidemiological and accreditation situation 2009-2011
Socio-economic impact

- Death rates approach 100% in naïve populations: tremendous socioeconomic consequences

  • famine in cattle-dependant areas (2.5 million bovines and buffalos dead in RSA during the first African pandemic)

  • Wild animals depopulation

  • 1982-1984 outbreaks: US$500 million
  • Vaccination campaigns: US$100 million/year
Clinical signs (1)

- **Incubation period**
  - 3 to 15 days
  - Most of time 4 to 5 days

- **Clinical forms**
  - Classic
  - Peracute
  - Subacute
  - Atypical
Clinical signs (2)

- **Classic form**

  1-2 days
  - Fever (up to 41.5°C), depression, anorexia
  - Serous mucopurulent oculo-nasal discharge
  - Halitosis
  - Drool of fetid saliva
  - Necrosis and desquamation of the oral mucosa

  2-5 days
  - Constipation then hemorrhagic and/or watery diarrhea
  - Dehydration

  4-5 days
  - Death within 6-12 days
Clinical signs (3)

- **Peracute form**
  - Young animals
  - High fever with congested mucous membranes
  - Death within 2 to 3 days

- **Subacute form**
  - Mild clinical signs
  - Low mortality

- **Atypical**
  - Irregular fever
  - Mild or no diarrhea
  - Immunosuppression leading to secondary infection
Necropsy (1)

- **Esophagus**
  - Brown and necrotic foci

- **Omasum**
  - Rare erosions and hemorrhage

- **Abomasum**
  - Hemorrhagic/necrotic abomasitis

- **Cecum and colon**
  - Necrosis, edema and congestion
  - « Tiger stripping »
Necropsy (2)

- **Lymph nodes**
  - Swollen and edematous

- **Gall bladder**
  - Hemorrhagic mucosa

- **Lungs**
  - Emphysema, congestion, areas of pneumonia
Epidemiology

- **Susceptible species**
  - Especially cattle and (water) buffaloes

- **Barrier species crossing**
  - Most of ungulates can be infected
    - Sheep, goats and pigs:
      - subclinical infection – seroconversion
      - transmission to cattle
    - Camels
    - Giraffe, antelopes, hippopotami

- Wild animals not considered as reservoir
Transmission (1)

- Direct contact
  - Nasal and ocular secretion
  - Biological fluids: saliva, urine, blood
  - Feces

- Ingestion of contaminated food or water

- Indirect contact
  - Fomites
Transmission (2)

- **Aerosol**
  - only under very short distances

- **Most infectious period:**
  - 1-2 days before clinical signs
  - 8-9 days after the onset of clinical signs

- **Vector transmission unknown**

- **No chronic carrier state reported**