Information from the EU-RL for diseases caused by Capripox viruses (lumpy skin disease, sheep pox, goat pox)

David Lefebvre, DVM, PhD
Service for Exotic viruses and particular diseases
Scientific Direction for Infectious diseases in animals
Sciensano
Brussels, Belgium

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Lumpy skin disease virus

- Viral infection of cattle
- Entered the EU through Turkey in 2015, spread in the Balkan in 2016
- 2016-2018: EU-funded vaccination and eradication campaign
- 5-45% morbidity, 10% mortality
- Arthropod-borne: mechanical spread by flies, mosquitoes (and ticks)
- Iatrogenic transmission by vaccination and injection
- Other mechanisms of transmission need more research
LSDV infection: clinical symptoms

- Severe general illness with fever and milk drop
- Rhinitis, conjunctivitis, salivation
- Typical painful nodules (5 cm \(\varnothing\)) in the different layers of the skin which become necrotic plugs
- Pox lesions and necrosis of mucosal membranes in mouth, GI tract, respiratory tract → pneumonia
- Swelling of lymph nodes
- Limbs may be swollen and animals are reluctant to move
- Very slow recovery due to general illness, lesions and emaciation
LSDV infection: clinical symptoms
LSDV infection: diagnostic window

- Fever
- Virus in blood
- Skin lesions
- Virus in skin lesions
- Antibody response
- Saliva: 6-64 days
- Nasal discharge: 6-64 days
- Ocular discharge: 8-64 days
- Urine: 10-15 days
- Feces: 4-61 days
- Semen: 159 days
- Organ tissues: 4-21 days

PCR
LSD vaccination in South East Europe– Situation as at May 2017

**Vaccination completed since 2016 in:**
- Bulgaria
- Greece (Northern part)
- Serbia
- FYROM
- Montenegro
- Kosovo
- Croatia
- Albania

**Vaccination in progress in:**
- Southern part of continental Greece & islands
- Bosnia & Herzegovina

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Single LSD outbreaks reported in 2017 (ADNS)
Sheep pox and goat pox virus

- Direct contact with aerosol transmission
- Transmission through mucosae or skin
- Biting insects can serve as mechanical vectors
- In endemic areas:
  - 80% morbidity, 10% mortality
  - up to 100% mortality in imported European or Australian breeds
- Severe general illness with fever
- Skin lesions: macules ➔ papules ➔ necrosis
- Rhinitis, conjunctivitis and swelling of lymph nodes
- Papules on and necrosis of mucosal membranes
- Laborious breathing due to pneumonia
Sheep pox and goat pox virus

• Differential diagnosis:
  • Orf virus / eczema contagious (parapoxvirus)
  • Bluetongue virus
  • Peste des Petits Ruminants virus (Paramyxoviridae) …
  • Attenuated vaccines and inactivated vaccines are available, not yet applied in the EU
- 01/2007: Lesvos Island: 1 outbreak in a sheep holding
- 08/2013: 3 outbreaks in North Evros, with 2ry spread into different prefectures (until 03/2014)
- 10/2013: new 1ry (?) outbreak in Lesvos
- End 2013: 4 outbreaks in Bulgaria
- 06/2014: new (?) epidemic in South Evros, 2ry spread (until 12/2014)
- 12/2016: 4 outbreaks in Lesvos
- 09/2017: 32 outbreaks in Lesvos
Recent activities of the EU-RL for Capripox viruses

- Organisation of an annual PT (ISO 17043 conform)
  - Detection of capripox virus nucleic acid in cell culture supernatant and tissue homogenate
  - Detection of specific antibodies to capripox viruses in serum

- Independent vaccine quality control for vaccines to be included in the EU vaccine banks for LSD or sheep pox
  - Identity of the vaccine strain
  - Titration of the vaccine
  - Freedom from extraneous agents
Recent activities of the EU-RL for Capripox viruses

Development and validation of a TaqMan probe-based real-time PCR method for the differentiation of wild type lumpy skin disease virus from vaccine virus strains

Assistance to the EC and countries

- Missions, trainings and workshops (on request of a country):
  Greece, FYROM, Bulgaria, Belarus, Ukraine, Kazakhstan

- Technical input:
  - Provide (diagnostic) protocols for laboratories
  - Training for technicians and scientists at Sciensano (Kazakhstan, Greece, Bulgaria, Romania)

- Expert advice and reply to (official) questions
Studies

• Duration of immunity and protection after vaccination

• Subclinical infection

• Transmission studies:
  • Vectors
  • Direct and indirect transmission

• LSD and sheep pox vaccine evaluation
Thank you for your attention!