Disease of Wild Ruminants II

Tuberculosis

- THERE HAS BEEN INCREASED INTEREST in tuberculosis (TB) due to infection with *Mycobacterium tuberculosis* complex organisms, including *M. tuberculosis* and *M. bovis*, in wild and captive wild animals following outbreaks of the disease in animals in zoos, primate centers, animal colonies, and game parks.

Tuberculosis

- Infection with *M. tuberculosis* complex organisms can produce extensive disease involving the parenchyma of the lung as well as extra-pulmonary tissues.
- When animals with advanced disease cough, the organism may be transmitted by aerosol or droplets of exudate containing the bacilli.
- Animals may also be infected by ingestion of feed and water contaminated with urine, fecal material, or exudates from diseased animal that contain tubercle bacilli, and this has been found to be a critical route for inter-species transmission of *M. bovis*.

Tuberculosis

- Clinical Signs

- Clinical signs are only rarely apparent in wild animals.
- The obvious difficulty with observing and handling animals in the wild, in farmed herds, or in confined colonies, is that animals with TB remain in these populations when no signs of disease are present.

Tuberculosis

- Gross lesions:

- Wild mammals found to be tuberculous at necropsy after natural death are often without suspicion of TB.
- Gross lesions may be extensive, involving entire organs of one or both body cavities
- Nodular formations with some caseous necrosis are often present.
- In several instances, *M. bovis* has been cultured from specimens with no visible lesions.

Tuberculosis

- Tuberculous lesions observed at necropsy usually have an appearance of yellowish caseous necrotic areas in nodules of firm, white to light gray fibrous tissue.
- Tubercles may not appear discrete in instances where lesions become diffuse with existing tissues.
- Other bacteria and agents are often present within tuberculous lesions, which may affect the gross appearance.

Tuberculosis

- Microscopically, tuberculous lesions from camelids and wild bovines closely resemble those in other bovidae.
- Baboons and several species of monkeys usually demonstrate microscopic similarities to those in other wild mammals.

Paratuberculosis

- Paratuberculosis (Johne's disease) is an infectious granulomatous enteritis caused by *Mycobacterium avium paratuberculosis.*
- MAP is an example of infectious disease agents where a wildlife reservoir does not consist of a single host species, but rather of a matrix of potential reservoir hosts and the environment.

Paratuberculosis

- Due to the development and intensification of deer farming in Europe and worldwide, the prevalence of paratuberculosis in these ruminants has recently increased.
- The high MAP prevalence in farmed deer could potentially contaminate wildlife populations, if infected deer are released.

Paratuberculosis

- Clinical signs:

- Paratuberculosis can be tuberculoid or multibacillary, depending on the more cellular or more humoral immune response of the host.
- Paratuberculosis in red deer and elk is characterised by chronic granulomatous enteritis followed by severe clinical signs with lossof body condition and weight.
- Diarrhea, emaciation and poor condition have also been observed in MAP-infected Rocky Mountain bighorn sheep, and Key deer.

- Non-ruminant species do not usually exhibit the classical clinical signs of paratuberculosis.
- Macroscopic or microscopic lesions compatible with paratuberculosis in culture-positive animals from other non-ruminant wild species are uncommon, with the exception of wild rabbits.
- In this species, macroscopic lesions have been observed in mesenteric lymph nodes, caecal appendix, sacculus rotundus and cecum.
- These lesions consisted of LN enlargement, thickening of the caecal appendix and the sacculus rotundus wall, and multiple granulomatous to abscess-like tuberculous LN lesions

Anthrax

- Anthrax is an acute to peracute, highly contagious disease of domestic and wild mammals.
- Although anthrax is primarily a disease of herbivores, all mammals are suscetible.
- Humans, suids and carnivores are considered incidental hosts.

Anthrax

- Epidemiological factors:

Depends on:

- Spesific properties of the bacterium
- Environmental factors
- Factors affecting disseminaton of the organism
- Animal densities and human activities

Anthrax

- Within an infected host, B. Anthracis spores germinate to produce vegetative forms which multiply, eventually killing host.
- Spores need oxygen.

Anthrax

- Clinical signs:

- The first sign of anthrax is finding dead animals.
- Blood-stained fluid exudates from nostrils, mouth and anus.
- Animals that died from anthrax do not demostrate rigor mortis.
- Blood does nor clot and is in dark-tar color.
- Oedematous swellings of face, troat, neck and/or ventral parts of the body is seen.

Anthrax

- Exensive pulmonary edema, excessive amounts of bloody serous fluids in peritoneal, pleural and pericardial cavities, edema and haemorrhage in lymph nodes and enlarged spleen (the red pulp being blackish-red, soft and sometimes semifluid).