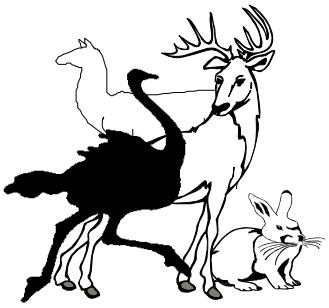
Surveillance Report VLA Miscellaneous Exotic & Farmed Species Expert Group



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1. Notifiable Disease – Tuberculosis

From January to the end of June 2010, *Mycobacterium bovis* was isolated from submissions from 10 alpaca farms, including two that had infection confirmed in 2009 and one small herd that remained under permanent movement restrictions since 2008 due to the owners' refusal to test their animals; all are located in endemic bovine TB areas.

In two separate submissions from farms already confirmed with bovine TB infection, single cases of *M. microti* and *M. avium* were also diagnosed. A diagnosis of *M. microti* infection was also made on another farm with no history of TB. Post mortem findings for *M. microti* included in one case enlarged mesenteric lymph nodes containing thick caseous material; and in the other case there were multi-focal white/yellow nodules in the liver and spleen, with marked enlargement of hepatic lymph nodes. The carcase with *M. avium* infection had miliary lesions in the liver and small caseous foci in the mesenteric lymph nodes.

Clinical signs of mycobacterial infection are non-specific and do not allow discernment of the causative organism. Signs observed may be of variable duration and include any combination of respiratory signs, malaise, anorexia, diarrhoea, weight loss and ill-thrift. Similarly, at post mortem examination it is not possible to distinguish what type of mycobacterial infection is present. While the respiratory form of TB is more commonly reported in alpacas, alimentary forms have also been recorded, and *M. microti* may also be associated with multinodular lung lesions. Multiple nodular mycobacterial lesions in abdominal viscera including the liver and spleen may resemble lymphosarcoma. Conversely, large intra-abdominal neoplasms can resemble mycobacterial infection. Severe multinodular chronic fasciolosis can also be mistaken for mycobacterial infection. Given the range of clinical signs and post mortem presentations, when mycobacterial infection is suspected further laboratory testing is indicated including culture and histopathology to reach a definitive diagnosis.

Suspect cases of TB infection identified in the course of post-mortem examination of camelids are notifiable to the local Animal Health office. In such cases, VLA Regional Laboratories will undertake additional laboratory testing for TB (histology and tissue culture in selective media) free of charge.

2. Zoonotic Diseases

Salmonellosis

An adult sika deer in very good body condition was found dead without any premonitory signs. Post mortem examination revealed the presence of a severe acute haemorrhagic and necrotising enteritis, *Salmonella* Typhimurium was isolated in a septic distribution. Advice was given about the risk of zoonotic spread.

3. Endemic New and Emerging Diseases: South American Camelids

PARASITIC DISEASES

Gastrointestinal nematode infections were confirmed on 12 premises at eight Regional Laboratories. *Haemonchus contortus* was diagnosed on eight of these. Other stomach worms included *Ostertagia* sp., *Trichostrongylus axei* and *Camelostrongylus mentulatus*. *Nematodirus* sp. and *Trichostrongylus* sp. were the main small intestinal species. Poor body condition or weight loss were the most common clinical signs, with anaemia also seen in cases of haemonchosis.

Fasciolosis was confirmed on three premises and was associated with weight loss in all of these and anaemia in one. In one animal, fluke parasites could not be seen at necropsy, despite having grossly visible hepatic scarring, but eggs were detected in faeces.

SEPTICAEMIA

Colisepticaemia was diagnosed once, in a three-day-old alpaca cria.

NEOPLASIA

Neoplasia was diagnosed once in a three-year-old female alpaca. Clinical signs prior to death included inappetance, weight loss, abdominal distension and colic. Tumours were found adjacent to the three stomach compartments, in the liver and in the kidney. The paragastric lesions had obstructed gastric outflow, probably causing the abdominal distension. Subsequent histopathological examination confirmed a round cell neoplasia.

KIDNEY DISEASE

A thirteen-year-old female alpaca died following malaise over the previous two days. It had been recumbent with a swollen abdomen. Ascites was the main lesion detected at necropsy. Histopathology confirmed a severe, chronic, membrano-proliferative glomerulonephritis, which was likely to have caused protein loss, resulting in ascites.

NERVOUS DISEASES

Haemorrhage into the ventricle of the brain was confirmed at necropsy as the cause of ‘sleepiness’ in a newborn cria. The birth had been assisted due to the comparatively large size of the cria, which weighed 8.15 kg.

Sudden death in a male stud alpaca was caused by a cerebral vasculopathy, similar to that seen in other species associated with clostridial epsilon toxicity.

CONGENITAL PROBLEMS

Congenital absence of the urethral opening was associated with a distended bladder in a one-day-old cria with dysuria. Concurrent cervical agenesis was also identified. Other necropsy findings included oedema of the lungs and kidneys.

A full term alpaca cria failed to breath following an uneventful birth. At necropsy, there was a congenital diaphragmatic hernia, resulting in the stomach compartments and much of the small intestine being present in the thorax. There was also bilateral pulmonary hypoplasia.

A six-day-old cria was found collapsed and died the next day. At necropsy, the liver was enlarged and congested and there was an excess of yellow fluid within the thoracic cavity. A large interventricular septal defect was present and the aorta was overlying the right ventricle with narrowing of the pulmonary arteries. This congenital defect is similar to the Tetralogy of Fallot.

SKIN DISEASES

A two-year-old alpaca was euthanased because it had not responded to treatment for ataxia and anaemia. A severe sucking louse infestation was identified at necropsy. This represents the first identification of sucking lice in the UK with a possible association with clinical disease.

Sarcoptic and chorioptic mange were associated with severe skin lesions and death in adult alpacas from two different herds. The first case had a history of chronic skin disease and weight loss. At necropsy, it was emaciated with extensive skin thickening and crusting over the head, ventral neck, legs and ventral abdomen, and *Sarcoptes scabiei* mites were detected. In the second case, dry scabs covered most of the body, an abscess was present over the left carpus and there was a discharging abscess over the lower jaw with extensive cellulitis over the upper jaw. *Chorioptes* was detected in the skin lesions and *Arcanobacterium pyogenes* was cultured from the abscesses. Bacterial cellulitis was considered to be secondary to *Chorioptes* infestation.

Sarcoptic mange in a cria

A four-year-old alpaca was submitted for necropsy following a period of malaise. Gross observations included poor body condition and fly strike, with maggots present in the interdigital space of both front feet. Uterine torsion and an associated peritonitis were also present, the latter being the likely cause of death. The welfare aspects of the case were raised with the private veterinary surgeon.

MISCELLANEOUS

Peritonitis was diagnosed three times at necropsy. The first case, described in the “Skin Diseases” section, was associated with uterine torsion. In the second case, clinical signs in an adult alpaca included weight loss, recumbency and anaemia. The primary problem was a severe gastritis affecting the first stomach compartment; a high faecal worm egg count was also identified. The final case was an adult male alpaca, which had shown inappetance, weight loss and colic prior to death. Fluid resembling ingesta was present in the abdominal cavity, suggesting perforation of the gastrointestinal tract. Unfortunately, the point of leakage could not be identified because of thick adhesions between viscera. Additional findings included non-perforating ulcers in the third stomach compartment and fibrinous pleurisy and pericarditis.

Malignant oedema was diagnosed in an adult alpaca that had been found dead with no previous signs of ill-health. Gross lesions included haemorrhagic oedema of the subcutaneous tissues, particularly over the head and neck, and the facial muscles were dark. *Clostridium novyi* was

identified by fluorescent antibody testing of affected muscles. *Camelostrongylus* infestation of the stomach was an additional finding.

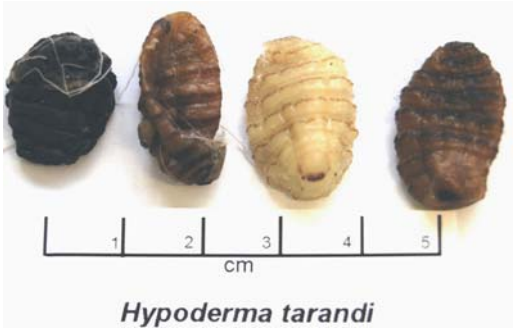
A six-year-old llama was euthanased after a history of weight loss and more recent respiratory symptoms. At necropsy, there was a large volume of yellow fluid in the abdomen and thorax and focal endo- and myocardial haemorrhages. Histopathology confirmed cardiomyopathy, chronic bronchoalveolar pneumonia and hepatic necrosis. This was suspicious of toxic or vascular damage and access to ionophore coccidiostats was suggested as one possible explanation.

An eight-month-old alpaca appeared dull and died the next day. Hepatic lipidosis was confirmed on histopathological examination.

4. Endemic, New and Emerging Disease

Hypoderma tarandi infestation in reindeer

Larvae which had reportedly emerged from pustules in the skin of three reindeer were identified as *Hypoderma tarandi*. Unlike cattle, warble fly infestation in reindeer is not notifiable. The parasites are host specific and their larvae are difficult to distinguish from species such as *Hypoderma bovis.*



Hypoderma tarandi

5. Endemic New and Emerging Disease - Zoological/Captive Collections

Ornamental Ducks

Losses of ornamental ducks were described from a private collection. Two of three of the submitted birds had swollen livers with dark red mottling and focally extensive necrosis and yellow diphtheresis of the cloacal mucosa with focal circumferential lesions in the mid to distal intestines. Histological examination showed an acute moderate multifocal fibrinoid hepatic necrosis associated with intranuclear inclusion bodies consistent with a viral hepatitis due to duck virus enteritis.

A four-week-old **emu** (*Dromaius novaehollandiae*) chick was submitted following a short illness characterized by haemorrhagic enteritis and colic followed within hours by death. On post mortem examination, findings included a fibrinous perihepatitis, two 8mm-diameter, cream-coloured liver lesions and associated adhesions, serous pericardial effusion and inflammation and oedema of the intestinal mucosa. No coccidial oocysts or motile protozoa were detected on parasitology. Histopathology revealed acute, severe, multifocal, haemorrhagic and necrotic enteritis and acute multifocal and subcapsular hepatic necrosis. Gram-staining detected Gram-positive rods associated with the intestinal mucosa. It was thought that clostridial enteritis was the most likely cause of death.

A four-year-old male captive **hooded seal** (*Cystophora cristata*), previously diagnosed as hypothyroid, died after a three week period of lethargy and inappetance despite treatment which included intramuscular administration of antibiotics and multivitamins. Gross pathological findings included extensive muscle necrosis over the left flank, an underlying necrotic iliac lymph node, two necrotic pulmonary masses and a necrotic bronchial lymph node. Routine bacterial cultures yielded a number of isolates and a heavy pure fungal growth was cultured from the necrotic iliac lymph node, wet preparations of which revealed sporangiophores typical of *Mucor* sp. Histopathology of necrotic muscle, pulmonary lesions, bronchial and iliac lymph nodes revealed cellular necrosis with a marked pyogranulomatous and eosinophilic inflammatory cell infiltrate and fungal hyphae consistent with a Zygomycete species. This is believed to be the first report of systemic mucormycosis in a pinniped likely to have originated from an injection site reaction.

6. Publications

Twomey DF, Cooley WA, Wood R. (2010) Confirmation of the chewing louse, *Bovicola breviceps,* in a British llama (*Lama glama*) herd. Veterinary Record 166, 790-1.

These lice are usually of little pathogenic significance and were detected incidentally from llamas that were submitted during a partial herd cull to control tuberculosis. Although they had previously been anecdotally reported in British camelids, the formal identification required additional observations of specific morphological features using light and electron microscopic examination.

Twomey DF, Higgins RJ, Worth DR, Okker M, Gover K, Nabb EJ, Speirs G. (2010) Cutaneous TB caused by *Mycobacterium bovis* in a veterinary surgeon following exposure to a tuberculous alpaca (*Vicugna pacos*). Veterinary Record 166, 175-7.

This report highlighted the potential risk of zoonotic spread of *M. bovis* infection to people who have close contact with infected animals.