

Farm Pets: The 10 Minute Consult Mini Series

Session Two: Camelids

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Animal Husbandry

Characteristics

There are four subspecies of South American Camelid. They are:

1. Llama
2. Alpaca
3. Guanaco
4. Vicuna

There are approximately 70,000 in the UK, mainly Alpacas.

Alpacas are mainly grazers with an adult weight of 55 – 90 kg. The newborn (called a cria) weigh between 6 – 9 kg. Llamas are bigger with an adult weight of 115- 250 kg and a newborn weight of 8 – 18kg. They are browsers. Llamas tend to be more aggressive (Hence their use to guard lambing sheep flocks against foxes). They can be controlled with careful handling by tucking the head under the arm. They can be cast if required. However often they will go into sternal recumbency, the so-called 'Kush' position.

Blood testing

They have thick skin. Blood is normally taken from the jugular vein but this can not be visualised, when raised. Blood should be taken from the right side to avoid damage to the oesophagus. It should be remembered that the carotid artery lies just deep to the jugular on the caudal aspect of the neck.

Micro-chipping

This should be carried out on the left-hand side of the neck, in the crest, a hands breadth below the ear. The skin is tough so some force is required but this MUST be directed at a 45-degree angle to avoid the spine. The whole length of the needle should be used.

Vital signs

The normal pulse varies from 60 – 90. The respiratory rate varies from 10 – 30. The rectal temperature has a normal range of 37.5 – 39 degrees Centigrade.

Teeth and Alimentary System

Teeth

Like cattle and sheep, camelids do not appear to have any upper incisors, only a dental pad. However in reality they have an upper incisor tooth on both sides, which has migrated caudally and resembles a canine. They have three lower incisors on each side. They are all present as deciduous teeth soon after birth. The central permanent incisors erupt at 2 years, followed by the laterals at 3 years and the corners at 3 and a half years.

Males have a total of four canines. They erupt at approximately two years of age. Females and geldings may or may not develop canines. In 5% of males there are deciduous canines, which are present in the first month of life. Camelids are anisomatic. They have 5 cheek teeth (2 premolars and 3 molars) in each of four arcades. The roots of the upper premolars lie in the maxillary bone and the roots of the upper molars lie in the maxillary sinus. All the roots of the lower cheek teeth lie in the mandible.

Crias have their 2 deciduous premolars in each arcade at birth. The first molar erupts at 9 months. The second molar erupts at 2 years and the third at 3 years. The first permanent premolar erupts at four years and the second permanent premolar at five years.

Alimentary system

In place of the reticulum, rumen, omasum and abomasum of the ox, the camelid has three compartments named C1, C2 and C3. There are areas of glandular tissue in C1 and C2 but the last fifth of C3 acts as the true glandular stomach. The rest of the intestine is broadly similar to the ox. The most common torsion is seen in the spiral colon.

Parasites and Clostridial diseases

External Parasites

Fly strike is an up and coming problem in camelids, particularly in alpacas. Owners should be warned. However it is not as common as in sheep. It appears that camelids require a wound to be struck, so perhaps preventative measures are a little over the top. Total removal of maggots using a hair drier is vital. Badly affected animals should receive antibiotics and NSAIDs. 'Summer Fly Cream' is useful for topical application.

Chorioptic mites cause the most troublesome skin condition. There is a multitude of treatments described, mainly using topical 'ivomectins'. Treatment of affected individuals needs to be persistent. There is no doubt that certain animals are very sensitive to infestation and over react. The skin becomes very thickened and so no treatment can penetrate and therefore most treatments in these animals appear to be ineffective. Fipronyl used at ten-day intervals has been seen to be useful. There is good scientific work to show that zinc deficiency is extremely rare. Owners consider it a problem but normally mites are the culprits.

Internal Parasites

Camelids do suffer from gut worms, but this is an over rated problem in the UK thanks to their habit of defaecating in one place and the absence of *Lamanema chavezii*. Gut

worms are more likely to be a problem in large herds. Regular faeces samples from individuals in various groups are well worthwhile for faecal egg counts (FEC). To try to avoid the danger of parasite resistance in small herds, FECs should be taken from all animals prior to worming. It may well be found that such worming is unnecessary. All sheep wormers are safe in camelids. Weights may cause a problem. Under dosing should be avoided. Pour on cattle wormers should not be used as they may cause skin blistering and damage to the fleece. Owners may prefer to use injectable anthelmintics. There is a large increase in the reports of liver fluke in cattle and sheep. Camelids in marshy areas will be at risk. Chronic fascioliasis is more likely to occur than the acute form. 5% Fascinex orally is the treatment of choice.

Coccidiosis is likely to be self-limiting, except in newly weaned animals kept in dirty conditions or stressed by travelling. However camelids get their own coccidia *Eimeria macusaniensis* (called Big Mac) which is highly pathogenic. It is about twice the size of a normal sheep *Eimeria* spp. Treatment with Vercoxan or Baycox at the sheep dose is appropriate.

Clostridial diseases

These certainly do occur in camelids. The main ones are *clostridii perfringens*, *clostridii tetani* and *clostridii sondelii*. There is no evidence that sheep vaccines are worthwhile but they are widely used. If there is any doubt about the tetanus vaccination status any camelid at risk should be given Tetanus antitoxin. The myth that it is toxic in this species is unfounded. Camelids are as sensitive to tetanus as sheep and goats so practitioners should be on their guard. As there are no licensed vaccines available the practitioner has a dilemma, as there are very variable pieces of advice in circulation. *Clostridium sondelii* has certainly been recorded in camelids and so I think the best advice must be to use Bavoxin 10. This should be injected subcutaneously behind the shoulder. 1ml the sheep dose is adequate. A second dose should be given in four to six weeks. For maximum cover I would advise booster injections every six months avoiding injecting heavily pregnant females. If crias were born to unvaccinated dams I would advise a 2ml dose of Lambivac in the first 48 hours of life followed by a second injection in 2 weeks. The normal vaccination regime can be started at 12 weeks.

Colic

Camelids are very stoical. All cases of colic should be taken very seriously. Colic is the most likely cause of recumbency in an otherwise healthy adult camelid. Recumbency should be classified as intermittent, preferred or constant. Coaxing a constant recumbent

animal is very stressful and should be avoided. A gastrointestinal obstruction is the likely diagnosis. Accurate diagnosis is difficult and laparotomy may well be appropriate.

Naturally a raised temperature from a septicaemia may cause similar signs. Neurological disease must be differentiated from colic. The neurological conditions include trauma and spondylitis. Listeriosis has been seen in camelids. Equally musculoskeletal and metabolic diseases should be considered. Musculoskeletal problems should include Myopathy (White Muscle Disease), which is recorded in crias and young adults. Obviously Fractures and arthritis must be included in this group. Hypocalcaemia will occur in female camelids but not around parturition, like cows. It is seen at peak lactation like in mares. Another metabolic condition is heat stress. Bacterial infections like septicaemia, peritonitis and pneumonia will cause recumbency. The toxemia associated with severe fly strike will also cause a camelid to be too weak to stand. Urinogenital causes would obviously include parturition. Uterine torsion can occur like the cow at parturition. Normally correction can be accomplished by rolling. It also can occur earlier, but in the final trimester, like in the mare. Surgical correction through a midline approach is recommended. Urinary calculi can cause recumbency. Open mouth breathing in recumbency indicates a very poor prognosis. Camelids with their thin legs are very prone to bedsores as a result of recumbency. Self-trauma to their prominent eyes is a danger. Lack of movement and nutrition will lead to further problems of metabolic imbalance.

The Female and Parturition

The female may reach sexual maturity at a year but this is not the norm. Breeding normally is delayed until at least two years and often to three years. Camelids are induced ovulators. Mating takes place in sternal recumbency. Gestation length is 342-350 days. Gestation lengths are shorter in autumn bred animals. Twins are extremely rare. Problems at parturition are also unusual except with over protective owners. There is plenty of room in the birth canal. However the long limbs and long neck may cause problems. Parturition normally occurs during the day. Caesarean section can be performed under GA in dorsal recumbency. I favour a left flank approach (90% of pregnancies are in the left horn) under local. Great care is needed stitching up the uterus as it is very vascular. Physical mothering is not as evident as in ewes. Owners tend to over react. The placenta is diffuse like in the mare. Should expulsion be delayed by more than six hours therapy is required. 2ml of Oxytocin can be given. (0.5ml Oxytocin can be given at four hourly intervals to aid milk let down). Uterine prolapse will occur. Keep the animal in sternal recumbency, but do not extend the hind legs, as in the cow. Give an epidural as in the sheep (2.5ml local and 0.5ml 2% Xylazine). Remove placenta. Replace

uterus. Normally this is not difficult. Give Antibiotics NSAIDs and Oxytocin (2ml). Check Tetanus status. Use a Buhner suture. Remove in 48 hours. To induce parturition use prostaglandin (2ml Lutalyse or 0.5ml Estrumate). This works within 24 hours if given within 10 days of due date. The use of Dexamethasone or Oxytocin is not recommended. The same dose of prostaglandin can be used to abort unwanted pregnancies or to treat a retained Corpus Luteum (Beware that it is not a CL of pregnancy). 2ml Receptal repeated in 12 hours will aid ovulation at service.

Pregnancy diagnosis can be performed by ultrasound. This needs to be per rectum between 28 and 49 days and after that from the flank. Wool clipping is not required. Spirit can be used as the ultrasound medium. There is a danger of damage to the rectum. A guide has to be used and large quantities of lubricant. The VDS does not advise per rectum for routine pregnancy diagnosis. If infertility examinations need to be carried out per rectum, I would advise contacting the VDS.

Sedation, Anaesthesia and Castration

Alpacas are gentle creatures and can readily be controlled so sedation is rarely required. They will often go into the 'kush' position or can easily be cast. This is not so with llamas who can be a handful. The main thing is to get close into them so that any kick will not be as painful. Xylazine is very effective. 1ml of a 2% solution given intramuscularly will certainly sedate a llama, which may well then 'kush'. 0.75ml is quite sufficient for a large male alpaca.

Anaesthesia can be carried out the hard way. Xylazine intravenously followed by ketamine intravenously. This will allow intubation and gaseous anaesthesia with 'isoflo'. This is not my preferred method. First of all intravenous injections are not easy as the owners do not like the wool clipped. The skin is very thick so the jugular can not be visualised. The carotid lies only just below the jugular particularly in the caudal third of the neck. Secondly intubation is very difficult unless you are skilled with a long laryngoscope. Thirdly there is a real danger of inhalation pneumonia on induction and recovery. My preferred method is an intramuscular injection of a cocktail into the quadriceps muscle. I will give you the dose for a typical eighteen-month-old llama weighing 80kg and also an eighteen-month-old alpaca weighing 60kg. The dose can be used on a pro rata basis. For 80kg: 5ml ketamine, 2.5ml xylazine (2% solution) and 0.5ml Butophanol (All in the same syringe). This will give twenty minutes of anaesthesia after five to ten minutes. For 60kg: 3.3ml ketamine, 1.7ml xylazine and 0.3ml Butophanol.

The reason I use these weights is because there is myth, strongly held by owners, that castration should be delayed until this time. They feel that if animals are castrated before sexual maturity you will get weak long legs. I have no way of disproving this.

Castration can be performed in two ways. Naturally the veterinary charge will reflect the manner of castration. This can be a proper sterile operation under GA. The surgery is performed in a similar manner to castrating a dog. With skill and forethought there is time under the intramuscular anaesthesia described above. The second method is to perform castration under local anaesthesia either standing or in the 'kush' position. Ideally the animal is well restrained behind a solid gate e.g. in the front of a cattle trailer, with an inner partition. Access can be provided from behind e.g. the 'jockey' door. The surgery is performed as for a three-month-old calf. The only difference being that there is usually a large amount of fat in the scrotum which should be removed. Remember to check the tetanus status.

TUBERCULOSIS IN CAMELIDS

Alpacas in particular seem to be particularly severely affected by TB and through a combination of a very long neck and a particularly explosive cough, they can disseminate TB bacilli considerably further than most animals. Furthermore, both llamas and alpacas can have open lesions in the lungs and throat with no visible sign of infection. Thus any infected camelids are a serious potential risk to other animals at a show, including of course goats.

Just to make life even more difficult, at present, the only legally accepted test for TB in Alpacas remains the skin test. That is known in alpacas to miss a high percentage of infected animals, with a failure rate of over 90% in some herds. Two blood tests are under development, but are yet to be officially validated. Both appear to be at least as accurate as say the skin test in cattle. However, as yet, neither blood test can be used on a herd until a skin test has been carried out. That means that herds can be deemed clear on the basis of a skin test, whereas a blood test, which cannot legally be insisted upon, may have disclosed reactors, which are a danger to other livestock.

That is the scientific reason for bringing pressure to bear on the authorities. There is also a second reason.

At present, camelids do not have to have official identification, and therefore stopping their movement is somewhat impractical unless owners of herds where infection is known, take it upon themselves not to move their stock from home.

The British Alpaca Society were surprised in 2008 when TB first flared up in alpacas. The initial reaction of a lot of alpaca owners was to keep quiet about it, but it soon became clear that matters were getting out of hand, and Di Summers set up a helpline for those affected, and this highlighted some heartbreaking stories of serious outbreaks of disease, with one herd of about 130 losing over 70% of their stock if not more.

The then Chairman of the BAS, Mike Birch, after initially hoping that things might settle down without too much hassle, then realised that that was not going to happen, and he and Di organised a series of excellent roadshows designed to raise awareness of the

problem. These took place during 2009, and were fronted by camelid veterinary expert Dr Gina Bromage, and were attended by over 1000 delegates in all..

Di Summers, Gina Bromage and Mike Birch have now produced a website.

[<www.alpacatb.org>](http://www.alpacatb.org)

The definitive book on camelids is 'Medicine and Surgery of South American Camelids' by Murray Fowler published by Iowa State University Press.

I have written a book for British Veterinarians. Veterinary Treatments in Llamas and Alpacas. This can be purchased under my name on amazon.