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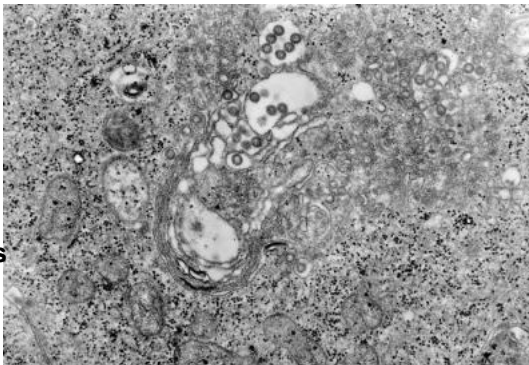
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Infected tissue with Rift Valley Fever



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Foot and Mouth Diseases (FMD)



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Brucellosis
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Donkey with skin problems

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**Contagious
Pleuropneumonia
Anthrax
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Diarrhea
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disease
Anaplasmosis
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Mouth
Diseases
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Lantana plant

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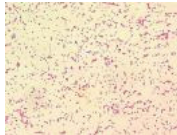
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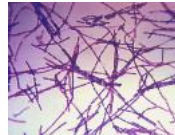
Brucellosis



Tuberculosis

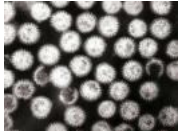


Contagious



Anthrax

Brucellosis
Tuberculosis
Contagious
Pleuropneumonia



Anthrax

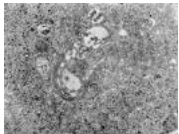
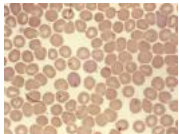
Rabies

Milk fever

Mastitis

Diarrhea

Rabies



Milk fever

Mastitis

Diarrhea

Mucosal
disease

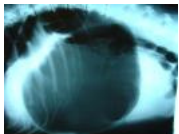
Mucosal

Anaplasmosis

Babesiosis

Rift Valley

Anaplasmosis



Babesiosis

Rift Valley

Fever

Foot and

Foot rot

Bloat

Liver Flukes

Foot and

Mouth

Diseases
(FMD)



Foot rot

Bloat

Plant

Eye problems

Skin diseases

Liver Flukes

Plant

poisoning

Eye

problems

Skin

uropneumonia

Contagious Pleuropneumonia

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Information of www.infonet-biovision.org

diseases	Local names: Luo: Athung'a / Kamba: kyambo / Kipsigis: chebwonit / Embu: kiviti / Gabbra: sombessa / Kikuyu: Rimunia / Maasai: olkipei, longishu, ol gibe, ol kibei / Meru: mohir / Samburu: ikipei / Somali: sambab, harwein, agmar / Swahili: ugonjwa wa mapafu / Turkana: loukoi, lotai / Luvugusu: madjukhu / Nandi: chepuonit / Randile: ikipei /
Fodder	
Production and Conservation	Common names: Peripneumonia, peripneumonie contagieuse (French) peripneumonia contagiosa (Spanish)
Products	Description: Zoonotic disease

Introduction



This is an infectious disease of cattle and goats which affects the lungs.

- In cattle it is called "contagious bovine pleuropneumonia" (or CBPP)
- in goats "contagious caprine pleuropneumonia" (or CCPP).

Contagious pleuropneumonia is caused by *Mycoplasma mycoides* variety *mycoides*. The disease is wide spread in the semi arid Sub Saharan Africa, particularly running from West Africa to the horn of Africa. It also occurs in India, China, and South East Asia. It does not occur in USA, Australia and South Africa.

Contagious Pleuropneumonia

Transmission

The disease is transmitted between animals by inhalation of droplets expelled by infected animals. The causative agent does not survive for long in the open environment hence direct contacts is essential for transmission. Incubation period takes a minimum of 7 days to several weeks after infection. Infection spreads faster where the animals are crowded e.g. in houses, stable, market and during transportation. Lungers (clinically normal group of animals in the herd) are important source of infection in the herd- especially when they are stressed.

Contagious pleuropneumonia can kill from 60 to 100% of the herd.

Signs of Contagious Pleuropneumonia



Checking temperature using a thermometer

© William Ayako, Kari Naivasha

Incubation varies from 3 - 6 weeks but can extend up to six months.

- **High fever**
- **Lack of appetite; the animals are tired and weak**
- **Rough hair**
- **Painful, fast, breathing becomes distressed often with painful cough**
- **Grunting when the animals breathe out**
- **The animals stand with their head lowered and neck stretched, back arched and with their elbows spread pointed outwards to take off pressure from the lungs. If forced to move, the animal has a dry cough that turns moist**
- **The animals will often stand facing the wind to allow in more air in the lungs**
- **In very severe cases, a thick yellow discharge comes from the nose and there is a swelling under the chest.**
- **The animals lose condition and death may occur after 2 or 3 weeks. Those animals who recover remain carriers of the disease and are dangerous for the**

healthy animals in the herd.

Prevention - Control - Treatment

- **Vaccination. There are developed control programmes in most countries and farmers are encouraged to support, cooperate and work with those programmes. Vaccines against CBPP are used in such control programmes. The control programmes usually start with vaccinating twice per year then once year. In developed countries, control programmes usually aim at test and slaughter of all infected animals.**

- **Separate sick animals from healthy ones.**
- **Common traditional practices**
 - **Somali: Boil the lungs from the animals that have died from this disease and cut them into very small pieces. Make a 1 cm long cut in the tip of the ear of a healthy animal and insert a thin piece of lung under the skin. Rub the place so that the piece stays under the skin. Use one piece for each cow.**
 - **Samburu: Burn and grind the lung of an animal that has died of the disease. Make a cut in the outer side of the ear and put the lung powder on the cut.**
 - **Maasai: Collect the blood from an animal that has died from this disease and dry it in the sun. Crush the dried blood to powder and mix with urine from another sick animal. Drench animals with this mixture.**
 - **Maasai: Boil in water meat from an animal that has died from the disease. Give the soup to healthy animals to drink.**

(Source: ITDG and IIRR, 1996)

Recommended treatment

It is not advisable to treat animals for CBPP. Treated animals with antibiotics will recover but remain carriers of the disease. The carriers will make it difficult to get rid of the disease. Ask the veterinary for help.

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Foot and Mouth Diseases (FMD)



Foot and Mouth Diseases (FMD)

Scientific name: *Aphtae epizooticae*)

Local names: Luo: olawo, achany / Maragoli: azuya / Gikuyu: muguruma / Gabbra: oyale / Kamba:muthingithu / Kipsigis:ngworek / Maasai: Olkuluk, loirobi, olguluk / Samburu: ikulup / Somali: dila, labe, abeb, abeeb / Swahili: ugonjwa wa miguu na midomo / Turkana:lojaala, ebaibai, lokulup / Luidakho: man?gwali / Luvugusu: gamalenge / Nandi: maikutiet
Common names: afthosa, fievre aphteuse (French) fiebre aftosa (Spanish)

Introduction

WARNING: This is a notifiable disease! If you suspect an animals have foot and mouth disease, you must inform the authorities immediately.

Foot and mouth disease is a highly contagious viral infectious disease of cattle, sheep, goats and pigs. It can also affect wild animals, especially buffalo, which act as a significant hosts and in which the disease is generally much milder than in cattle. The virus can be harboured for periods in the nasopharynx of wild fauna. The importance of the disease in small stock such as sheep and goats is largely as carriers of disease to cattle. But in Kenya it has ben shown that goats are infrequent carriers and sheep not at all. The disease is enzootic in many parts of the world. It is caused by seven serotypes of Foot and Mouth disease virus namely: - A, O, C, SAT 1, SAT 2, SAT 3 and ASIA 1. The disease is mainly transmitted through inhalation or ingestion of the virus from contaminated feeds and direct contact with infected animals. Human can also transfer infection to other animals through movement of people and vehicles from an infected premises to susceptible areas. Meat amd milk and semen from infected animals can spread infection. As can ticks, and people working with infected cattle can harbour the virus in their nasal mucosa for up to 28 hours. Windborne spread can be important under certain conditions as is spread by flocks of birds. The important thing to remember is that this is one of the most contagious diseases known and act accordingly by taking every possible measure to prevent the entry of infection. The incubation period is on average 3 to 8 days (1 to 21) after the animals are infected with virus. Infected animals will then discharge the virus through the saliva, rupture of vesicles and blisters on the tongue and feet and other discharges from the nose and through coughs to the materials in contact or directly to other animals thereby infecting them.

Signs of Foot and Mouth Disease

- **There is severe lameness, due to the presence of blisters and vesicles between the toes, which then rupture and become secondarily infected.**
- **The animals develop a high fever and become weak and dejected, and there is a rapid loss of condition. Mortality in calves is high.**
- **Cattle stop eating due to the pain arising from the lesions in the mouth.**
- **There is a serious drop in milk production.**
- **The coat becomes rough and there are blisters and vesicles inside the mouth especially on the tongue. There is profuse salivation with long ropey strings of saliva with a characteristic smacking of the lips.**
- **Blisters also form above and between the claws and some blisters appear on the teats and abortion is common.**
- **Most animals recover but there is a frequent chronic and sometimes permanent loss of condition.**
- **In some instances heart failure may occur, causing sudden death.**
- **Sheep and goat suffer a much milder disease than that affecting cattle.**
- **Any combination of salivation and lameness with blisters and vesicles in the mouth must always be regarded as being Foot and Mouth Disease until proved otherwise.**

Prevention - Control - Treatment

Prevention and Control

- **Report occurrence immediately so as to invoke quarantine after the disease is confirmed by the veterinary authorities. Such quarantines should be lifted only by the authorities, usually 6 weeks after the last recorded case.**

- **Disinfect all the premises where the disease has occurred and motor vehicle tyres with suitable disinfectant to prevent further infections.**
- **Vaccinate regularly. This should be done after determining the strain of the virus to be able to give the correct sero type vaccine. Usually a multivalent vaccine is administered every 6 months as preventive measure. Outbreaks have occurred following vaccination and have been attributed to the production of carrier animals.**
- **Strict adherence to sanitary measures e.g. destruction of feed and beddings of infected animals.**

Recommended treatment

There is no medical treatment for foot and mouth disease. However, you can help the animals to recover:

- **Shade them from the sun and give them plenty of water**
- **Give them soft feed such as green soft lush grass, better than hay as the blisters make it painful for the animals to eat. The addition of molasses is advised to give the animals energy.**
- **Give antibiotics by intramuscular injection to prevent secondary infection of the blisters. WARNING: Do not give antibiotics by mouth to adult cattle, camels, sheep and goats. It makes these animal sick by destroying essential micro-organisms in their rumens, bacteria which are there as a vital part of the digestive process.**

Common traditional practices

- **Kipsigis:**

Mix 10 kg of maize flour in 10 litres of water. Add two kg of pounded finger millet. Allow to ferment for 3 days. Give an infected animal 4 litres of this brew to drink.

Treatment for hooves: Spread 5 kg of ash or 5 kg of Magadi soda mixed with 5 kg of ash in the morning and in the evening, at the entrance of the boma. So the cattle must walk through it on the way to graze and when they return

- **Luo:**

Pound a half a handful of fresh olulusia (Vernonia amygdalina) roots and half a handful of fresh olulusia leaves. Mix this with 4 kg of finger millet flour and 5 litres of water. Sieve and drench adult cattle with 2 litres (1 litre for calves, goats and sheep) twice a day until recovery.

Treatment for hooves: Allow the animals to stand in cold, standing water, or herd them through cold, sticky mud. This helps relieve the sores on the feet.

- **Turkana:**

Mix 500g of Magadi soda in 5 litres of water. Drench adult cattle with this amount (2.5 litres for calves). Repeat twice a day until recovery.

Treatment for hooves: Press a warm wet cloth on the wound for several minutes, then cover the wound with butterfat. Repeat until the wound heals.

(Source:ITDG and IIRR 1996)

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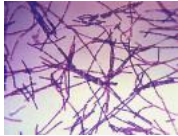
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- **The Organic Farmer magazine No. 50 July 2009**

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Anthrax



Anthrax

Local names: Luo: Aremo / Embu: thita / Kamba: ndulu / Gabbra: chimale, chirrmalle / Kikuyu: Muriru / Kipsigis: bursta / Nandi: purasta / Maasai: Emburwo, ol akirikir, ol ogereger, em bjangat, eng eanairogua / Maragoli: likenji / Samburu: lokuchum, nokulupo / Somali: kut, khut, kud, baargariirshe / Swahili: kimeta, imetha / Turkana: enomokere, lolewe, lookot, lotorob, lokuchum / Iteso: atular / Luidakho: lishenji / Luvugusu: muyaka /

Common names: fièvre charbonneuse, charbon (French) carbunco bacteridiano (Spanish)

Description: Zoonotic disease

Introduction

WARNING: Notifiable disease! If you suspect an animal has anthrax, you must inform the authorities immediately.



Anthrax is a high infectious bacterial disease of livestock that can kill people. It doesn't affect chickens but it is common in ostriches. The disease occurs worldwide but is mainly common in tropical and sub tropical countries. It is caused by bacillus anthracis bacteria which are very difficult to kill because they are able to form spores. Spores protect them for many years outside the animal body. The bacteria can survive for several years in livestock products such as hides, wool and bones.

Transmission

The disease is transmitted through pastures, food and watering points which are contaminated by the spores. Infection is influenced by such factors as drought and communal watering points. The animals may be forced during drought to graze on short grass which may be contaminated by the infected soil.

Water holes used by different species of animals are known to be another source of infection. Tissues of infected animals may be moved by rats and carrion eaters and transfer infection.

Humans are fairly resistant and are infected after an occupational hazard affecting workers in tanneries. The workers may as well inhale spores and suffer an acute fatal pneumonic form of anthrax. Cutaneous anthrax is common among people who carry meat and other animal products from infected carcass.

Signs of Anthrax

Following incubation of 1 - 2 weeks, the disease may manifest in very severe, severe and less severe forms.

- In very severe form, there is a short illness and this makes the disease difficult to treat. The animal develops high fever, difficult breathing followed by convulsion, collapse and death.**
- In severe form, the disease would last about 2 - 3 days before death. The animal will appear depressed,**

listless and have high fever. The mucus membranes in the eyes and gums are congested and hemorrhagic. There is difficulty in breathing caused by edematous swelling in the throat.

- In less severe cases, some animals may survive for 1 week and others will recover.

In both severe and less severe cases, affected cows may abort and have a reduction in milk production. The milk will be blood stained or appear yellowish in color. Infection in the alimentary tract may cause dysentery.

It is highly risky to take samples of the disease by unqualified laboratory personnel. In all cases where anthrax is suspected, a strip of tape or cloth soaked in blood from a cut superficial vein, dried and placed in an air tight container together with blood smear samples are adequate. The sampling procedure should be carried out by qualified laboratory personnel.

Prevention - Control - Treatment

Prevention and control require a strict adherence to veterinary regulations to prevent and minimize the spread of the disease among livestock and human.

- Carcass of any animal suspected to have died of Anthrax should not be opened but may instead be buried or burnt to prevent contamination of the environment.

Signs after death:

- Carcass is stiff and bloated
- Bleeding from ears, mouth, nose, anus and vagina
- Blood is dark and does not clot
- Contaminated beddings, premises and feeds should be destroyed or thoroughly disinfected.
- Vaccination of all livestock at risk should be done annually as a legal requirement. The live Sterne strain spore vaccine is available in most countries and offers annual protection.
- Quarantine should be imposed in all infected areas to prevent movement of animals into and out of such areas. Such quarantines should be lifted at least 6 months after disinfection procedures are complete.

Recommended treatment

Treatment with antibiotics such as oxytetracycline 4 mg/kg body weight for 6 days or streptomycin 5 g intramuscularly twice daily is effective.

Common traditional practices

- **Kipsigis:** Collect 0.25 Kg of each of the roots of masheget (*Synadenium grantii*), manguyangel and priwob-set (*Fuerta Africana*) and 0.25 Kg of the bark of soget (*Warburgia ugandensis*). Boil in 1 litre water for 30 minutes. Sieve and allow to cool. Drench adult cattle with 1 Fanta bottle (300 ml) 3 times a day for 3 days. Use half this amount for calves.
- **Samburu:** Take a 6 cm long root of sokotei (*Salvadora persica*), and the same weight of sokotei leaves. Pound the root and leaves, and boil for 30 minutes in 10 litres of water. Give this mixture to the animal instead of its regular drinking water until the animal has recovered.
- **Luo:** Crush a handful of roots and leaves of kagino, mix with 2 litres of water and boil for at least 30 minutes. Drench the animals twice a day with 0.5 litre. Give half this amount to calves, sheep and goats.

(Source: ITDG and IIRR, 1996)

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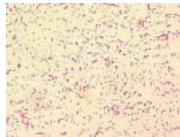
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Brucellosis



Brucellosis

Local names: Embua: kuvuna / Luo: tuo bwogo / Kikuyu: muhono, kihuna / Maasai: Aibiriu, olik ibiroto / Samburu: ikiboroto / Swahili: homa ya kutupa mamba / Turkana: akiyech / Maragoli: luhusidza / Luvugusu: livure / Nandi: sutonik /

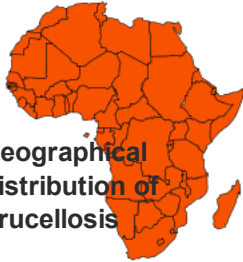
Common names: contagious abortion, Bang's disease

Description: Zoonotic disease

Introduction

Brucellosis is a bacterial infection affecting domestic animals such as cattle, camels, donkeys, goats and sheep. People can catch the disease from animals.

The disease occurs world wide and is also known to occur in all tropical countries. It is caused by four strains of the bacterium *Brucella*, in various livestock. Only one



Geographical
Distribution of
Brucellosis

species *Brucella abortus* is of economic importance in cattle. *Brucella melintensis* and *Brucella suis* occasionally affect cattle that come in contact with small ruminants and pigs respectively. *Brucella abortus* has worldwide distribution. Cattle of all ages and sex can be infected with *B. abortus*.

Mode of spread

The disease is spread when aborting animals discharge *B. abortus* bacteria in the placenta, foetus and vaginal discharges to the ground where they can survive for several weeks. The cattle become infected when they ingest or inhale contaminated material with the pathogens. Humans are affected when they consume milk from infected cows. The disease can be transmitted to the unborn calf through the placenta by the infected dam. The disease has negative economic consequences to stockmen in both modern intensive dairy systems and as well as pastoral production systems.

Signs of Brucellosis

Incubation varies from a few days to a few months.

- In in-calf females, the bacteria invade and cause abortion from the seventh month of pregnancy.
- After abortion, afterbirth doesn't come out (retained placenta). This can further develop to Metritis, which often cause infertility.
- In bulls, symptoms may not show up but if so; they may include inflammation of the testes, lack of sexual activity and even infertility.
- There is subcutaneous swellings containing infected fluid on the legs of infected cattle and the placenta often has a thickened leathery appearance with necrosis on the cotyledons

Diagnosis. Abortions occurring after 6 months of pregnancy are indicative. However, blood samples should

be taken for detailed laboratory analysis to confirm the disease. Blood samples should be taken for agglutination test. When abortion occurs, aborted fetuses should be taken intact in a sealed container to the laboratory for detailed examination. The fetuses should be handled carefully with gloves to avoid human infection.

Prevention - Control - Treatment

The disease can be controlled by:

- **Managing effective sanitary measures in the cattle environment**
- **Vaccination. Calves under eight months can be vaccinated with live vaccines (S.19) to prevent infection. Such vaccinations can provide lifelong immunity. However, the live vaccine should be used with care in adult animals because it can cause abortion in in-calf females and inflammation of the testes in adult males. Adult cattle should be vaccinated annually with dead B. abortus vaccine (45/20).**
- **Because of the danger of human infection, infected fetuses, placenta and cows should be handled with great care. Handlers of such material should always wear gloves for protection. They should also ensure that keep their hands away from the mouth, nose and eyes until after the hands are thoroughly disinfected.**

Recommended treatment

Brucella infections are known to be persistent and hence treatment with antibiotic is not recommended. It is therefore not practical and not viable to make any treatment attempt.

Other useful home remedies

- **Isolate all cows that have aborted until all the discharges have stopped**
- **Burn or burry all contaminated materials such as fetuses, foetal membranes**
- **Clean and disinfect all cattle premises which may be contaminated with fetuses and foetal membranes.**
- **With the risk of human infection, proper hygienic precautions should be taken when handling abortions**

and where infection is known to occur in certain herds of cattle, drinking of raw milk and un pasteurized milk products should be prohibited

Common traditional practices

- **Samburu: Crush a piece of sokotei root (*Salvadora persica*, toothbrush tree) about two fingers long. Boil in 5 litres of water for 1 hour. Allow the mixture to cool, than sieve and drench the animal has aborted. Use 2 litres for cows, 1 litre for sheep and goats.**

(Source: ITDG and IIRR, 1996)

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Tuberculosis



Tuberculosis

Local names: Luo: Kahera / Kiswahili: Kifua kikuu / Turkana: Lokud / Maragoli: Kehera / Maasai: Enkirhoget / Samburu: nkiroget /

Common names: pearls disease, phthisis, consumption, tuberculose (French)

Description: Zoonotic disease

Introduction

WARNING: Notifiable disease! If you suspect an animal has tuberculosis, you must inform the authorities immediately.

Tuberculosis is a bacterial infection of domestic animals, mainly affecting cattle and man. It is caused by *Mycobacterium bovis* bacteria and is distributed world wide. The bacterium is transmitted when an infected animal excretes the organism in various discharges such as exhaled air, saliva, nasal discharges, faeces, urine and milk. The germs can survive outside the host for several weeks as long as they are not exposed to harsh climatic conditions like direct sunlight.

Housed animals become infected when they inhale the causative organism. Grazing animals are infected through ingestion of the organism through feed supplementation and water troughs while calves may be infected by drinking milk from infected cows. Human beings are very susceptible to *Mycobacterium bovis* and *Mycobacterium tuberculosis* and they become affected by consuming un-pasteurized milk. The course of the disease is always chronic and usually lasts several months during which affected animals lose condition and may eventually die.

Signs of Tuberculosis

The infection causes an abscess in the lung as the first point of entry through inhalation of the causative organism. The infection then spreads to other organs and draining lymph nodes. Where infection is due to ingestion of the germs, the initial lesions would appear in the lymph nodes in the throat or intestines. As the disease advances, lesions in the lungs would cause persistent coughs stimulated by exercise. Lymph nodes in the head, neck and fore quarters further become enlarged. The animal develops labored breathing and discharges yellowish secretion from the nose. The animal would also develop undulating fever through out the disease. Some times, the infection of the udder occurs thereby causing hard, nodular mastitis. There would be a general loss of body condition.

Diagnosis

Enlargement of peripheral lymph nodes are indicative of the infection but not conclusive. In tuberculous mastitis the signs often involved inflammation often found at the base of the quarter of the udder with painless swellings where as in tuberculous Metritis the signs include yellow colored pus. Accurate diagnosis of tuberculosis requires the application of tuberculin test.

Prevention - Control - Treatment

Because of the zoonotic nature of the disease, a lot of efforts have been put on strict control and eradication of the disease. Control measures depend on test of all animals for the disease using the tuberculin skin test. This test requires skilled man power to execute. Where animals are confirmed with the disease, infected animals can be removed and premises cleaned and disinfected. However, this exercise requires sound infrastructure and financial support to compensate farmers whose cattle are removed for slaughter.

- **Isolate sick animals**
- **Do not buy or sell animals which you think may have tuberculosis**
- **Sick people should not handle animals**
- **Ensure strict bio security in the environment where cattle are kept. Clean and disinfect cattle premises**
- **WARNING: Consumption of raw milk by humans should be discouraged. People get tuberculosis from animals. Boil milk before you drink it.**

Recommended treatment

Advancements have been made on treatment of human tuberculosis which can be applied for treatment of cattle. However, treatment of cattle is contra indicative and as such emphasis is put on prevention and control.

No traditional treatment recommended.

- **Ask the veterinary for help**

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Rabies



Rabies

Local names: Luo: Tuo swao, Rabudi, swawo / Swahili: Kichaa cha mbwa / Turkana: long'okwo, arthim, nkerep, nkwang' / Somali: ramis, nyanyo, waalan, walan / Samburu: nkuang, nkwang / Maasai: Olloitirwa LolLdien, enkeyian orki, enkeya oldian / Meru: nthu cia kuuru / Maragoli: bulalu vwa tsimbwa / Gabbra: nyanye, aidurr / Kamba: mun'gethya, nduuka ya ngiti / Kipsigis: miotap ngokto /

Common names: hydrophobia, lyssa, rage (French), rabia (Spanish) Tollwut (German)

Description: Zoonotic disease

Introduction

WARNING: Notifiable disease! If you suspect an animal has rabies, you must inform the authorities immediately.

Rabies also known as *Hydrophobia* (fear of water) is a highly fatal virus infection of the nervous system caused by *Rhabdovirus*. It is spread world wide and affects all warm blooded animals including man and other domestic and wild animals except birds. It is transmitted when infected animals bite other animals and contaminate the bitten wounds with the saliva containing the virus. The disease manifests by irritation of the brain resulting into over excitement, mania and attack complex by the infected animals. In Kenya, the disease is more serious in rural than urban areas. It is common in the rural areas because most of the rural people are not aware of the dangers associated with the disease. It is occurrence in the rural areas is also attributed to the social attachment to the local dogs kept and regarded as pets by the youth. The dog is also regarded as a source of security in the rural areas and is present almost in every homestead. Because of the fact that most of the rural people are not aware about the hazards of the disease, they are not bothered to vaccinate their dogs to protect them against rabies.

Signs of Rabies

How rabies is spread

The virus is excreted through the saliva of an infected animal and the route of transmission is the contamination of fresh wounds with infected saliva usually produced after the bite of the rabid animal. It can also be transmitted through inhalation and ingestion of the causative agent. The virus spreads from the site of the bite to the brain, other nerves of the body and salivary glands thus causing the clinical signs several

weeks or months later. The dog is regarded as the main transmitter of the disease but other domestic animals such as cats, cattle, sheep and goats can as well transmit the disease among themselves as well as to human.

Clinical signs of rabies

Following the bite of a rabid animal, the incubation period takes a few days to several months. In cattle, incubation period takes three weeks but may also vary between 2 weeks to several months as well. The disease can last from as short as two days to about a week after the onset of the clinical signs. The first sign is change of behavior which may take two to three days in dogs. The next stage is the excitement stage whereby the animals would display the typical signs of rabies such as restlessness, aggressiveness and voice changes. Depending on the species of the infected animal, the voice changes may include howling, roaring and bleating. Infected people would be heard barking like dogs while for dogs, they would make unprovoked attacks on other animals or objects. This stage is referred to as 'furious' rabies and lasts for about four days. This is the most dangerous stage of transmitting the disease to human by dogs. The infected animals then develop paralysis from the rear limbs and would refuse to eat or drink while profusely salivating. The paralysis phase is often referred to as 'dumb' rabies due to the dominant clinical feature. In this form cattle would show uncoordinated gait and the hind quarters would show periodic collapse. The tail would become flaccid. There would be decreased sensation evident over the hind quarters followed by tenesmus and paralysis of the anus. The animals become unable to bellow then develop total recumbence. Death then quickly follows.

Diagnosis of rabies

Presence of a carnivore showing signs of nervous disturbance should be suspected of the occurrence of rabies in a given locality. However, histological analysis of brain tissue would reveal the presence of Negri-bodies in the cytoplasm of the nerve cells of the brain.

Prevention - Control - Treatment

Appropriate prevention and control measures

- **Vaccination of all domestic dogs**

It is advisable to conduct a mandatory vaccination of all domestic dogs. Since rabies is regarded as notifiable disease, the campaign should be enforced by veterinary act and a breach of the act should be punished by the law.

- ***Regular baiting of stray dogs in the urban and rural areas***

After every vaccination campaign against rabies, all stray dogs and other dogs that have not been vaccinated should be baited in accordance with enforcing act

- **Joint collaboration**

Effective control of rabies requires a joint collaboration between various stake holders such as: veterinary department, public health, provincial administration and ministry of education and the public.

- **Avoid contact with aggressive dogs and cats**

- **Keep stray dogs and jackals away from livestock**

Warning!!!

- **Remember always that there is no treatment for rabies and it is not advisable to try to treat an infected animal with rabies because of the dangers in handling such an animal.**

- **It is recommended to immunize people bitten by stray dogs soon after they get bitten with an anti rabies vaccine.**

- **The cost of anti rabies vaccine for human immunization is expensive. In Kenya the cheapest anti rabies vaccination for human would cost about Kshs. 10,000/- in public hospitals or more in private hospitals. Therefore it is cheaper to vaccinate a dog at a cost of Kshs. 50/- once in the dog's life. This would protect your dog from getting or transmitting rabies.**
- **Remember also that the Kenyan law requires that all dogs must be vaccinated against rabies.**
- **Rabies is a highly notifiable disease and therefore any suspected case of rabies should be reported immediately to the veterinary department.**

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Foot rot



Foot rot

Local names: Luo: achany, abok / Gabbra: bargao / Kipsigis: moeet / Gikuyu: rugrumo / Maasai: Alelei, en jalan / Maragoli: bulwaye vwe tsimbagayu / Samburu: ngojini, namurie / Somali: raaf-dila, rafqarir, gumeed, rafdilnac, rafjac, bog, boog / Turkana: ekichodinu, ebaibai /

Common names: foul-in-the-foot, pietin, pietur (French), pederro (Spanish)

Introduction

Following periods of prolonged rain, outbreaks of foot rot appear in cattle, sheep and goats, even those kept under extensive production systems. Humid, warm conditions favour the organisms responsible. Foot rot can be a major disease problem under intensive dairy production systems. Other factors such as breed and housing are known to influence the occurrence and severity of the disease. Under intensive systems where exotic breeds are kept the disease occurrence is more severe than in extensive systems where most indigenous breeds are normally kept.

Fusobacterium necrophorum is considered to be the major cause of Foot Rot in cattle although other bacteria such as *Bacteroides* species can also be involved. *Fusobacterium necrophorum* can be isolated from faeces which may explain why control is difficult. The organism is a normal resident of the environment of cattle. Injury to the interdigital skin provides a portal of entry for infection. Maceration of the skin by water, faeces and urine may predispose to injury. The animals contract the disease when they walk

in wet, muddy places where infected animals have been. It can also start after an injury to the foot. The disease has negative economic consequences to the farmer because it hinders the animal from feeding at the time when there is plenty of good feed.

Adult cattle are more commonly affected than younger animals and Bos indicus cattle appear to more resistant than those of European breeds.

In sheep there are two degrees of Foot Rot - Benign Foot Rot and Virulent Foot Rot plus another called Ovine Interdigital Dermatitis. In Virulent Foot Rot two organisms are required to initiate infection - Fusobacterium necrophorum and another called Dichelobacter nodosus. The former lives in the sheep's environment, the latter in carrier sheep and the latter is required for transmission. It cannot live for more than two weeks on soil or pasture but according to its degree of virulence sheep develop Benign or Virulent Foot Rot or Ovine Interdigital Dermatitis. In Virulent Foot Rot very severe lameness is caused with serious damage to the hoof.

Signs of Foot rot

Foot rot in cattle is a subacute or acute necrotic infection originating from a lesion in the interdigital skin that leads to a cellulitis in the digital region. Pain, severe lameness, fever, anorexia, loss of condition and reduced milk production are the major signs. The condition in cattle is usually sporadic, affecting individual animals. Usually one limb only is affected, usually a hind leg. Open lesions can become infected with secondary invaders and the interphalangeal joint can become infected. Typically the claws are markedly separated, the inflammatory oedema is uniformly distributed between both digits, the animal is reluctant to bear weight on that foot, the skin between the toes is discoloured, later it begins to slough and has a whitish appearance and has a foul smell.

Foot Rot in sheep is a herd disease, unlike the condition in cattle and must be treated as such. Lameness may be severe such that the sheep remain recumbent or on their brisket and knees. Sheep lose condition,

rams may be unable to serve, wool prouction is reduced and areas of the hoof become detached and maggots may invade infected areas.

Prevention - Control - Treatment

Prevention and control

Move the animals to sandy (drier) places to control foot rot. Keep the ground clean and dry, especially in bomas

With regard to cattle drain areas around drinking troughs, gateways and frequented tracks. Contaminated concrete must be frequently cleaned and scraped free of manure. Preventive use of a footbath with an antiseptic and astringent solution eg copper ir zinc sulphate- 7 - 10% in water - is beneficial.

Regarding sheep any sheep added to the flock must be examined for evidence of Foot Rot and if lesions are found these sheep should either be treated and isolated for a month, or rejected. All sheep in the flock must be treated and any which do not respond to treatment should be culled. Alternatively two flocks should be created - a clean flock and one separate from the group with no lesions.

Treatment tips

- 1. Isolate animals with severe infection to stop further spread of the disease to the other animals**
- 2. Cattle: Treatment must begin as soon as possible! Good results are obtained with Penicillin IM for 3 days, but with an increased dose, up to double that normally recommended. Long-acting Oxytetracycline also gives good results as does a three day course of Trimethroprim/Sulphadaizine IM.**

Sheep: Penicillin/Streptomycin again giving a double dose, Oxytetracycline, and Erythromycin are effective. This must be followed by careful examination of all four feet and careful hoof paring to remove all underrun horn and to expose necrotic tissue. Bactericidal solutions are then applied by aerosol spray, footbathing or footsoaking. The latter include 10% zinc sulphate, 10% copper sulphate or 5% formaldehyde. Repeat every 5-10 days for 3 treatments. The success of treatment is much greater if the sheep are kept in a completely dry environment after treatment. The feet of treated sheep should be examined every 1 - 2 weeks to identify those needing further treatment.

3. Wash the foot especially the skin between the claws with hot water- as hot as you can put your hand in. But carefully - especially in cattle, as in the anterior region of the interdigital area the dorsal pouch of the interphalangeal joint is very superficial.

4. Cut away or trim any decayed part of the hoof to remove the infection that is underneath it Walk the animals through a foot bath twice per week. The foot bath can be prepared with 5 % formalin solution or copper sulphate solution at 10%.

5. Walk the animals through a foot bath twice per week. The foot bath can be prepared with 5 % formalin solution or copper sulphate solution at 10%.

6. Apply juice from some kind of euphorbia trees such as euphorbia kibwezi to cauterize some kinds of abscesses and secondary infections. The juice also stops the wound from bleeding.

7. Application of antiseptic dressings with sulphonamides or antibiotics. These are available in the form of aerosol sprays such as the chloramphenicol gentian violet.

8. Astringents such as the copper sulphate in the form of a paste or aqueous solution at 5% or formalin 5% for three days.



Application of aerosol spray to cure foot rot

© William Ayako, Kari Naivasha



Application of formalin on trimmed hoof

© William Ayako, Kari Naivasha



Hoof trimming knives

© William Ayako, Kari Naivasha

Common traditional practices

- **Somali:** Wash the foot with salty water repeatedly until the animal recovers
- **Kipsigis:** Apply fresh or used engine oil or brake fluid twice a day for 1 week.
- **Turkana:** Grind 500g of dry eteteleit (*Acalypha fruticosa*) leaves to powder. Apply a teaspoon of the powder to the wound Repeat every two days until the animal recovers.
- **Luo:** Pound a handful of Ilulusia (*Vernonia amygdalina*) leaves and mix with half a cup of ghee. Apply this amount onto the effected part twice a day until it heals.

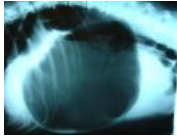
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Bloat**Bloat**

Local names: Luo: ich-kuot / Embu: nunvita / Gabbra: furfur / Gikuyu: huhita / Kamba: kwimbanywa / Kipsigis: kowiren / Maasai: Embo'ngit, Ediis, empomgit / Maragoli: kuhaata, myika munda/ Meru: mpwna / Samburu: mberini / Somali: bakhakh, dunbudhyo, balao, baalallo, dhibir, dibiyio / Turkana: lotebwo, akitebukin, akiurur / Pokot: lesana /
Common names: torsion, gastric torsion

Introduction

With the onset of long rains, livestock keepers especially goat, sheep and cattle keepers should become aware of the dangers of bloat to their livestock. Bloat occurs when there is an abrupt nutritional change in the diet and especially when ruminants feed on lush green pastures. It simply means animals have too much gas in their stomach.

How animals get bloat

The rumen of cattle, sheep and goats is like a large vat in which a mixture of partly digested feed and liquid is continuously fermenting producing large quantities of gas. For example, an average cow can produce over a thousand litres of gas in a day. Some of the gas is removed by absorption in the blood stream but most of it is removed by belching during "cudding". If the gas can not escape, the rumen literally "blows up" and the animals gets bloat. It can happen when:

- **Animals eat too many legumes or too much fresh, lush gras (e.g. olenge grass (Luo))**
- **Animal eats too much grain (e.g. finger millet, Acacia pods)**
- **Animal eats cassava leaves or peales**
- **Something blocks the passage of food in the stomach or gullet**

Types of bloat

There are two types of bloat namely: Frothy bloat and Gassy bloat.

- **Animals get frothy bloat when the rumen becomes full of froth (foam) because the digestion is upset. Several animals in the herd get this type of bloat at the same time when they graze on a lot of wet, green pasture mixed with legumes in the field. Animals can also get it when they feed on ripe fruits or other feeds that ferment easily. Some poisonous plants can cause sudden and severe bloat. A sudden change in the type of food can also cause frothy bloat. Frothy bloat normally happens at the start of wet season when the diets of grazing animals abruptly changes from dry feeds to wet lush pastures.**
- **Animals get gassy bloat when the rumen becomes full of gas because the esophagus is blocked. This type of bloat normally affects one or two animals in the herd at the same time. They get it when they choke on some thing or eat plastics or when they get a disease like tetanus that paralyzes and hinder them from ruminating.**

Signs of Bloat

- **The left side of the abdomen behind the ribs becomes very swollen causing distressed breathing.**
- **The animal stops eating**
- **The animal stamps its feet on the ground**
- **Sometimes green froth comes out of the mouth and nose**
- **Tongue sticks out slightly**
- **Some animals have a little diarrhea**
- **Animals may collapse and die quickly.**

Prevention - Control - Treatment

Prevention of bloat

- 1. Feed the animals with dry grass to fill them up before you put them on new wet lush pasture**
- 2. Do not water the animals just before you put them on to wet pasture**
- 3. Do not graze the animals on wet green pasture early in the morning. Wait until when the pasture has been dried up by the heat of the morning sun**
- 4. You should increase grazing hours of the animals on wet green pasture gradually for about a week**
- 5. Avoid abrupt changes in the diet of animals and always give newly introduced feeds in small quantities**

Treatment of bloat

Depending on the type of bloat, several methods of treatment can be applied:

- Do not feed the animal for a few hours and make the animal to move around**
- For less severe cases of frothy bloat, give 500 ml and 100 ml of any edible vegetable oil, solid cooking oil, butter oil, ghee or milk orally to large and small animals respectively.**
- For very severe cases where the animal can not swallow, you can tie a rope across the mouth of the animal to make it chew the rope to stimulate belching**
- Give bloat medicine such as the following trade names: Stop Bloat, Bloat Guard or Birp once daily for 3 days**
- For very severe cases of frothy and gassy bloat when the animal is distressed and can not breathe, it is advisable to puncture carefully the skin and the rumen of the animal on the left flank to let the gas out.**

Use a knife or any sharp thing but the best instrument to use is the trochar and cannula. The hole should be made at a hands' width behind the last rib and a hand away from the edge of the backbone. Push hard because the skin is very tough. Gas and froth will come out when you make the hole. It helps to put a tube or cannula through the hole to keep the hole open. Pour some vegetable oil into the rumen through the hole to help stop further gas or froth formation. --> Call a veterinarian to attend to a punctured abdomen or a difficult case of bloat

Common traditional practice

- **Gabbara:** Mix 4 teaspoons of laundry detergent with 1 litre of milk. Drench 1 litre for an adult cow (0.5 litre for sheep and goats) OR mix 2 teaspoons of chewing tobacco with 1 litre of water. Drench 1 litre for adult cattle (0.5 litre for sheep and goats). For kids and lambs drench with 2 teaspoons)
- **Turkana:** Mix 500g Magadi soda with 1 litre of water. Stir well and drench adult cattle with the mixture. For calves, goats and sheep use 0.5 litre. For large camels give 2 litres.
- **Luo:** Mix 0.5 litre of paraffin oil with a handful of olulusia (*Vernonia amygdalina*) leaves and 2 spoons of salt. Drench with half this amount.
- **Kamba:** Mix a handful of wood ash with 1 Fanta bottle (300ml) of water. Sieve and drench adult cattle with this amount. Use half the amount for calves, sheep and goats.

(Source:ITDG and IIRR 1996)

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Milk fever



Milk fever

Scientific name: *Parturient paresis*

Local names: Kikuyu: Murimu wa iria

Description: Management disease

Introduction

Milk fever is a disease of mature cows, occurring a few days before, but mostly just after calving. It is common in imported high yielding dairy cows, especially Channel Island breeds such as Jerseys or Guernseys. Milk fever is not known in the indigenous stock. Milk fever is caused by low calcium levels in the body due to the sudden onset of lactation at calving. The nutritional status of the cow in the dry period is known to influence the risk of the disease. Diets low in dry matter such as lush pastures and diets with high calcium during dry period can predispose the cow to milk fever. Low magnesium in the diet hinders absorption of calcium and hence is predisposing to milk fever. The disease is more risky in cows after third calving and is rare in calving heifers.

Signs of Milk fever

- **The first sign of the disease is loss in appetite followed by slight drop in temperature.**
- **The affected animal become uncoordinated, fall over and remain seated with the head resting on the shoulder.**
- **Dull eyes and shivering, constipation is a common feature and sometimes a goose-stepping gait is seen.**
- **If not treated immediately, the animal may go into coma and die within a day after the first signs. Since the rumen stops functioning, bloat becomes a complication and may cause death**

Prevention - Control - Treatment

Prevention and Control

- **Feed the cow with the correct levels of nutrients from the late pregnancy to peak lactation**
- **Feed diets with the right dry matter content such as offering additional hay in combination with lush pasture.**
- **Feed balanced mineral supplement which appreciates the inter-relationship between calcium and magnesium**

Recommended treatment

If the cow is found to be lying on her side she should be immediately propped on to her chest. Otherwise she is liable to get bloat or inhale stomach content with the attendant risk of developing aspiration pneumonia. But do NOT use rocks or boulders!

Slow intra venous infusion 400 ml of 20% calcium borogluconate should be administered as soon as is possible. If this is difficult then give the same volume by subcutaneous injection. Give in several sites and massage the sites of injection to disperse the solution. At the same time remove the calf. Response to treatment is seen by the cow belching, snapping and opening her eyelids, breathing deeply, passing dung and sitting up. Even if the cow appears to be unconscious give i/v calcium. Even cases which look hopeless can recover. The calf should be removed and the cow not milked for 24 hours. On day two milk half the estimated volume from each quarter and feed this to the calf. On day three milk normally. If the calf is allowed unrestrained access to the cow or if unrestrained milking is carried out the cow may well go down again. Get a flutter valve and have it clean and ready for use. There is nothing more frustrating than trying to give 400 ml calcium by i/v injection with a 20 ml syringe and it is guaranteed to damage the jugular vein.

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Mastitis



Mastitis

Local names: Luo: Tuo thuno / Embu: yele / Gabbra:hiha goru / Kipsigis: miatapkinai / Maragoli:lifuuti / Somali: candhobarar, candabarar, carar, galleh, goof / Turkana: loebeta / Kikuyu: Murimu wa nyundo, kuruara thukamo / Maasai: Enkeeya Ollki /

Common names: mammitis, mammaite (French), inflammation de la ubres (Spanish)

Description: Management disease

Introduction

Mastitis is an inflammation of the udder of milking animals. It is caused by bacterial micro-organisms, mainly *streptococci* and the *staphylococci* which are common in the animal and the animal environment. The infection occurs when the micro organisms gain access to the udder through the teat canal. The infections in the udder affect the quantity and quality of the secreted milk. The disease is known to cause economic losses of up to 40 % of the herd productivity.

The disease occurs wherever and whenever the animals are bred, fed and managed with the intention to increase milk supply. Indeed the higher the level of production, the higher the occurrence unless there is very strict control measures continuously put in place. The animal is predisposed to the disease by several factors such as the age, state of lactation, milk yield, hereditary factors, trauma and lack of hygiene. Animals get most often mastitis when they have just had babies and are giving most milk. Pigs get sometimes mastitis when their teats are bitten by the sharp teeth of baby pigs. Sheep and goats can get very severe mastitis called *contagious agalactia*.

Signs of Mastitis

There are three forms of mastitis:

Sub-clinical mastitis which can only be detected by the laboratory examination of milk drawn from the udder of affected cow. This form of mastitis is mainly caused by *streptococcus agalactiae* which is found in the animal. Where production of milk is meant for export market, this form of mastitis is known to contribute to a big proportion of rejected milk.

Mild clinical mastitis has distinct changes in the udder sometimes detectable by touching it. In this form, the udder becomes firm to the touch in one or more quarters. The changes in milk are, however more definite.

This form of mastitis can be examined using the black plate in the strip-cup. Milk can be seen to be of watery consistence and of abnormal color, which often could be pinkish, or yellowish due to blood staining. Flakes or clots in milk may as well be noticed by the strip - cup test.

Acute or severe clinical mastitis in which, milk changes are more definite with the udder having typical inflamed signs. The milk changes consist of yellow sediment sometimes with blood clots. The milk may also appear green or yellow-green and even with foul smell especially when the infection is caused by pus forming bacteria (the *Corynebacterium pyogenes*). The udder changes consist of swelling and pain. The teats may reveal injury signs at closer observation. As the disease progresses, the udder becomes hard, the milk yield decreases and milk becomes thin, watery or grey in color.

Use of proper mastitis diagnostic kits

- Farmers are advised to carry out regular milk sampling for bacteriological and chemical analysis in well-equipped laboratories to guarantee quality and ensure safety. The analysis can be done by the Department of Veterinary services in the Veterinary Investigation Laboratories (VIL) milk testing laboratories of the Ministry of Livestock and Fisheries Development.**
- The use of a strip-cup when milking is strongly recommended as a means of giving a first indication of the presence of mastitis in the herd. A strip-cup is cup shaped metal container of a quarter litre capacity with a ledge about 3 cm down from the rim on which a disc of fine gauze or shiny black top plate sits. The gauze allows milk to pass through but flakes and clots are held while the black plate picks discolorations as well as other abnormalities in milk.**
- California mastitis or Schalm test can also be used by the farmers. This test detects rapidly and clearly high levels of leucocytes in milk. The test kit (plastic paddle) together with the test solution is obtainable from the firms dealing in dairy equipment.**



Strip cup for testing mastitis

© William Ayako, Kari Naivasha



California mastitis tester

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Drawing milk from different teats on a CMT to test for mastitis

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Prevention - Control - Treatment

Prevention and Control

- Use frequently mastitis tests such as strip cup for an accurate determination of mastitis in herd
- Disinfect teats with mastrite solution. Apply mastrite solution using antispill cup. The solution is available in the following forms: *hypochlorite*, *iodophor* and *chlorhexidine*.

- Where only a few animals are positive, culling can be done.
- Herd autogenous vaccines can be used but they are expensive

Since mastitis is a management disease in a dairy farm, it will some time persist even with the most careful hygiene. With this in mind, dairy farmers are advised to adhere to the following eight control measures:

1. Milk the cows having mastitis last.
2. Milkers should thoroughly wash their hands before and after milking each cow.
3. Hot water mixed with a dairy disinfectant should always be available in the dairy.
4. A separate clean udder cloth or a disposable tissue paper should be at hand for cleaning of the udder.
5. First streams of milk from each quarter of the udder used to test for mastitis should not be dropped on the floor but should be directed into a separate container with a dairy disinfectant.
6. Constant running of water over the floor of a milking shed is advantageous.
7. Where machine milking is practiced, footbath with disinfectant should always be provided.
8. Normal milk room hygiene including washing of containers and equipment should be continuous.

It is worthwhile for farmers to note that the most essential prerequisite to develop any control program is an accurate



determination of the extent of the disease in the herd. If the above control measures are followed by the farmers, the veterinary costs of treating the disease would be minimized.

Recommended treatment of mastitis

- **Treat the animals as soon as possible**
 - **Keep the udder as empty as possible by milking the animal as often as you can. -**
- Infected milk can transmit infection to other animals**



A cow with mastitis undergoing treatment

© William Ayako, Kari Naivasha



Multi ject tubes for treatment of mastitis

© William Ayako, Kari Naivasha

Apply antibiotics

**directly into the
udder. The
following
antibiotics can
be infused
through teat
canal:**

- **Penicillin at
a dose rate of
50 - 200,000
units**
**Tetracycline
at a dose rate
of 100 - 400
mg**
- **Streptomycin
at a dose rate
of 0.25 - 1 g**
- **Neomycin
at a dose rate
of 0.5 - 1 g**
- **Polymixin at
a dose rate of
50 mg**
**Erythromycin
at a dose rate
of 300 - 600
mg**

**How to apply
antibiotic
directly into
the teat:**

**Step 1 : Milk
the udder until
it is empty**

**Step 2: Clean
the end of the
teat**

**Step 3: Put the
tip of the tube
into the teat
and squeeze
the antibiotic
up into the
udder**

**Step 4:
Massage the
teat and the
udder**

- **If the
disease is**

**severe, also
give
antibiotics by
injection!**

**The following
drugs can be
used:**

- **Penicillin at
5 million units
every 12
hours**
- Tetracycline
at 1 - 3 g
every 24
hours**
- Streptomycin
at 10 - 11 mg
per kg body
weight every
24 hours**

Common traditional practices:

- **Turkana: (1) Mix a handful of dikdik faeces with a little water to make paste. Smear the mixture onto the udders and teats. Leave it overnight. Do not allow the calf to suckle. The swelling goes down by the next**

morning. (2) Burn dry donkey faeces in a pot. Put the pot under the udder of the sick animal until it swets. Repeat if the condition does not improve

- Luo: Crush a handful of *oyieko* (*Sesbania sesban*) leaves. Mix with 125g of cream or butter for 5 minutes. Rub the mixture into the affected area until the swelling disappears.
- Kipsigis: Chew a handful of *chemogong* (*Ajuga remota*) leaves and stems. Spit 2 mouthfuls of the juice and saliva directly onto the swollen udder once a day for 7 days.

(Source: ITDG and IIRR 1996)

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Diarrhea



Diarrhea

Local names: Embu: kuvarua / Gabbra:halabata, albahti, albata / Luo: Ambululu, diep / Kipsigis:keburketan / Kikuyu: ruharo,kuharuo / Kamba:wituuu / Maasai: Ankorotik, olodo kurum / Maragoli: kunyalala munda / Samburu: ngorotit, nkiriato, ngiriata, kep-ngochek / Somali: har, har dig, hardik, shutan, daab, adeya / Turkana: eremonu, lomaritenit, anemoriloleo, lolera /

Description: Management disease

Introduction

Introduction

Diarrhea is a common disease in livestock and poultry, especially in newborns. It occurs in many diseases and is not itself a specific disease. It is caused by a few single specific micro-organisms or combined micro-organisms which include: *Escherichia coli*, *Salmonellae*, *Viruses* and *Protozoa*. This form of diarrhea is transmitted via the environment where the animal is kept and the calves become exposed to these organisms at early age. Through fecal droppings, from mature cattle, calves or other species of animals' pathogens contaminate the environment. Only when the environmental load of the organisms' increases to high levels, the calves can become infected. However, the disease is more serious in intensive than

extensive system.

A brief outline of the infectious organisms causing diarrhea is as follows:

Signs of Diarrhea

Most of the organisms which cause the infection are capable of damaging the intestinal wall. They cause hence reduced absorption of the fluids taken by the calf resulting into diarrhea which can be blood stained. The infected calves become dehydrated. They become weak, lose appetite, get a low body temperature (hypothermia) and heart failure. The eyes become conspicuously sunken and are dull looking with the skin becoming dry.

Escherichia coli

Is common and found in large numbers in the intestines of all animals including adult and young calves.

***E. coli* cause acute diarrhea lasting one to four days. The calves become depressed, weak and lack appetite. There may be a high fever at the initial stages of development then the temperature drops below normal and the calf may die.**

Salmonella

There are many different species of Salmonella that can infect and cause severe disease in young calves with bloody stained diarrhea. The most common are: *Salmonella typhirium* and *Salmonella dublin*. Outbreaks of salmonellosis can cause death of the infected calves. Those that survive may take several weeks to recover.

Clostridium perfringens

These organisms cause diarrhea with blood stains (dysentery) often with abdominal pains and death within twenty four hours.

Rotavirus and corona virus

These viruses invade the intestinal lining and are the cause of profuse diarrhea in calves.

Cryptosporidium

The diarrhea caused by these organisms tends to persist for several weeks and the severity depend on the level of infection. The infection is normally mild and animals tend to recover satisfactorily.

Coccidia

These parasites are major cause of diarrhea in calves which are several months old. There cause loss of appetite and profuse yellow and watery diarrhea.

Prevention - Control - Treatment

Prevention and Control

- **Get a new-born to drink enough the mother's first milk (the colostrum) from its mother in the first 24 hours of its life. Adequate feeding of colostrum to calves at birth provides passive immunity to calves.**
- **Control intestinal parasites properly**
- **Vaccinate animals against diseases that cause diarrhea.**
- **Clean calf pens regularly**
- **Avoid over crowding of calves**
- **Find out which specific organism is causing the disease. This requires a laboratory test on feces samples or rectal swabs handled by a skilled veterinarian, since some of the pathogens are harmful to human. Where the pathogens are known, the right antibiotic for effective control of the disease can be**

applied.

- Isolate calves with diarrhea from the healthy ones.

Recommended treatment

- Reduce milk intake
- Somali Kenya: Give 0.5 litre of sour milk once or twice a day to young animals that have not yet started to eat grass. Let animals rest until they recover. (For camels, cattle, goats and sheep)
- Turkana: Boil butterfat in a small pot and let it cool down. Fill a 20 ml syringe (without a needle) and inject the butterfat 4 times a day into the rectum. Hold the animal by its hind legs so its head is down, and shake it a little (For goats and sheep).
- Somali Kenya: Boil 0.5 litre of water and add 2 tablespoons of dry tee leaves. Allow to cool, then drench the whole amount 2 times a day for 1 week (Camels, cattle, goats, and sheep)
- Add a handful of fresh or dry tea leaves to a glass of water and boil. Let the mixture cool down and strain the liquid to remove the leaves. Give the animal 0.5 litre of this strong tea 2-3 times a day for a week (For cattle).

Treatments for chicken and ducks:

Gikuyu, Kamba, Kipsigis, Maasai: Chop pepper (*Capsicum sp.*) fruits and mix with drinking water. Use about 3 fruits in 0.5 litre for 10 birds

Embu, Kipsigis: Chop 2 red peppers (*Capsicum annum*) and mix with about 20ml of water. Add 2 tablespoons of soot. This amount is for 1 bird. Put the mixture in a saucer and give the birds to drink. If the

diarrhea is serious, drench young birds with 1 teaspoon full and older birds with 2 teaspoons full.

Common traditional practices to prevent or treat

- **Give the animal warm water to drink**
- **Mix 5 tablespoons of sugar and 1 tablespoon of salt with 2 litres of water. Drench 2 litres for adult cattle, 1 litre for calves and small stock.**
- **Somali Ethiopia: Boil grains such as millet, sorghum and cowpea in water. Collect the fluid and drench or give to the animals to drink (for camels, cattle, goats and sheep)**
- **Mix 0.5 kg of wheat flour in 1 litre of water. Drench (for calves)**

(Source: ITDG and IIRR 1996)

Other useful home remedies

Stop feeding infected calves with milk for two days. Instead give plenty of clean water in adlib and administer a rehydration fluid. This is prepared by mixing clean water with sugar and salt. In cases where the calf is very dehydrated, feed the fluid at the rate of a tenth of the body weight (1 litre for 10 kg of body weight) daily for four days.

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Mucosal disease



Mucosal disease

Local names: Luo: diep nyaroya / Kikuyu: ruharo rwa kimira / Maasai: linkati /

Common names: Bovine virus diarrhoea

Description: Management disease

Introduction

Mucosal Disease is caused by the same virus which causes Bovine Viral Diarrhoea. Both are manifestations of infection by the same virus. At one time it was thought that



**Geographical
Distribution of
Mucosal disease**

these were two separate diseases. **Mucosal Disease** refers to the condition in cattle persistently infected with noncytopathogenic BVD virus when they become superinfected with cytopathogenic virus and develop clinical disease. Incidence is low but mortality is high. The virus occurs all over the world and is probably more widespread than most people think, even in Kenya. Cattle that are persistently infected with noncytopathic Bovine Viral Diarrhoea Virus serve as a natural reservoir of virus. Transmission can occur post-natally by aerosol contact with infected secretions and excretions shed by persistently infected animals. Needle transmission can occur. Pre-natal persistent infection develops when noncytopathic virus is transmitted transplacentally during the first 4 months of foetal development. The calf

is born infected and remains infected for life. Transplacental infection that occurs later in gestation results in abortion, congenital malformations, or birth of normal calves that have antibody against BVDV. So the outcome of infection varies according to the stage of pregnancy when infection occurs:

Up to 90 days of pregnancy

At this stage infected cows give birth to a calf with permanent infection of the disease and whose immune system does not recognize the virus as a foreign organism ("anti body negative calves"). Fifty percent of these calves develop clinical disease and die within the first two years of age from superinfection with a cytopathogenic strain of BVDV or by a mutation of the virus population within the animal itself. Calves appear to be stunted, and prone to respiratory and enteric ailments. In the infected mother foetal death and irregular returns to service occur.

90 to 180 days of pregnancy

Infection at this stage causes abortion or the birth of a congenitally deformed calf with perhaps eye and brain abnormalities or a persistently infected calf possibly with some antibody.

After 180 days of pregnancy

At this stage, the immune system of the foetus is fully developed and the immune system of the foetus

detects and clears itself of infection. At birth such calves are normal and have antibodies against the disease. But abortion may still occur in the mother.

Whatever the stage of pregnancy the cow herself will often be only mildly affected - she may have a raised temperature and scour for a few days but only occasionally develops a severe illness. It is the persistently infected calf which causes problems.

Signs of Mucosal disease

BVDV is immunosuppressive and as a result an infected animal is much more susceptible to other infections such as those affecting the gut or lungs

The virus attacks all the mucosal surfaces in the body causing inflammation and ulceration and it is the results of this which cause the symptoms seen. Erosions can occur throughout the intestinal tract, lesions are seen in the mouth, nose and muzzle, there is often foul smelling diarrhoea containing shreds of intestine, mucus and blood. Occasionally diarrhoea may be so severe as to appear like water or paralysis of the gut may occur with no sign of faecal material. Other signs which may occur include discharges from the nose, excessive tears and lameness due to eruptive lesions of the interdigital cleft and coronary band.

.Animals are reluctant to eat and there is drooling and even frothing from the mouth. High mortality with moderate morbidity is to be expected. In Mucosal Disease, where a persistently infected animal, usually under 2 years of age, is superinfected with internally acquired cytopathogenic virus, the mortality is very high, death occurring within a few days of onset, with fever, dysenteric diarrhoea, lack of appetite, dehydration, ulceration throughout the gastro-intestinal tract and erosive lesions in the mouth and nose.

Diagnosis is based on the disease history, clinical signs, gross and microscopic lesions, virus isolation from tissues such as spleen, thyroid and salivary gland and examination of paired serum samples when a more than four- fold increase in antibody titre indicates recent infection. Difficulties may occur when the presenting animal has no specific neutralising antibody due to immunosuppression or the inability to secrete antibody. So the whole picture must be considered.

The birth of congenitally abnormal calves, unexplained abortions, the appearance of stunted ill-thriven calves in the herd and cases of severe diarrhoea in young animals under the age of two years followed by their death must arouse a suspicion of BVD/ Mucosal Disease Complex. There will be a low incidence (5%) of acute clinical disease but a high case mortality. For diagnosis serum samples have to be sent to a laboratory outside of Kenya.

Prevention - Control - Treatment

Treatment is limited to supportive therapy such as providing antibiotic cover to prevent secondary bacterial infections, appetite stimulants, vitamins and alimentary tract astringents, such as kaolin, charcoal etc.

Post-natally acquired BVD virus infections are trivial. Control measures therefore are directed to limiting the risk of transplacental infection. Persistently infected animals should be identified and removed and isolated from the breeding herd. Only virus-negative and antibody-positive animals should be retained in the herd. Live and killed vaccines have been developed. The former has several disadvantages such as the risk of transplacental infection, they are immunosuppressive and epidemics of the mucosal disease syndrome have been recorded after their use. Killed vaccines are safe, but booster doses are necessary to achieve a good level of protected immunity.

Because the disease mainly affects cattle under 2 years and since colostral immunity from BVD positive cows wanes by 6 months of age the vaccination of young stock between 6 months and 2 years of age is a logical approach ? but the manufacturer's instructions should always be followed. Vaccine is obtainable from the UK and the US.

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Liver Flukes

Liver Flukes

Family: *Trematoda*

Description: Parasite



There are two important species of liver fluke in Kenya - *Fasciola gigantica* and *fasciola hepatica*.

The former is the more important, being found throughout the lower warmer parts of the country. As the name suggests it is very large, being more than twice the size of *Fasciola hepatica*, which is found in the cooler highland areas of the country, and also in the temperate zones of the world such as Europe, North America, Australia and New Zealand. Liver flukes belong to a class of worms called trematodes.

The life cycle of liver flukes involves a snail, which acts as an intermediate host. If there is no snail there will be no flukes. The snail involved requires still, stagnant water to survive. Swift running water does not suit it. So swamps, ponds, lakes with a marshy edge and pools of water edged by vegetation are danger zones for grazing animals.

Cattle, sheep and goats are mainly affected, although other animals such as donkeys, horses, and many species of wildlife such as buffalo can also be infested. Humans can also be infested with liver flukes.

As the name suggests, the liver fluke attacks the liver.

Three forms of illness can occur.

- 1) It can cause sudden death, either from liver failure or from haemorrhage, when large numbers of immature flukes migrate through the liver.
- 2) It can be the cause of a chronic wasting disease accompanied by anaemia and oedema.
- 3) It can also be the precipitating factor in Infectious Necrotic Hepatitis (Black Disease) of sheep, when toxins released from the bacterium *Clostridium Novyi* type B multiply in the anoxic lesions caused by the migrating flukes. Sudden death is the result.

Life cycle of liver flukes

A knowledge of the life cycle of the liver fluke is an aid in understanding how to control the disease.

The life cycle of *Fasciola gigantica* and *hepatica* both follow the same pattern. The intermediate host snail may differ but in other respects the life cycle is the same. This begins with the eggs of the fluke which mature in the bile ducts in the liver, pass down the ducts, into the gut and are excreted with the faeces. Once outside in the environment, which must contain water, the eggs hatch, releasing an active stage, called miracidia. These either actively invade a host snail or are eaten by a host snail. They then hatch in the snail's gut and a stage called a sporocyst develops in the tissues of the snail. 5 - 8 weeks later another stage called cercariae emerge from the snail and encyst on herbage or grass, where they are eaten by the final host - cattle, sheep, wildlife etc.

Temperature and time are critical in the early stages for the development of the miracidia- above 5-6 C, and best between 25 - 24C. They must find a suitable snail within 24 - 30 hours or they will die. Once ingested by the sheep or cow the cercariae develop into another stage called metacercariae. These invade the gut wall and travel to the liver where the now immature flukes wander through the body of the liver until they reach the bile ducts. Here they mature until they start to lay eggs and the life cycle begins again. It takes 10 - 12 weeks from infestation until eggs start to be laid. Mature flukes are long lived and sheep and cattle may be carriers for years.

The intermediate host snail employed by *Fasciola hepatica* is called *Lymnea truncatula*. That by *Fasciola gigantica*, *Lymnea natalensis*, but sometimes also *truncatula*.

Signs of Liver Flukes

The severity of clinical signs depends on the number of parasites ingested by the host animal over a short period of time.

Cattle appear to be able to develop an immune reaction to fluke infestation, but sheep do not. The acute form of the disease is more common in sheep than in cattle. Acute fascioliasis occurs 5 - 6 weeks after the

ingestion of large numbers of metacercariae. There is a sudden invasion of the liver by masses of young liver flukes. Death takes place due to haemorrhage or liver failure, or both. The acute form of the disease is manifested by sudden death, or dullness, weakness, anaemia, lack of appetite, pain over the region of the liver and death in 48 hours. Because this is caused by migrating flukes which have not yet begun to lay eggs, no eggs are found in the faeces and diagnosis must rest on a post mortem examination. This will reveal a badly damaged, swollen liver. The capsule will have many small perforations and haemorrhages below the capsule. The body of the liver will contain tracts formed by the migrating flukes and the liver will be damaged and friable. Close examination will reveal the small immature flukes. This form of the disease occurs in sheep, rarely in cattle.

Cattle exhibit the sub-acute or chronic forms of the disease, as also do sheep and these can cause death in both.

These forms of the disease are due to the activity of the adult flukes in the bile ducts, causing anaemia and protein leakage. Body growth is reduced, there is loss of weight, submandibular oedema ("bottle jaw") and anaemia. Diagnosis is made by the finding of fluke eggs in faecal samples. These must be differentiated from those of Paramphistome rumen flukes. A post mortem examination will reveal large mature flukes in the bile ducts, which are usually thickened and which may be calcified in cattle, but not in sheep. There will be oedema, anaemia and often emaciation. Black Disease, caused by the multiplication of Clostridium Novyi in the tracts caused by migrating immature flukes is a disease of sheep aged sheep between 2 - 4 years. Acute fluke infestation usually kills younger animals. This age difference is helpful in making a diagnosis.

Diagnosis therefore rests on the clinical signs, grazing history, season of year- whether wet or dry-, post mortem findings, the finding of immature or mature flukes and the demonstration of fluke eggs in faecal samples.

Prevention - Control - Treatment

Prevention and control

Ideally control measures include the removal of flukes from affected animals, the reduction of the intermediate host snail populations and the prevention of livestock access to snail-infested pastures. In practice only the first of these is used in most cases.

Fencing off snail sites is feasible when the areas are small. Clearing away aquatic vegetation will help. As will the provision of adequately maintained water troughs with a good concreted area around them to prevent the area from becoming muddied. Drainage is the best permanent solution, but may be costly. Many chemicals used to control snails are poisonous to livestock and in many cases are inadequate to reduce snail populations to levels sufficient to reduce snail infestations to acceptable levels.

Grazing livestock in Africa are more likely to contract liver fluke infestations during the dry season than in the wet, as during the dry season they enter snail infested marshes which they avoid when there is sufficient grazing elsewhere. In such situations it is advisable to keep animals out of such swamps for as long as possible so that fewer viable metacercariae are present on the herbage. When entry to the swamp is unavoidable then the older cattle should go in first as they are much more resistant than the younger cattle, followed, last of all, by the most susceptible sheep and goats.

By the use of these measures, together with the administration of fasciolicidal drugs administered at strategic intervals to those animals most at risk the disease can be considerably reduced.

Treatment

The following drugs are very effective for treatment fascioliasis:

- Triclabendazole and Fenbendazole should be given at the rate of 10mg and 8mg respectively per kg body weight by mouth.**
- Trodax or nitroxynil given at 34 % solution for cattle administered subcutaneously at 1.5ml per 50kg body weight and may be repeated as may be necessary.**

- **Oxyclozanide or Flukanide or Ranide are available from different pharmaceutical manufacturers and should be used according to the manufacturer's recommendation.**

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Anaplasmosis



Anaplasmosis

Local names: Embu: ndigania / Gabbra: biraa / Kamba: nthiana / Meru: nthiana / Kipsigis: cheptikonit / Gikuyu: ndigana / Maasai: Entorhobo, lipis, endigana, engemomywa oldigana oiboir / Samburu: mporot, ndiss / Somali: ndaratu, gabgab, jooge, racamo / Swahili: ndigana baridi / Turkana: lonyang', lopid / Nandi: kipkuit /

Common names: gall sickness, anaplas, anaplasnose bovine (French)

Description: Insect borne disease

Introduction

Anaplasmosis is an acute febrile disease of cattle, usually transmitted by blue ticks and caused by a rickettsial bacterium, called *Anaplasma marginale*. This is an obligate intracellular parasite which multiplies by binary fission in red blood cells, causing a severe anaemia. There are other species of *Anaplasma*. Severe anaplasmosis is caused by *Anaplasma marginale*. This parasite occurs at the edge of the red cells. A mild, usually inapparent form is caused by *Anaplasma centrale*. This parasite occurs at the centre of the red blood cell. The incubation period of the disease is about 2 - 12 weeks and is directly related to the infective dose.

The disease occurs throughout the tropical and subtropical regions of the world. Anaplasmosis is not contagious. Transmission does not take place by contact but generally via the medium of an infected tick vector such as the blue tick. This is a one-host tick, spending its entire life on its host and for whose control once-weekly dipping or spraying is generally appropriate. The source of infection is always the blood of an infected animal. Biting flies, contaminated instruments, injection needles, and oxpecker birds can also transmit infection. Wild animals and other domestic animals can be infected and become reservoirs of infection.

Infections in the sucking young are usually clinically inapparent, and, once infected, animals remain carriers

for life. In areas where cattle first become infected with *Anaplasma marginale* early in life, losses due to anaplasmosis are minimal. In animals less than 1 year old anaplasmosis is usually subclinical, in yearlings and 2 year olds it is moderately severe, and in older cattle it is severe and often fatal.

Thus exposure of calves to infected ticks confers upon them an often life-long resistance. Paradoxically efficient tick control at this stage of bovine life will later expose cattle to possible life-threatening anaplasmosis. These facts must be kept in in mind at all times. Zebu cattle, with their relative resistance to heavy tick infestations, are less likely to be infected, but they are just as susceptible as European breeds. Carrier animals serve as reservoirs for further transmissions.

Serious losses can occur when mature cattle with no previous exposure are moved into endemic areas or when transmission rates are insufficient to ensure that all cattle are infected before reaching the more susceptible adult age. This latter situation can occur when a previously effective acaricide loses its efficacy, especially when that efficacy has continued from calthood into adulthood.

Signs of Anaplasmosis

Clinical signs

Onset of illness is characterised by a rising fever of up to 41 C (106 F) , a drop in milk production, and a decreased appetite. Acutely affected animals lose condition rapidly and peracutely affected animals may die within a few hours of the onset of clinical signs. Acutely affected animals are depressed, lose their co-ordination, if exerted, become breathless, and lag behind the rest of the herd. If forced to walk some of these animals may even lie down. These symptoms are directly related to the degree of anaemia caused by the destruction of red blood cells. Examination of the eyes and vulva will reveal a change from a healthy pink to a pallid white to a yellow or even light orange colour, indicating the onset of jaundice due to liver damage. The teats of a milking animal appear pale or white in colour.

There is a rapid bounding heart rate. This is easily heard by pressing one's ear against the animal's pelvis.

This loud beat, heard several feet from the heart itself, is almost diagnostic for Anaplasmosis. It cannot be heard in a normal animal. The urine may be yellow or even brown, but, unlike Babesiosis (Redwater) contains no red blood cells.

Constipation is common.

Pregnant animals often abort.

Some animals are hyperexcitable and aggressive, charging and attacking people. In the severe form of the disease, there may be death if immediate treatment is not given. In dead animals, blood is thin and watery and the flesh is pale yellow. The liver is yellowish orange. The gall bladder is large and full of brownish greenish fluid and the kidney is large and soft. The spleen is enlarged and mushy.

Diagnosis

A presumptive diagnosis can be made, based on an assessment of the history, clinical and post mortem signs, together with the appearance of ticks and an anaemia without haemoglobinuria. A peripheral blood smear from the ear should be taken for laboratory analysis by qualified personnel to confirm the disease.

Anaplasmosis is generally not such a severe disease as Babesiosis (Redwater) with which it might be confused. In the latter the urine contains red blood cells, sometimes is almost black in colour and the individual death rate is usually much higher.

Prevention - Control - Treatment

Preventive measures

Preventive measures Regular dipping and spraying with effective acaricides to control tick infestations are

vital preventive measures. In non-East Coast Fever areas, and in most extensive systems, young calves are often not dipped for the first few months. This allows them to contract the disease and confers immunity. This will provide an enzootic stability in association with a sub-clinical infection.

The drugs of choice for treatment are tetracyclines and imidocarb dipropionate-Imizol.

- Oxytetracycline long acting solution is effective given early in the disease at a rate of 30mg per kg i/m. Likewise imidocarb at 3mg/kg. These dosages will not eliminate the carrier state. For this repeated injections at a higher dose level are required, which may not be appropriate in Kenya at the present, due to the widespread abundance of the organism in recovered, immune animals.
- Constipated cattle should be given a dose of Epsom Salts - 500g (1lb) is a suitable dose for an adult animal. Careful nursing and provision of an appropriate diet with green feed will assist recovery.
- Eradication is generally not practicable due to the ubiquity of the carrier ticks, the long period of infectivity in carrier animals, the presence of carriers in the wild animal population and the difficulty of identifying infected animals.
- Vaccines are available and used in some countries. These are either living attenuated strains of *A. Marginale* coupled with treatment if required, or the less pathogenic *A. Centrale*. Severe reactions can occur with both types of vaccine.

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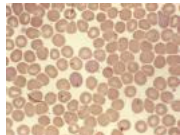
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Babesiosis



Babesiosis

Local names: Luo: aremo / Kiswahili: ugonjwa ya kukojoa damu / Turkana: eyiala, lopic, lobul / Nandi: sasioto / Kipsigis: beek che biriren / Gikuyu: munyuria / Maasai: enado nkulak, ol odulak / Meru: maumaga yamatune / Samburu: nkula, ngula /

Common names: Piroplasmosis, red water, tick fever, Texas fever, La tristeza, piroplasmose bovine (French), Fiebre del texas (Spanish)

Description: Insect borne disease

Introduction

The other names of this disease include: Red water, Cattle tick fever. This is a febrile disease of cattle caused by protozoan parasite *babesia bigemina* and *babesia bovis*. The disease is mainly transmitted by blue tick (*Boophilus* species) and also by the red legged tick. The disease occurs worldwide but has serious infections in the tropics and sub tropics. It has an incubation of between 7-28 days after infection by infected tick. Ticks acquire babesia infections from infected animals at a subsequent blood meal usually in the next generation of ticks since the infection can be passed through the eggs.

Signs of Babesiosis

Signs

The parasite invades red blood cells where they multiply and break out to invade more red blood cells. There is rise in temperature as the first sign which comes 1 - 3 weeks after the infective tick bite. Excessive damage of red blood cells causes anemia and shock. The affected animals become depressed and lose appetite. The eyes and gums become pale from anemia and jaundice due to bile pigments in the blood stream. The color of urine becomes reddish due to hemoglobin in blood circulation.

In severe cases, brain capillaries become blocked with infected red blood cells causing cerebral babesiosis which is manifested by nervous signs which include in-coordination, paralysis, coma and death.

In less severe cases of the disease, infected cattle have fever lasting about 1 week and remain sick for 3 weeks. This group of animals will recover slowly while pregnant animals may abort. Recovered animals remain permanent carriers of the disease.

Prevention - Control - Treatment

Prevention and Control

It is advisable to keep suitable breeds of animals in disease endemic areas. Such breeds may include indigenous cattle and their crosses with exotic cattle. It is also advisable to vaccinate all young animals with live vaccines to counter periods of inactivity of Boophilus vectors. Combined vaccination and strict control of ticks is an effective control strategy where exotic cattle are introduced.

Recommended treatment

Among the current available drugs for treatment of babesiosis include the following:

- **Imidocarb (trade name imizol) mix 23.6g with 125 ml of water and inject deep in the muscle**
- **Diminazene aceturte (trade name Berenil) at 3.5 mg/kg body weight**
- **NB the sooner you do the treatment the better**

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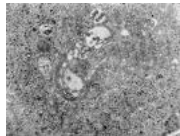
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Rift Valley Fever



Rift Valley Fever

Common names: Enzootic hepatitis

Description: Insect borne disease

Introduction

Rift Valley Fever is an acute, or peracute, mosquito- borne viral disease affecting domestic ruminants - cattle, sheep, goats, camels and domestic buffaloes- and man. It occurs mainly in East and Southern Africa and more recently in Saudi Arabia and Yemen. During epidemics the occurrence of numerous abortions, deaths in young animals (and adults) - and acute symptoms in humans tends to be characteristic.

The virus is widely distributed in Africa, but major epidemic episodes in animals and humans are relatively rare, occurring in 5 to 20 year cycles. The virus survives in interepidemic periods in mosquito eggs, laid on vegetation in dambos - which are shallow depressions in forest edges. Only when these are flooded do the eggs hatch. This only occurs when the water table rises following prolonged heavy rain. The eggs then hatch and a new population of infected mosquitoes emerges.

Epidemics in domesticated animals are initiated by the bites of infected mosquitoes. After this infected aerosols generated by virus-infected aborted fluids spread the disease rapidly through the flock or herd. Man is usually infected by the aerosol route by handling infected animals or tissues. Until recently the disease in man was considered to be a non-serious influenza type illness, but a fatal haemorrhagic form has emerged and now RVF in man is considered to be one of the most dangerous diseases known.

The virus may be spread by windborne mosquitoes or by the introduction of viremic animals. There is a remarkable age - related innate resistance to RVF virus - the case mortality in lambs less than 1 week old exceeds 90% whereas the rate in lambs over 1 week drops to 20%. Formerly, apart from abortion, most cases in adult animals were subacute, but latterly a haemorrhagic form of the disease has emerged with rapid death in mature animals, including cattle.

Signs of Rift Valley Fever

The incubation period in lambs is 12 to 36 hours. A biphasic fever of up to 41C (106F) may develop.

Peracute infections occur in newborn lambs which die within hours of infection. Acute reactions occur in older lambs and calves and occasionally in adult sheep. In very severe infection in calves, death may occur in 2 days after infection without their showing any clinical signs.

A haemorrhagic syndrome was observed during the last outbreak in Kenya, affecting adult cattle. In its severe form, calves will develop high fever, and may vomit. Some nasal discharge may also be seen followed by prostration and mortality may reach up to 70%.

In mature animals most, if not all, infected pregnant sheep, cattle and camels abort affected foetuses.

Subacute reactions occur in adult sheep, cattle and camels. There is a low-grade fever, partial inappetence and general weakness. Jaundice is prominent. The main post mortem lesion is focal necrosis of the liver but in young animals the foci coalesce to form a diffuse necrotic lesion. The liver is a bright yellow and studded with subcapsular haemorrhages. It is not enlarged. In adult affected sheep and cattle the focal necrosis of the liver is discrete. In addition to the hepatitis there are haemorrhages in most other organs and tissues.

In humans, there is lack of appetite, nausea, severe headache, joint pains, dizziness and nose bleeding. Encephalitis, retinitis, photophobia, loss of central vision, irritation, stupor and coma can occur.

Haemorrhagic RVF is characterised by a very acute febrile illness, accompanied by jaundice. Widespread haemorrhages develop within 2 - 4 days and death usually occurs within another 3 - 6 days. Patients who are immunosuppressed or malnourished are at particular risk. Recovery from RVF is followed by lifelong immunity.

Prevention - Control - Treatment

Prevention and Control

Outbreaks of Rift Valley Fever generally occur only after periods of prolonged heavy rain. Such being the case livestock owners should be aware that if long rains are excessively heavy and continue for an

excessively long period of time, an outbreak of Rift Valley Fever is likely to occur and action in the form of vaccination is required.

Control of vectors, movement of stock to higher altitudes and confinement of stock to insect-proof stables are usually not practical, instituted too late and of little value. Immunisation remains the only effective way to protect livestock.

Vaccination of animals with suitable vaccines should be practiced. Pregnant cows should be vaccinated with killed vaccines to avoid the risk of abortion while humans at particular risk should be vaccinated with formalin killed tissue culture vaccine.

Recommended treatment

There is no known medical treatment of Rift Valley Fever

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Eye problems



Eye problems

Introduction

Eye problems can affect all animal species. Eye injuries are especially a problem in camels, as their eyes protrude and they gaze on thorny bushes.

Different types of eye problems may have different causes such as:

- **Insect bites in the eye**
- **Ticks attached to the inside of the eyelid**

- **Eye worms**
- **Foreign bodies in the eye**
- **Injury to the eye, for instance by thorns or herders' sticks**
- **Infectious diseases such as pink eye or camel pox**
- **Irritating sap from plants such as Euphorbia candelabrum**
- **Snake venom**

The most common signs are:

- **Watery or yellowish discharge from the eye**
- **Partially or totally closed eye**
- **Swollen eye**
- **Reddish eye**
- **Thick, whitish film covering the eye**
- **Abnormal growths in the eye**

General prevention and treatments

Prevent eye problems by doing following:

- **Apply tick grease or other repellents around the eyes.**
- **Manually remove ticks.**
- **Do not hit the animal around the eyes**
- **Do not herd where there are many thorny plants or plants with irritating sap**
- **Use only leafy trees and shrubs for fencing in the animal pen**
- **Separate animals with infectious eye diseases from the rest of the herd**
- **Control camel pox**

Pink eye

Pink eye is an infection of the eyes of cattle, sheep, and goats with a mixture of microorganisms which include *Moraxella*, *Mycoplasma*, *Listeria* and *Chlamydia*. The infection occurs in animals of all ages but is more severe in young animals. The infection is transmitted through direct contact with infected animals especially where the animals are crowded.

Flies also spread the disease in cattle. The disease outbreak becomes more common when flies are abundant and more especially if the conditions are dusty.

The infection has a worldwide distribution and infection does not spread between small ruminants and cattle since the causative agents of the disease for small ruminants differ with those that affect cattle.

Signs of Pink eye

Incubation takes between 1 - 20 days after infection and one or both eyes may be affected.

The eye becomes watery, the conjunctiva under the eye lid becomes red and inflamed and the animal blinks repeatedly and diverts the affected eye(s) away from bright sunlight.

Cattle would develop an opaque spot in the centre of the eye which would spread gradually to cover the entire eye in about a week. The opaque spot becomes yellowish thus causing temporary blindness caused by a depressed ulcer.

The animals start to recover and after about a month, the affected eye will have completely healed. In a few cases, the ulcer may be so severe that it may rupture thus causing permanent blindness.

Prevention and control

Avoid overcrowding of animals and the sick animals should be segregated and treated. Cleanliness in the cattle yards should be maintained to keep flies away from the animal environment.

Recommended treatment

Although majority of cases recover without treatment, application of antibiotics in ointment or powder directly into the eye would alleviate painful distressing condition. Sub-conjunctival injection of antibiotics is also effective but should be given by a veterinarian.

Common

traditional practices

- Embu (For cattle, goats and sheep): Burn *muranga (Combretum molle)* leaves and stem. Crush the ash to make a handful of powder. Apply the powder directly into the eye

Eye worms



These worms may live in the membranes of the eye in all types of livestock. They cause an infection of the eyes of livestock with *Thelezia* species of worms, also known as *Thelaziosis*. *Thelezia* are thin white worms measuring up to 2 cm long. It is known to affect cattle, sheep, dogs, equines, camels and buffaloes. It is distributed all over the world. The disease may affect one or both eyes of the infected animal. The infection is spread from host to host by the house fly and other similar flies when feeding on the infected eyes, they ingest larvae of the worm which develop to infectious stages in the flies.

Eye Worm

© Courtesy of the United States Federal Government

Signs of Eye worm

The worm often has no clinical signs otherwise, there are excessive tears - clear discharge which may sometimes become grey, white or yellow and in sever cases, there may be inflammation and purulent ulcerated surface of the eye may be seen and the animal will try to avoid bright light.

Diagnosis The worms can be seen with naked eye but a veterinarian should be consulted to confirm the presence of Thelezia in the eyes.

Prevention - Control - Treatmentl

Prevention and Control

The condition is less severe and control of vectors is impractical. It is always advisable to consult a veterinarian to remove the worm from the eyes under local anesthesia - eye wash such as Xylocaine, Lignocaine and Bupivacaine. Mix 10 ml of 2% local anesthesia with 40 - 50 ml of clean water and use to make an eye wash. Put 5 - 10 ml in the eye and wait for about 2 minutes then wash the worms out of the eye using clean cold water

Recommended treatment

Treatment is possible with topical application of levamisole which can as well be administered by mouth. Treatment with ivermectin is also effective. Put 1% solution of levamisole or ivermectin directly into the eye you can also put antibiotic eye ointment if the discharge is cloudy, white or yellow.

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Skin diseases



Skin diseases

Introduction

Fly strike is also known as *Myiasis*. All animals get fly strike but sheep get it worst and most often. Humans are sometimes affected with fly strike.

Signs of Fly strike

Animals are irritated and scratch and rub at a wound with fly larvae in it. The larvae can destroy a lot of

flesh. Bacteria often infect the wound.

How animals get fly strike

Animals get fly strike from eggs that blowflies lay in a wound. They lay eggs in very small wounds, such as tick bites and on larger wounds, such as castration wounds or any other injury that cause wound on the skin of the animal. The eggs become larvae that eat the animal's flesh. (Some people call these larvae maggots.) Screwworm fly larvae cause one severe kind of fly strike

Photosensitization

Photosensitization is a skin problem associated to plant poisons, which make the skin of animals; especially cattle and sheep very sensitive to sunlight. Animals get it when they eat poisons that the liver cannot destroy and which make the skin very sensitive to sunlight. The poisons usually come from plants, or fungi that live on the plants.

Phylloerythrin is a breakdown product of plant chlorophyll in the fore stomachs of ruminants, which in healthy animals is excreted into the bile by the liver. In animals with impaired liver function, however, phylloerythrin accumulates in the blood and is transported to the skin, which is sensitized to the ultraviolet rays of the sun as a consequence, resulting in photosensitization in lightly pigmented areas of skin. A number of plants contain liver poisons that may result in photosensitization if eaten in sufficient quantities, including:

1. *Lantana camara*, ornamental garden shrubs, which has become wild in many parts of the world and is now found throughout sub Saharan Africa. *Lantana* poisoning is virtually confined to cattle.

2. *Tribulus terrestris*/devil's thorn is a ground creeping plant with yellow flowers



Lantana Plant

© William Ayako,

widespread throughout the tropics; it is regularly eaten by stock without causing problems, but is also suspected to cause photosensitization.

Signs of photosensitization



- The pale colored parts of the skin become red and inflamed and the skin cracks open. This often happens on the back and around the nose but can happen anywhere on the body. Sometimes the skin dries up and large pieces of skin fall off leaving a sore patch underneath.
- The mucous membranes sometimes become yellow.
- Most animals do not become sick but a few of them become very sick.

Prevention and Control

- Put the animals into the shade and keep them away from bright sunlight for a few days.
- Move the animals to a different pasture away from the plants you suspect poisoned them. Some plants are only poisonous at certain times and the pasture may be safe to return to later in the year.
- Remove by digging or burning out known poisonous plants in pastures.

Photosensitization

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Recommended treatment

- Put a wound dressing on the cracks and sore places.
- Give an antibiotic by injection to treat infection if the skin is much damaged.

Elephant skin disease

Elephant skin disease is a disease affecting cattle, horses and donkeys. Goats occasionally get the disease.

It is spread by *besnoitia* spp of protozoa, which occurs probably worldwide. *Besnoitia besnoiti* infection in cattle has been recorded in Africa, southern Europe and Asia. *B.benneti*infection occurs in Equids (horses) in Africa, Europe, and the Americas. An unidentified *Besnoiti* infection of goats is found in Kenya. The disease is spread by biting flies but infection may also come from cats, which are suspected as the final host of *Benonoitia besnoiti*. Cats are known to excrete *Besnoitia oocysts* in their feces.

Signs of Elephant skin disease

Bovine besnoitiosis occurs in cattle over six months old. About a week after infection, affected animals may have high fever, photophobia (avoidance of direct sunlight), and oedema of the skin, diarrhoea and enlargement of superficial lymph nodes. Up to 10% of affected animals die in the early stage. Survivors develop a chronic disease in which the parasites localize in cysts underneath the skin.

- Some animals have clear discharge from the nose and the eyes. Sometimes there are white patches on the eye.
- Some animals die in about 10 days. Animals that recover have their skin thickened and they lose some hair.
- Goats have lumps in their ears and around the genitals. They have white patches on their eyes. Pregnant goats abort and many become infertile. New borne goats are weak and some die.

Other diseases that look like this are: *dermatophilosis*, *lumpy skin disease*, *mange* and *malignant catarrhal fever*.

Prevention and Control

1. Separate sick animals from healthy ones.
2. There is an effective vaccine in southern Africa.

Recommended treatment

There is no good treatment but skilled workers can give medicines to help animals recover.

Horn cancer

The disease is a cancer of the base of the horn of zebu cattle, mainly in castrated adult males, and occasionally in cows and bulls. The disease primarily affects short-horned Hariana cattle of India, but the condition has been reported in other zebu breeds in other parts of the world. The exact cause of horn cancer is not known, but may be partly hormonal. Affected animals commonly have a previous history of mechanical injury to the horn, or persistent rubbing of the tissues round the base of the horn from head ropes. It is not an infection, but castrated males get it more often.

Signs of Horn Cancer

- **The horn becomes loose and comes away from the skin.**
- **You can see a grey/yellow lump at the base of the horn. It is covered with blood and mucus; it smells bad and is often infected.**
- **The cancer has cauliflower-like growths covered in foul-smelling bloodstained exudates, and may invade the frontal sinuses causing purulent discharges from the nose.**
- **The cancer spreads inside the animal to other parts of the body. If left untreated, the animal becomes distressed and loses condition. Secondary bacterial infection or blowfly strike may be complications.**

Recommended treatment

Skilled workers can cut out the cancer. This often works if they do it before the cancer spreads to other parts of the body.

Sometimes they use special medicines to control but they do not always work.

Lumpy skin disease

Lumpy skin disease (LSD) and pseudo-lumpy skin disease

LSD is a viral infection of cattle only transmitted by biting flies and is caused by a poxvirus, whereas pseudo-lumpy skin disease (PLSD), a benign and harmless but completely separate disease, is caused by a herpes virus.

The disease is endemic in sub-Saharan Africa and Madagascar and has recently spread to Egypt and Israel. The PLSD virus also causes *mammillitis*, an infection of the teats, in newly calved dairy heifers in Europe, North America and Australia. The animals get the disease when insects that suck blood, such as mosquitoes, bite them. The disease occurs most when there are many insects at the start of wet season. Imported breeds of cattle get the disease more easily than the local cattle. The disease may be confused with the following diseases besnoitosis; dermatophilosis; ringworm

Signs of Lumpy skin disease

- The animals have much saliva coming from the mouth. A clear discharge comes from the eyes and nose. Later the discharge from the nose becomes grey/white.
- The cattle are weak and tired and stop eating. They have a fever that sometimes goes down after 1 - 2 days but it goes up again. Animals produce little milk and pregnant cattle often abort.
- Lumps appear on the body, usually around the head and neck, under the abdomen, on the legs, or around the genitals and the udder.
- The lumps are hard and usually all about the same size. The hair on the lumps stands up. Softer, yellow/grey lumps may appear on the mouth. They rub off easily leaving sore red patches.
- Many of the lumps on the skin turn into sores that get infected and become deep wounds. Most of these dry up and heal after a few weeks but they leave scars that damage the hide. Some lumps become hard and do not go away.
- Cattle do not usually die but they take months to recover and a few of them become very thin.
- Occasionally the disease is very mild, animals only have a low fever and lumps on the skin that heal in about six weeks.

Prevention and control

Vaccination for lumpy skin disease is effective. Vaccinate all animals in contact with the disease. PLSD is of no importance other than that it can confuse the diagnosis of the much more significant LSD.

Recommended treatment

There is no treatment for lumpy skin disease. Give an antibiotic injection to stop the damaged skin getting

infected by bacteria.

Cattle pox

Most pox diseases happen in Africa and Asia. Sheep and goat pox happens in Africa north of the equator and in Asia. Most animals can get pox diseases but each animal gets a different type of pox disease. Viruses cause all pox diseases: sheep and goat pox (*Capri pox*), pig pox (*sui*pox), camel pox (*orthopox*) and cattle pox (*parapox*). The disease can be confused with the following diseases: Bluetongue; foot and mouth disease; mange and contagious pustular dermatitis.

The disease is spread by direct contact between animals and on contaminated things. Many animals get infection from people who have touched infected animals. Infection comes from blisters and scabs of infected animals. Infection can live for a long time in dry scabs that fall off.

Cattle; calves get pox from infected mothers. They are infected for life and may become sick when they are adults.

Camels; pox spreads quickly through a group of camels, especially in or just after wet seasons.

Pigs, they usually only get pig pox when they are 3 - 6 weeks old. They get it from touching infected pigs or when lice bite them or stable flies that carry infection.

Signs of Cattle pox

Cattle become sick 5 - 10 days after they get infected.

- **They have small red sores on the teats at places where there are small injuries. The sores soon have scabs over them. When the scabs fall off they leave a crescent of smaller scabs.**
- **Sometimes the disease goes on for a long time. The teats become rough with many greyish/yellowish scabs.**
- **Animals usually recover in 2 - 8 weeks.**

Prevention and Control

- Isolate infected animals by moving healthy animals away from them. Avoid moving infected animals to areas without the disease.
- Vaccinate healthy animals that have been near infected animals.
- Avoid using, or disinfect things that have touched infected animals.
- Make sure that newborn animals drink enough colostrums, this gives them some immunity to pox diseases from their mothers.
- Those people who milk infected animals should not milk healthy ones. It is best not to drink milk from infected animals.

Recommended treatment

There is no treatment for pox diseases but you can help animals to recover:

- If the sores are bad or deep put antibiotic or antiseptic on them. Be careful not to spread the disease further. Use wound dressings that dry

Ring worms

Ringworm is a fungal, and not a worm, infection of the skin of all domestic animals (cattle, horses, mules, donkeys, pigs, and camels) and humans. It is caused by *Trichophyton* and *Microsporum* spp. The disease occurs worldwide. The infection is spread by direct contact. Spores of the fungi can survive for prolonged periods off the host, however, and infection can arise from contact with contaminated stalls, ropes, utensils, and etc. spores can also survive on animals without necessarily causing disease and such "carrier" animals are another source of infection.

Signs of Ring worms

Animals become sick of ringworm 7 - 28 days after they get infected. It becomes a problem in animals

housed or kept in close proximity to each other. Zero grazed animals are at more risk. Care should therefore, be taken when handling animals as a high proportion of human cases are derived from animals. Sensible hygiene precautions should minimize this risk.

- **Animals have a circular scab on the skin about 3 cm across. Scabs usually happen first around the nose, above the eyes, on the ears or under the tail. The skin under the dry scab is wet. Scabs soon join together and become thicker.**
- **After several days the scabs fall off. The skin underneath becomes dry and grey/white.**
- **Animals do not scratch much when they have ringworm. But they sometimes scratch a lot if bacteria infect the scabs.**
- **The scabs fall off after a few weeks and leave patches with no hair.**
- **Animals slowly recover even without treatment. The hair grows back in about three months.**

Prevention and control

- **Isolate and treat animals with ringworm.**
- **Use disinfectant to clean contaminated places and equipment before using them for healthy animals. Direct sunlight kills ringworm microbes.**
- **Vaccinating for ringworm is expensive. It is rarely worth using a vaccine. Animals that recover from ringworm do not usually get the disease again.**

Recommended treatment

Animals usually recover from ringworm with no treatment but it may take 2 - 3 months. They recover sooner when it is dry and sunny. To help recovery:

- **Shave the hair around the place with ringworm. Burn the hair you have shaved off because it is infected.**
- **Scrape the scabs off gently. Use soapy water and a brush.**
- **Put antiseptic on the sore area. Animals treated like this can recover in 2 - 3 weeks.**
- **Give griseofulvin by mouth or put it directly on the sore area. This medicine is expensive but animals treated with it start to recover in about ten days.**

Skin tumors

All domestic animals can get skin tumors. Humans are not affected by skin tumors from animals. Some viruses (papavovirus) may also cause skin tumors.

There are two types of skin tumors: benign and malign tumors. The types that spread are more often on younger animals. Animals get the type of tumor that can spread from direct contact with animals with skin tumors. They often get skin tumors after they mate with an infected animal. Infection with these types of tumor usually gets in to the body through small wounds. Some families of animals seem to get skin tumors more often than others.

Signs of Skin tumors

- Hard lumps on the skin that are not hot are often tumors. These lumps usually grow slowly. Sometimes the skin over a tumor is injured and the lump has open sores on it.
- These skin tumors often appear 3 - 12 weeks after animals get infected.
- They often grow on the genitals and on the teats. These tumors do not harm but they sometimes interfere with milking. Sometimes they make mating difficult.
- Horses, mules and donkeys sometimes get skin tumors called sarcoids. They grow at the base of the ear and low on the legs of horses. They do not spread through the body but they sometimes grow back after they are cut off. Horses often get small tumors around the nose and mouth. These usually disappear after 1 - 6 months with no treatment.
- Camels about a year get small skin tumors around the lips and nose.



Benign tumors

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Older camels get tumors, especially on the teats. The tumors go away after a few months with no treatment.

Prevention - Control - Treatment

There is no known treatment for most tumors. Some tumors do not spread to other parts of the body (these are called benign tumors). Skilled workers sometimes remove these tumors. Some tumors spread to other parts of the body (these are called malign tumors). It is not worth operating to remove these because they come back in other parts of the body.

- **Skilled workers can make vaccines for some skin tumors from the tumors themselves. They usually inject the vaccine into or under the skin and give other injection two weeks later. These vaccines often work. Other medicines are not very effective.**
- **Some people cut or pull skin tumors off or tie a thread around the base of the tumor. These treatments do not work well. They can cause more tumors to grow.**
- **If a tumor has open sores on it, treat it with an antibiotic to stop infection. Use antibiotic powder or wound dressing.**
- **Note: many tumors fall off after 3 - 18 months with no treatment.**

Worm nodules disease

Worm nodules disease is an infection of the skin of cattle, equids and camels with small slender *Onchocerca* worms. The disease occurs worldwide, but is mainly common in the tropics and sub-tropics. In livestock infections are rarely a problem but it may be necessary to differentiate them from other more serious skin diseases such as mange and skin tuberculosis. The lesions on the skin contain microscopic larvae of worms called microfilariae. Midges and small biting black flies ingest the microfilariae, which develop to infectious larvae in the flies, which pass the infection to another host when feeding. The infectious larvae migrate to the predilection sites where nodules develop and adult females produce microfilariae.

Signs of Worm nodules disease

Clinical signs are minimal, consisting of nodules up to 3 cm in diameter under the skin and internally. In cattle skin nodules are found in the brisket, lower limbs and ligaments of the neck whereas in horses they are found in the ligaments of the neck and lower limbs.

Other symptoms are;

- **Animals have small lumps (called nodules) just under the skin. The lumps are full of worms and worm larvae.**
- **Cattle usually have lumps on the legs, around the genitals, on the neck and between the front legs.**

Skilled workers can check a piece from one of the lumps for these worms with a microscope.

Diagnosis

The microfilariae can be readily demonstrated in biopsies of nodules examined under the microscope.

Prevention - Control - Treatment

- **Ivermectin works well, other medicines are less effective.**
- **Control of the vectors is usually impracticable.**

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Plant poisoning



Plant poisoning

Introduction

Animals often live where there are poisonous plants available. They usually do not eat enough of them to

get poisoned; they seem to avoid the poisonous plants. When animals go to a strange pasture they need to "learn" to avoid the poisonous plants there.

- To let animals "learn" about a strange pasture without being poisoned, only put them on the new pasture for a short time each day . Than gradually increase the time they spend on it.

After very dry times, fires or when the pastures have been overgrazed, often the only plants that survive are poisonous plants with deep roots. The animals have than no other choice but to eat these plants which they normally avoid and they get poisoned.

- To avoid this, take extra forage to the animals if you can, while the pasture recovers.

Some common poisonous plants

Lantana

There are various species of this plant which have poisonous effects to different species of livestock, the most common among them being the *Lantana camara*. It is a shrub with coarse, branched stems having small curved prickles, rough toothed leaves and flower heads of various colors which range from red, yellow and white. It is common in most tropical countries where it has been wide used as ornamental plant in gardens. It flourishes in grasslands and is not palatable to livestock. However it is sometimes ingested accidentally.



Signs of poisoning

Affected animals will show:

- Severe jaundice and photosensitization in the form of severe

dermatitis on the light colored areas of the skin.

- **Death from hemorrhagic gastroenteritis may occur if animals consume it in large quantities.**

Lantana plant

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Lantana plant

© William Ayako,
Kari Naivasha

Castor oil plant

This is a blood poisoning plant occurring in most tropical areas. It is also called palma Christi. The shrub grows up to 3 meters high and has large palmate 3 or 5 pointed leaves. It has small yellowish flower and the seeds resembling engorged ticks with various markings on them. The seeds which are toxic if not treated are eaten by some tribes in Africa after special treatment i.e. soaking and boiling. Castor oil as they suggest is removed by pressing the seeds and the remaining cake is rich in ricin (a toxin) which is the toxic principle. The cake sometimes gets mixed in animal feeds by accident thereby causing poisoning.



Castor oil plant

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Signs of poisoning

There is profuse watery diarrhea in all affected animals and cattle may die in convulsions

Tribulus

It is a prostrate vine with yellow flowers having small spine fruits and burrs. It occurs throughout the tropics mainly Australia, Asia, South America and Africa. It favors bush paths and is troublesome to pedestrians due to the fruits and burrs.

Signs of poisoning

Photosensitisation, animals refuse to eat and drink, fever, edema of the limbs, blindness, jaundice, a purulent dermatitis and in the advanced stages asphyxiation and death. In South Africa it causes a condition called geeldikop (yellow thick head) with photosensitization.

In West Africa it appears most toxic during the humid season especially at the beginning of rains.

Oleander

Other names: *Nerium oleander*, *Nerium Indicum*, *Ceylon rose*, *lovers' poison*

This is a common shrub which grows up to 4 meters high and occurs throughout the tropics. It has numerous long stems growing from a common root. It has red compound flowers, and the leaves are dark green and are highly toxic.

Signs of poisoning

Vomiting, convulsions, diarrhea, colic and acute gastro enteritis

The solanines

These are a group of the solanaceae family all likely to contain alkaloid which is toxic if taken in sufficient quantities. Members of the solanaceae family include: thorn apples, *Datura* species, *Solanum* species including the potato *Solanum tuberosum*, *Solanum torvum*, *Solanum Incanum* and *Solanum nigrum* (dealy night shade) among others.

Signs of poisoning

Dullness, depression, increased pulse rate and respiration, nervousness, muscular tremors often followed by paralysis, drop in temperature, slowed pulse and respiration, relaxation of the sphincters, recumbency and death.

Datura plant

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Kari Naivasha**

The mimosine group

A number of legumes such as *Leucaena leucocephala* are known to contain a toxic substance called mimosine which when eaten in large quantities may cause hair loss and may also affect the normal reproductive behavior.



Leucaena shrub

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Mexican poppy-Argemone mexicana

This plant is widespread in the tropics and is known to be rich in toxic alkaloids. The seeds are particularly toxic and when mixed in grains and fed to animals will cause mortality. During drought, animals especially may feed on the plant and get poisoned.

Signs of poisoning

In all animals, there is intense capillary dilation leading to loss of fluid from the body tissues.

Milk weeds-Asclepias species

These plants are widespread in tropics and sub-tropical countries. Most species of the plant have large pods filled with floss. Their toxic principle is a mixture of glycosides. When ingested by animals, they suffer gastro enteritis and heart conditions.

Signs of poisoning

Weakness, paraplegia, labored breathing, convulsions and death normally arising from respiratory failure.

Selenium accumulators or converters

These groups of plants are capable of taking up inorganic selenium and converting it into organic selenium thus making them available to other plants which are toxic when ingested by animals. They are of various genera some of them being: *Astragalus*, *Neptunia*, *Oonopsis*, *Xylorrhiza*, and *Stanleya* They thrive on soils that are rich in selenium and therefore are called selenium indicators.

Signs of poisoning

- In chronic selenosis they animals are dull, listless, lack appetite, emaciated and have rough coat.**
- In acute form, they animals grind their teeth, salivate, show abdominal pain, some degree of paralysis**

and become blind condition called blind staggers.

General diagnosis of plant poisoning

- **Careful examination of the whole of the contents of the alimentary canal to see if any parts of the plant can be seen may be indicative.**
- **Evidence of acute gastro enteritis coupled with parts of known poison plant can be conclusive.**
- **Death of animals recently introduced into an area where known poison plants exist can be considered as suspicious.**
- **Sporadic death at a particular time of the season in successive years when suspected poison plants are in bloom may arouse suspicion.**
- **Inspection of grazing areas will often show that poison plants have been grazed.**
- **In places where a good diagnostic laboratory is available, specimens from the alimentary tract of dead animals can be taken for analysis.**

Prevention - Control - Treatment

Prevention and control of plant poisoning

This involves removing the animals from the plants or the plants from the animals.

- **In areas where animal husbandry is settled, the poison plants can be physically removed from the pastures.**
- **Do not graze animals where you know there are poisonous plants**
- **Feed animals well and healthy. They are much less likely to eat poisonous plants or scavenge for food and eat poisonous by mistake**

- In pastoral and nomadic areas, rerouting of the animals away from the routes with known poison plants is a good control method.

Recommended treatment

Treatment of plant poisoning is never straight forward and is often symptomatic.

- Where toxins is a depressant, stimulants may be used and vice versa.
- Timely administration of purgatives is good in removing the poison from the alimentary canal and when treatment is delayed, it is better to treat symptomatically with sedatives and pain relieving drugs.

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Contagious Pleuropneumonia

Images



Checking temperature using a thermometer

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