

Diseases of Newborn Lambs

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Watery mouth disease

Watery mouth disease is a colloquial expression used to describe a collection of clinical signs in neonatal lambs which includes lethargy, unwillingness to search for the teat and suck, profuse salivation, increasing abdominal distension and retained meconium. The condition is caused by colonisation of the small intestine by *E. coli* with rapid multiplication, followed by death and release of toxin.

Initial contamination of the lambs' gut results from a high environmental bacterial challenge from dirty wet conditions in the lambing shed and pens, and ewes with faecal staining of the wool of the tail and surrounding the perineum. Colonisation of the gut and rapid bacterial proliferation is facilitated by inadequate and/or delayed colostrum ingestion especially in small weakly triplets, and poorly fed ewes in low body condition with insufficient colostrum accumulation.



Fig 1: Lambs with watery mouth are dull, lethargic, depressed and reluctant to suck.



Fig 2: Watery mouth disease can quickly progress to coma and death.

Watery mouth disease is commonly encountered in twins but especially triplet lambs aged 12 to 36

hours kept in unhygienic conditions. Affected lambs are dull, lethargic, depressed and reluctant to suck. They frequently lie in the corner of the pen and show little interest in sucking when encouraged to stand. They rarely stretch themselves when they stand. Within 2 to 6 hours there is profuse salivation, a wet lower jaw and increasing abdominal distension although the lamb has not been sucking. The condition can quickly progress to coma and death.

Clinical signs of watery mouth disease

- twins but especially triplet lambs aged 12 to 36 hours
- dull, lethargic, depressed and reluctant to suck
- profuse salivation
- a wet lower jaw
- increasing abdominal distension although the lamb has not been sucking

Treatment

During the early stages soapy water enemas, such as diluted washing-up liquid, are commonly used. Mild laxatives/purgatives promote gut activity and expulsion of meconium. Oral antibiotics are effective during the early phase of the disease; spectinomycin is probably the drug of choice. Up to 40 per cent of advanced cases of watery mouth disease have bacteria in the bloodstream and should be treated with amoxycillin or similar drug injected intramuscularly. Despite abomasal distension in lambs with watery mouth disease, oral electrolyte therapy at a rate of 50 mls/kg four times daily is essential.

Treatments

- soapy water enemas
- mild laxatives/purgatives
- oral antibiotics are effective during the early phase
- oral electrolyte therapy at a rate of 50 mls/kg four times daily
- amoxycillin or similar drug injected intramuscularly

Management/Prevention/Control measures

Problems with watery mouth disease are almost invariably encountered in housed flocks towards the end of the lambing period caused by a build up of infection. All attempts must be made to improve hygiene standards in the lambing shed. Wherever possible, the remaining pregnant ewes should be moved to another building, or weather permitting, turned out to pasture. Whilst not the primary factor in the disease process, it is still important to ensure adequate passive antibody transfer.

Control measures must include:

- Abundant clean, dry straw bedding
- Use of paraformaldehyde powder on straw bedding.
- Cleaning and disinfection of individual pens between lambing ewes.
- Collection and disposal of placentae.
- Ensure that lambs suck colostrum as soon as possible following birth
- Oral antibiotic preparation within the first 15 minutes after birth

The single most effective means of controlling watery mouth affecting neonatal lambs on commercial sheep units is the administration of an oral antibiotic preparation within the first 15 minutes after birth to limit bacterial colonisation of the gut. On most farms it should be possible to delay the prophylactic use of oral antibiotics in lambs until the second half of the lambing period.



Fig 3: Controlling watery mouth by administration of an oral antibiotic preparation within the first 15 minutes after birth to limit bacterial colonisation of the gut.

Umbilical Infection (navel ill)

Navel ill is common in young lambs born into unsanitary conditions where there is inadequate navel treatment. It is more common during inclement weather and in male lambs presumably because urination delays desiccation of the umbilicus and removes some of the topical astringent/antibiotic applied by the shepherd.

Umbilical infections may remain localised and develop into a discrete abscess involving the body wall or extend to peritonitis, and liver abscessation. Umbilical infection with *Fusobacterium necrophorum* with subsequent spread to the liver causes the specific condition of hepatic necrobacillosis.

The consequences of nil/incorrect navel dressing include ascending infection to involve the body cavity, liver, and possibly more generalised infection to involve the joint, meninges (brain), lungs, kidneys, and endocardium (heart valves). Navel infection can be readily prevented; prognosis is largely hopeless. While infections gain entry through the undipped navel within the first few hours of life the dreadful

consequences for the lamb may not be fully appreciated until some weeks later after a considerable period of suffering (hepatic necrobacillosis).



Fig 4: The iodine solution has not been correctly applied to the umbilicus.

Clinical presentation

Septic peritonitis

The clinical signs vary with the extent and nature of the peritonitis. Lambs which develop septic peritonitis appear very dull and weak within the first five days of life. They stand with their back arched and their heads held lowered and spend long periods lying in the corner of the pen. The rectal temperature may be subnormal. These lambs do not suck but increasing exudation in the peritoneal cavity, causing moderate distension, contrasts with the lamb's gaunt appearance and expression. Affected lambs rapidly become dehydrated and die within a few days of clinical signs first appearing.



Fig 5: This lamb with septic peritonitis appears very dull and weak and stands with its back arched.



Fig 6: Comparison between healthy five day-old twin (left) and litter-mate with septic peritonitis (right).

Hepatic necrobacillosis

Typically, affected lambs are first noted from 10 to 14 day-old when they appear dull and depressed, and in much poorer condition than their co-twin. They have an empty gaunt appearance and are too easily caught in the field. Affected lambs may not follow the ewe and co-twin and are found sheltering behind walls and hedgerows etc. Affected lambs stand with an arched back and all four legs drawn together.

Treatment

Treatment of septic peritonitis and hepatic necrobacillosis is hopeless and lambs should be euthanased for welfare reasons.



Fig 7: Necropsy of lamb with septic peritonitis – note the large amount of pus (infection) on the left of this image.

Management/Prevention/Control measures

The umbilicus (navel) must be fully immersed in strong veterinary iodine BP within the first 15 minutes of life and repeated at least 2 to 4 hours later. Antibiotic aerosol sprays are much inferior to strong veterinary iodine BP for dressing navels, and are much more expensive. All umbilical infections are a direct consequence of neglecting sound husbandry practice.

This essential routine procedure must be undertaken when the ewe and her lambs are penned soon after

birth, and again 2 to 4 hours later when the shepherd checks that the lambs have sucked colostrum as outlined earlier. Note that all these procedures can be fitted into a routine such that none is overlooked.



Fig 8: The umbilicus (navel) must be fully immersed in strong veterinary iodine BP within the first 15 minutes of life and repeated 2 to 4 hours later.

Joint ill (Infectious polyarthritis)

Localisation of bacteria within joint(s) to cause an infectious arthritis with moderate to severe lameness is a major economic problem and welfare concern. Bacterial spread through the bloodstream in neonatal lambs results from entry via the gut, upper respiratory tract, tonsil, and perhaps the untreated umbilicus. Bacterial challenge is much greater when lambs are kept in poor sanitary conditions with delayed or inadequate colostrum intake.

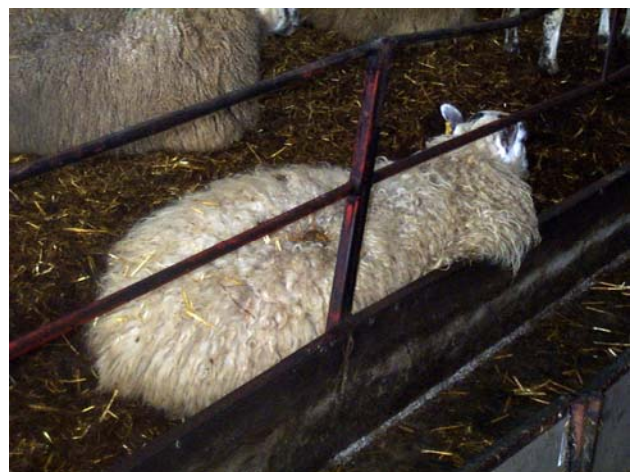


Fig 9: Bacterial challenge is much greater when lambs are born in poor sanitary conditions



Fig 10: High stocking density but plenty of clean dry straw should reduce bacterial load in the environment.

Clinical presentation

Streptococcus dysgalactiae infections are acquired during the first few days of life with lameness visible from five to 10 day-old. The number of infected joints is variable; typically only one joint is affected in approximately 50 per cent of lambs with 2 to 4 joints in the remainder. The joints most commonly affected, with decreasing frequency, are the carpal joints, hock, fetlock, and stifle joints. The affected joint(s) are swollen, hot, and painful. Infection causes considerable muscle wastage. After only one week lambs with polyarthritis are smaller than their co-twin and in poorer body condition.



Fig 11: Severe lameness of the right carpus of 5-7 days' duration. Note the lamb's poor body condition and open fleece. [Click video below](#)



Fig 12: Joint ill affecting the right hock (and possibly other joints).



Fig 13: After only one week lambs with polyarthritis are smaller (lamb on left) than their co-twin and in poorer body condition.

Lameness affecting a single leg may result from a foot abscess or interdigital lesion. Dog, fox and possibly badger bites are very uncommon. Trauma to joints may cause marked lameness; the stifle is the most commonly injured joint.

Diagnosis of an infected joint is based upon clinical findings although it may prove difficult to differentiate traumatic lesions from early infective conditions. In lambs less than one month-old all lameness and swollen joints should be considered septic until proven otherwise.

Procaine penicillin is the drug of choice for polyarthritis where *S dysgalactiae* and *E rhusiopathiae* are the most common joint pathogens accounting for over 90 per cent of positive joint fluid cultures. Penicillin once daily for at least five consecutive days administered during the early stages of lameness effects a good cure rate in many *S dysgalactiae* infections although dead bacteria and white blood cells within the joint may induce further inflammatory changes such that some degree of lameness persists.

Lambs with polyarthritis that continue to show moderate to severe lameness after two courses of antibiotic therapy do not grow well and represent a major welfare concern. These lambs must be euthanased for welfare reasons.



Fig 14: Lambs with polyarthritis that continue to show moderate to severe lameness after two courses of antibiotic therapy must be euthanased for welfare reasons.

Management/Prevention/Control measures

Every effort must be taken to reduce the risk of bacteraemia by ensuring timely adequate passive antibody transfer and reducing environmental bacterial challenge. The lamb must ingest sufficient colostrum (200 mls/kg) during the first 24 hours of life and 50 mls/kg within the first 2 hours, if not earlier. The umbilicus (navel) must be fully immersed in strong veterinary iodine BP within the

first 15 minutes of life and repeated at least once 2 to 4 hours later. Change of lambing accommodation is rarely an option; turnout to pasture for the remainder of the lambing period has been reported to markedly reduce morbidity.

There are no specific recommendations for the control of *S dysgalactiae* polyarthritis. A single injection of procaine penicillin to all lambs at 36 to 48 hours-old is very effective in the face of a disease outbreak but must be considered as a last resort after all aspects of lamb management and husbandry practices have been reviewed. The use of prophylactic antibiotic injections to control diseases that can be controlled by good husbandry practices will come under ever closer scrutiny by regulatory bodies.

Management/Prevention/Control measures

- reduce environmental bacterial challenge by maintaining good hygiene
- lambs must ingest sufficient colostrum
- appropriate navel treatments
- single injection of procaine penicillin at 36 to 48 hours-old

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