Downer cow's syndrome

Etiology

Most commonly the downer cow is a complication of milk fever .

Ischemic necrosis of the large muscles of the pelvic limbs and injuries to the tissues around the hip joint and of the obturator muscle are common in cows which do not fully recover and stand but remain recumbent following treatment for milk fever .

The injuries may also be the results of cows ( spread – eagling ) their hind limbs if they are unsteady during parturation or forced to stand or walk on a slippery floor immediately before or following parturation .

Dystocia due to an over sized calf may result in extensive edemas of the pelvic tissue and vulva , and failure of the cow to stand following parturation .

Epidemiology

Occurrence

The disease occurs most commonly within the first 2 or 3 day after calving in high – producing dairy cows immediately following milk fever

Cattle may also become persistently recumbent for many reasons other than complications of milk fever such as peracute coliform mastitis and carbohydrate engorgement .

Most common un dairy cows which have had milk fever but are unable to stand following treatment with calcium .

 Delay of more than 4 h in treatment for recumbent milk fever cows

Hypophosphatemia and \ or hypokalemia may be risk factors .risk factors

Animal risk factors

Complication of milk fever

A prolonged recumbency after a long delay in the treatment of milk fever is a major risk factor .

Prolonged recumbency before treatment for milk fever (more than 4-6 h) results in ischemic necrosis due to obstruction of the blood supply , especially in as heavy cow if she lies on one leg for a long period.

Cows with retained placenta and dystocia were also more likely to develop downer cow syndrome than cows without either problem .

Traumatic injuries to pelvic and pelvic limbs .

Traumatic injuries to the nerve of the pelvis and hind limbs are present in 25% or more of downer cows .

The sciatic and obturator nerves are vulnerable to injury by pressure from the calf moving through the pelvic canal during parturition .

 Serum electrolytes imbalance or deficiets may be associated with prol0nged recumbency following treatment for parturient paresis .

Hypocalcemia

Hypophosphatemia

The serum levels of inorganic phosphorus decline to below normal along with a hypocalcemia in cases of milk fever.

Hypomagnesemia

Along – term low level hypomagnesemia has been associated with the downer cow especially when it accompanies hypocalcemia . but it is usually manifested by atetanic hyperesthetic state which is not part of downer cow syndrome .hypokalemia

Ischemia due to prolonged recumbency associated with milk fever , may increase the cell membrane permeability of muscle fibers and allow the loss of potassium from the cell , this in turn causes the myotonia , which appears to be the basis of downer cow syndrome .

 Environmental and management risk factors

A slippery ground surface is a major risk factor .

Cattle which must walk across slippery floors , especially at the time of caving , may slip and fall and injure the large muscles of the pelvic limbs resulting in an inability to stand .

Prolonged recumbency result in ischemic necrosis and downer cow syndrome .

Signs

Unable to stand following treatment of milk fever .

Sternal recumbency

Normal mental status , vital signs and alimentary tract .

Appetite and thirst normal

most will stand in a few days if provided good clinical care and secondary muscle necrosis minimized .

some cases have bizarre behavior of lateral recumbency , abnormal position of legs , groaning , anorexia and die in several days.

Clinical pathology

Increase serum levels of creati8nine phosphokinase ( CPK) and amino transferase (AST) , serum phosphorus and potassium levels may be abnormal .

Lesions

Ischemic necrosis , edema , and hemorrhage of large medial thigh muscles .

Diagnostic confirmation

increased serum levels of CPK ,AST , proteinuria , necropsy lesions in cow unable to rise with no other lesions .

Differential diagnosis

Common causes of recumbency in dairy cows around time of parturation include :

Milk fever ; hypomagnesemia ; peracute coliform mastitis ; maternal obstetrical paralysis ; fat cow syndrome ; physical injures of pelvic limbs (dislocation of hip joints , rupture of gastrocnemius , femoral fracture ) ; acute diffuse peritonitis ( ruptured uterus , other causes ).

Downer cow syndrome

Is a common sequel to milk fever in which the cow was in sternal recumbency for several hours before being treated with calcium .

Following treatment , may of the clinical findings associated with milk fever resolved except the animal; was unable to stand .

Clinically the animal; may be normal except for recumbency and will commonly recover and stand normally within several hours or a few days .

Most Downer cows eat and drink normally , their vital signs are within the normal range , and their alimentary tract function is normal .however , some are anorexic , may not drink , exhibit bizzare movement of lying in lateral recumbency and dorsally , extended their head and neck frequently , moan and groan frequently , assume a frog – legged posture with their pelvic limbs and crawl or creep around the stall , and may die or are euthanized for humane reasons in a few days .

Non – parturient hypocalcemia

Paresis with mental depression and associated with low total serum calcium levels can occur in cows at times other than at parturition .

Hypocalcemia may occur after gorging on grain and may be a significant factor in particular cases .

Sudden rumen stasis due to traumatic reticulitis may rarely cause hypoalcemic paresis .

Diarrhea , particularly when cattle or sheep are placed on new lush pasture ,may also precipitate an attack.

Access to plants rich in oxalates may have a similar effect , particularly if the animals are unaccustomed to the plants .

Affected animals respond well to calcium therapy but relapse is likely unless the primary causes is corrected,.

Hypocalcemic paresis in sheep and goats

Hypocalcemia in sheep must be differentiated from pregnancy toxemia in which the course is much longer , the signs indicate cerebral involvement and the disease is restricted to pregnant ewes .

 There is no response to calcium therapy and a positive test for ketonuria is almost diagnostic of the disease .

At parturition , goats are susceptible to enterotoxemia and hypoglycemia

Treatment

Provide feed and water and excellent bedding or ground surface like sand or dirti palk.

Roll animal from side to side every few hours .

Fluid and electrolytes therapy as necessary .

The use of parenteral solutions containing potassium , calcium , magnesium , and phosphorus has been recommended .

Bedding and clinical care : comfortable bedding possible and the roll the cow from side to side several times daily to minimize the extent of ischemic necrosis and paraanalgesia which results from prolonged recumbency .

Palatable feed and liberal quantities of water .