DOWNER COW SYNDROME

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Etiology

- Mostly is a complication of milk fever
- Also injuries to musculoskeletal system due to a slippery floor before/following parturition
- Dystocia due to an oversized calf may result in extensive edema of the pelvic tissues and vulva, and failure of the cow to stand following parturition

Epidemiology

1. ***Occurrence***: commonly within the first 2 or 3 days after calving in high-producing dairy cows immediately following milk fever, other reasons of recumbency such as peracute coliform mastitis and carbohydrate engorgement
2. ***Incidence***: high incidence, study: 33% recovered, 23% slaughtered, 44% died

Epidemiology

3. Risk factors:

➢ Animal risk factors

- Complication of milk fever: prolonged recumbency after long delay in treatment (more than 4-6 hours)→ obstruction of blood supply → ischemic necrosis
- Traumatic injuries to pelvis & pelvic limbs: nerve injury present in 25% of downer cows, sciatic & obturator nerves are vulnerable by pressure
- Serum electrolyte imbalances may be present
- Hypocalcemia: insufficient amount of Calcium for treating Milk fever → cow unable to stand → prolonged recumbency
- Hypophosphatemia: return to normal after treatment of milk fever
- Hypomagnesemia: accompanies hypocalcemia, manifested by a tetanic hyperesthetic state, creepers (Mg, K ↓)
- Hypokalemia: occurs in dairy cows which have been treated with isoflupredone acetate for ketosis

➢ Environmental risk factors

- A slippery ground surface for walking, especially at the time of calving

PATHOGENESIS

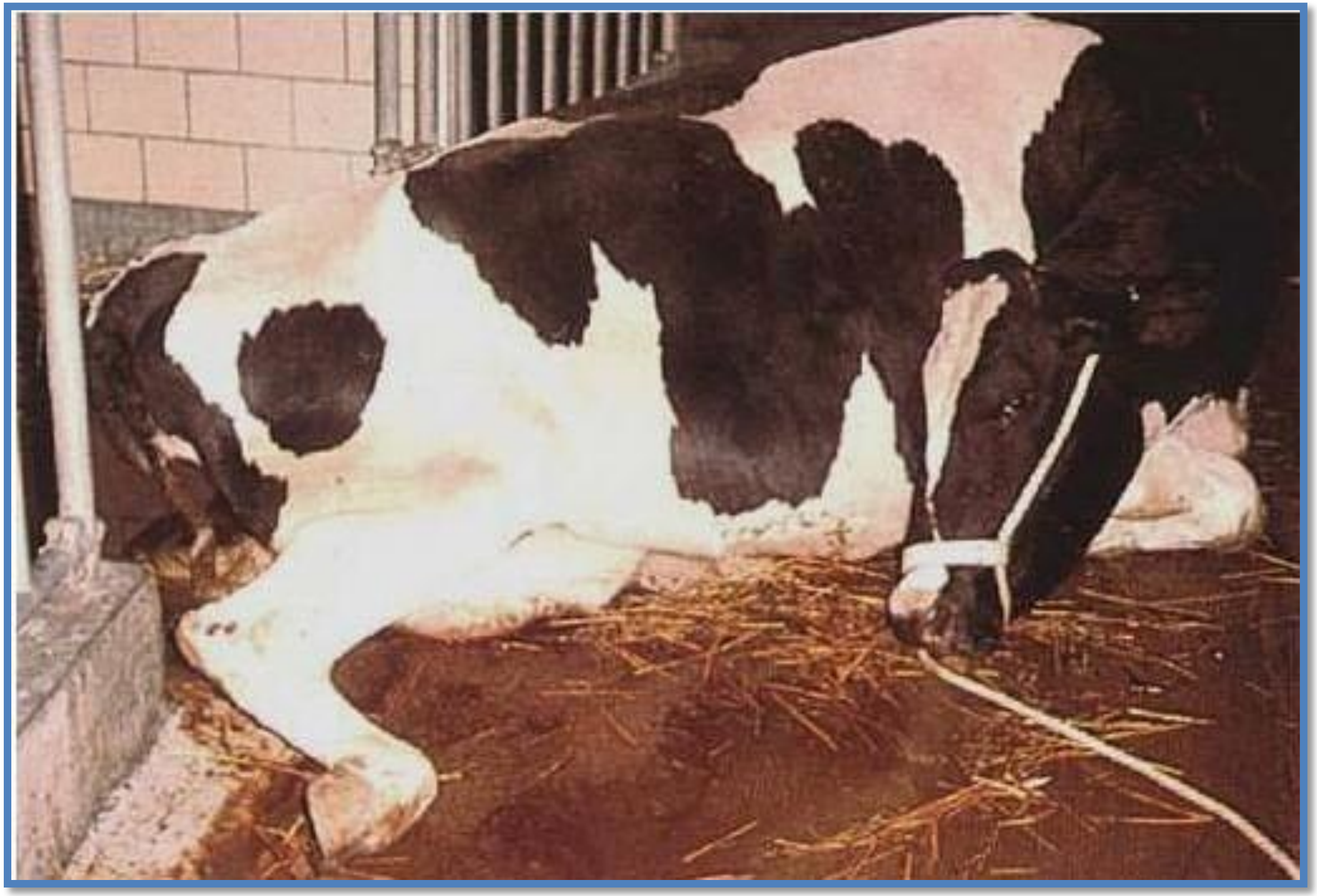
- Regardless of the cause Prolonged recumbency results in ischemic necrosis of major muscles of hind-limbs
- Traumatic injury to limb muscles & nerves at time of parturition can results in prolonged recumbency

CLINICAL FINDINGS

❑ Typical case:

- no effort, or unable to stand (30% of milk fever cases do no not stand following treatment for up to 24 h- cows considered downers if they do not stand after two treatments or 24 h)
- Painful, stiff or numb hindlimb
- Alert
- Eats, drinks well (reduced a little)
- Normal temperature
- Normal/elevated heart rate (80-100 bpm)
- Normal urination/defecation (proteinuria ← muscle damage)

CLINICAL FINDINGS



CLINICAL FINDINGS

- Crawling/creeping cases: make frequent attempts to stand (frog leg attitude)

Some cows on non-slippery surface + lifting assistance → stand

CLINICAL FINDINGS

With/without hip joint dislocation ; cow prefers this position which puts pressure on medial thigh

- Some cows stay in lateral recumbency with the head drawn back
- Severe cases (non-alert): hyperesthetic, do not eat/drink ←brain damage

Complications

- Coliform mastitis
- Decubitus ulceration (esp. over prominances)
- Traumatic injury around tuber coxae by hip slings
- Death due to myocarditis may occur after 48-72 h
- Response to treatment: 50% of downer cows stand within 4 days if cared for properly; if no response after 7 days → poor prognosis

Clinical examination

- Difficulty of examination: environmental circumstances, physical size of animal
- Causes of cattle recumbency: metabolic, nutritional, musculoskeletal, toxic, neurological, neoplastic, inflammatory, and infectious diseases
- Taking history: age, duration of rec., previous clinical abnormalities, parturition date, injections, diet, management info, sudden exercise, ground surface

Clinical examination

- A systematic physical examination of all accessible body systems is necessary
- ***Visual examination*** from distance: head & limb position, attempts to stand/creep
- The standard ***close clinical examination*** is necessary to determine body temperature, heart rate and pulse, respiratory rate, and the state of the major body systems such as the respiratory tract, cardiovascular system, central nervous system for mental state, and gastrointestinal tract, mammary gland, reproductive tract, any of which may indicate the presence of abnormalities associated with shock which results in recumbency
- Focus in **calved cows** on udder for mastitis, the uterus for metritis, and the gastrointestinal tract for diseases associated with toxemia and dehydration and shock (acute diffuse peritonitis, carbohydrate engorgement), which results in recumbency

Clinical examination

- Musculoskeletal system: Palpation of muscles, bones, joints & feet (passive flexion & extension); cows should be rolled from side to side
- Neurological examination: withdrawal reflexes, sensation of all limbs, ….
- Appropriate lifters can help complete examination

Clinical pathology

- Ca, P, Mg & glucose: normal
- CPK, AST: elevated (increase by duration, 18-24 h ↑
- U/A: Pr +, Mb +
- Prognosis on BUN, muscle enzyme

Necropsy

- Hemorrhages and edema of the skin of traumatic origin are common
- Hemorrhages and degeneration of the medial thigh muscles
- Hemorrhages around the hip joint with/without rupture of the ligamentum teres
- Heart: flabby & dilated; focal myocarditis
- Liver: fatty degeneration
- Kidney: degenerative changes in the glomerular and tubular epithelium

TREATMENT

- Treating animal depends on prognosis and cause & euthanasia/slaughter may be recommended for some cases

1. Fluid & electrolyte therapy

- K, Ca, Mg & P containing solutions recommended but the value?!
- Parenteral routs for not drinking cows

2. Bedding

- Comfortable bedding the most important part (sand/dirt pack) – if slippery cows do not attempt to stand
- Rolling over cows several times daily
- Normal milking + udder cleansing & germicides

TREATMENT

3. Assisted lifting
- Assistance to cows making efforts to stand (20-30 min)
- Several times daily
- Use of lifting devises
- Water floatation tanks

TREATMENT

Transportation & welfare of the cow

Control

- Early detection/treatment of ***milk fever*** will reduce the incidence and severity of downer cow syndrome
- ***Well bedding*** of cows with milk fever
- ***Rolling*** from side to side every few hours