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Downer Cow Syndrome متلازمة البقرة الراقدة

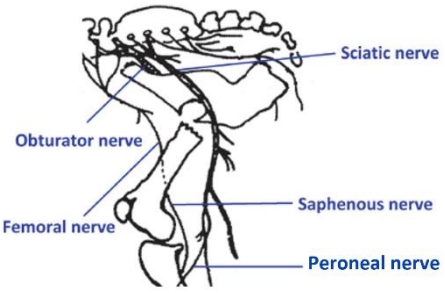
Department of Internal and Preventive Medicine

Summary:

The term downer cow refers to cattle that are unable to stand or walk without assistance for at least 24 hours without obvious reason.

Etiology

- **Persistent recumbency**, which results due to metabolic, musculoskeletal, neurologic, neoplastic, and inflammatory diseases.
- In **alert downer cow**, due to musculoskeletal or neurologic injuries:
    - Lesions of the sciatic or obturator nerve secondary to dystocia.
    - Fractures of long bones or the pelvis.
    - Hip dislocation.
    - Muscle injury: primary trauma or secondary to prolonged recumbency.
        - Musculoskeletal injuries are also common if cows are unsteady during parturition or forced to stand or walk on a slippery floor immediately following parturition.

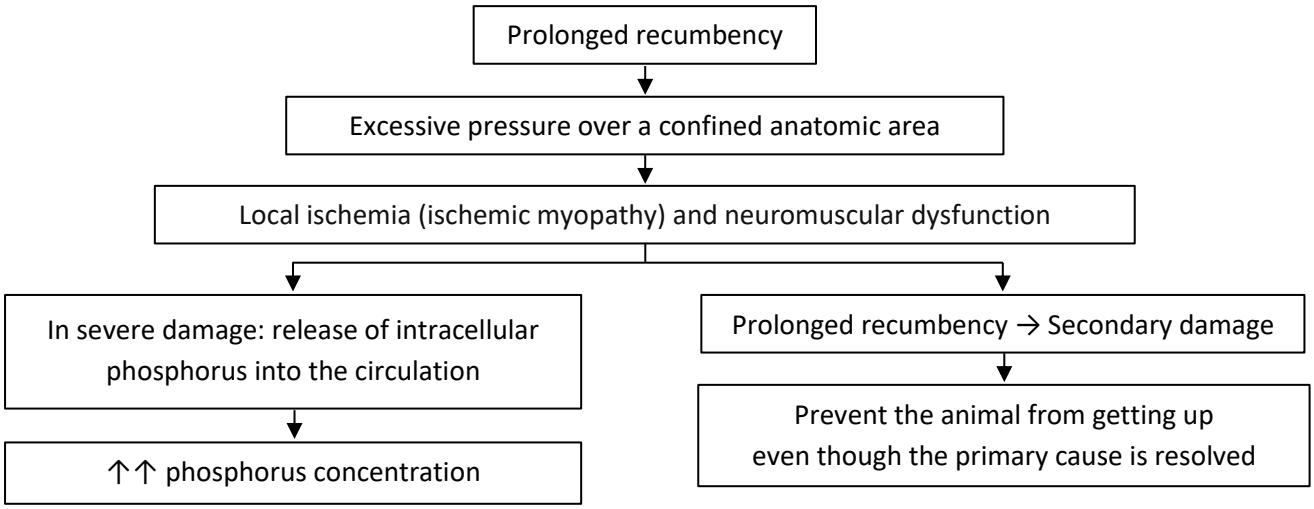


- In **non-alert downer cows**, due to:
    - Systemic disease affecting mental status and general attitude, such as periparturient hypocalcemia, septicemia, hypovolemia, diffuse peritonitis, and severe hepatic lipidosis.
    - Neurologic diseases affecting the brainstem or cortex.
- In most cases, the downer-cow syndrome is a complication of milk fever.

Epidemiology

- Most common in dairy cows within 2-3 days after calving, often immediately after milk fever case.
- Cows with high body condition score are at higher risk than thinner cows.
- A slippery ground surface is considered a major risk factor.

Pathogenesis



Clinical Signs

- Some affected cows may make no effort to stand.
    - Limbs in these cows appear stiff, painful, or numb.
- Some cows make frequent attempts to stand but are unable to fully extend their pelvic limbs.
- On a non-slippery surface, some cows can stand with some hip sling assistance.
- Hyperflexion of the fetlock joints due to damage of the peroneal nerve.
- In some cases, the hindlimbs are extended on each side of the cow and reach up to the elbows on each side.
- The abnormal position of the legs may result from dislocation of one or both hip joints.
- Regardless of the cause, the cow prefers this leg position and invariably will shift the legs back to the abnormal position if they are placed in their normal position.

- In more severe cases, the cow becomes hyperesthetic with slightly stiff limbs, and usually do not eat or drink.

- **Complications:**
    - Coliform mastitis.
    - Decubitus ulceration, especially over the hock and elbow joint.
    - Traumatic injuries around the tuber coxae caused by the hip slings.

- **Clinical Examination of the Downer Cow**
    - A systematic physical examination of all accessible body systems is necessary.

- Standard close clinical examination is necessary to determine body temperature, heart rate and pulse, respiratory rate, and the state of the major body systems.
- In the recently calved cow, particular emphasis must be given to adequate examination of the udder for mastitis, the uterus for metritis, and the gastrointestinal tract for diseases associated with toxemia, dehydration, and shock.
- A urine sample must always be tested for ketones and the presence of myoglobinuria.
- Careful systematic examination of the musculoskeletal system includes palpating the muscles, bones, joints (evidence of dislocation), and feet of each limb, including passive flexion and extension of each limb.

Clinical Pathology

- Serum calcium and glucose concentrations → normal range.
- Phosphorus and potassium concentrations
  - Decreased in cows with depressed feed intake.
  - Increased in animals with muscle damage and/or dehydration.
- Serum activity of CK and AST are usually elevated.

Necropsy findings

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

Treatment

- Treat the primary cause of recumbency.
- Antiinflammatory therapy as pain management.
- Provide excellent bedding or ground surface such as sand or dirt pack.
- Roll animal from side to side every few hours.
- Fluid and electrolyte therapy as necessary.
- Assisted lifting to aid standing using cow-lifting devices:
  - Hip lifters: fit and tighten over the tuber coxae
  - Body slings: fit around the abdomen and thorax of the animal
  - Notes:
    - The hip lifters can result in traumatic injuries to the tissues surrounding the tuber coxae if not used appropriately.
    - Cows carrying their own weight after being lifted must not be left unattended because they could lose strength and hang in the device, which could result in severe trauma.

Prevention

- All recently calved dairy cows that are at high risk for milk fever must be observed closely 12 to 24 hours before and after calving for evidence of milk fever.
    - If the cow becomes recumbent, do not delay treatment for more than 1 hour.
- Dairy cows should be placed in a comfortable and well bedded stall before calving and should be left in that stall until at least 48 hours after partition.

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References:

- Constable PD, Hinchcliff KW, Done SH, et al. (2017). Veterinary Medicine: A Textbook of the Diseases of Cattle, Horses, Sheep, Pigs, and Goats. 11th ed. Elsevier, St. Louis, Missouri, USA.