

Practice Tips

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What Is Your Diagnosis?

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A red and white ten year old Holstein Cow fell while crossing the gutter. She was eight months pregnant and dry for three weeks. The cow had stumbled two weeks before while crossing the gutter. My examination revealed a cow in lateral recumbency, salivating with her tongue hanging out of her mouth. Her rectal temperature was 101.4° F, pulse 100 beats per minute and normal respirations. Rabies is currently active in this area so we handled this animal with that in mind. The herd is vaccinated annually for rabies, IBR, PI₃, BVD and leptospirosis with killed products. Rectal examination revealed a 3 inch mass along the left ureter. Treatment consisted of intravenous Calcium, Banamine, Antihistamine, B-Vitamins and Rumalax Boluses. No response to treatment was noticed within 18 hours. The rectal temperature increased to 106° F. No further change in signs was noted

in the next 24 hours. The cow was taken to the State Diagnostic Laboratory for necropsy examination.

What Is Your Diagnosis?

The rabies FA Test was negative. The diagnosis was lymphosarcoma. The most prominent lesions were located in the left lumbar area. The lymph nodes and the caudal flexure of the duodenum were involved as well as the right atrium, diaphragm, omasum, abomasum and the right cervical lymph node. Both kidneys were polycystic, probably from obstruction of urine flow in the ureters.

The fetus was a Perosomus Elumbus with BVD Virus found in fetal tissues by FA examination.

Lymphosarcoma should be considered in the differential diagnosis of most conditions especially in herds with known BLV serologically positive cows as was this herd.

Use of Plastic Roof Cement to Identify Worked Cattle

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A system of marking beef cattle using plastic roof cement has proven very beneficial over the past fifteen years. The impetus for this idea comes from a large commercial operation in southwestern Virginia. The major benefit of this system is that it allows quick assessment of an animal's status at a glance. Plastic roof cement was chosen because it is easy to apply, highly visible, very durable, and relatively inexpensive. The bottom line is that this system allows for one hundred percent compliance to all herd-health procedures, an obvious benefit to both veterinarian and owner.

Credit for this system must go to Stuart Land and Cattle Company of Virginia, Incorporated, a commercial enterprise of beef cattle, sheep, and burley tobacco. The farm consists of sixteen thousand acres, located in the Appalachian Mountains. The terrain is rocky, rugged, steep mountain land, much of which is wooded and densely

covered with brush, thus making difficult the task of gathering cattle when they are to be worked; consequently, some cattle might not get processed. Due to the company's unique marketing program—they supply cattle for exotic disease research to the United States Government's Animal Disease Center at Plum Island, New York—all vaccinations and health procedures are pre-approved by the government, and there is a serious effort by management to completely comply to all facets of the herd-health program. It was this desire to be sure that all animals are worked that led to the need for a marking system that would identify whether an animal has been processed.

This system is not used as a substitute for individual animal identification; quite the contrary, each animal in the herd is identified in quadruplicate: (1) eartag, (2) tattoo, (3) bangle, and (4) brand. The marking system then is used as an adjunct to, and not in lieu of, individual identification.

Cattle are marked with plastic roof cement as they are processed through a chute. It then becomes a simple matter for a cowboy on horseback to spot any animal that has not been worked, one that is not marked. This is the major purpose of the system: easy recognition of the status of each animal in the herd.

Plastic roof cement offers several benefits. It is easy to apply, by just rubbing it on with an applicator stick. It is very visible, surprisingly even showing up well on black cows. It is durable, generally persisting two to three months. It is inexpensive, costing about two-and-a-half cents per cow. These advantages, plus the fact that there are no apparent harmful effects, have made plastic roof cement a very useful product. In summary, the use of plastic roof

cement to mark cows has allowed total compliance to all recommended health procedures. Without this system, a thorough and complete health program would not have been possible. Therefore, I recommend this system to anyone desiring such a goal.

Table 1. Marking system used at summer processing.

Area Marked	Status	Interpretation
None	Unknown	Bring in for examination
Hips	Pregnant	Will calve in spring
Shoulders	Open	Move to fall program
Hips + head	Pregnant	Performance cull
Shoulder + head	Open	Reproductive cull

Using Serum Total CO₂ or Bicarbonate Values to Individualize Fluid Therapy

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Conditions such as calf diarrhea, grain overload, vagal indigestion, and abomasal torsion often result in dehydration with very different types of electrolyte and acid-base abnormalities. If one is able to rapidly determine whether the animal is suffering from metabolic acidosis or alkalosis, and how severe that derangement is, one is able to better correct the acid-base and electrolyte abnormalities. A rapid test kit (Halereco Total CO₂ Apparatus Scientific Products) for estimating serum total CO₂ (TCO₂) is available. It is inexpensive and gives reliable results. The principle of the test is based on addition of lactic acid to the patient's serum: $\text{H}_2\text{CO}_3 \rightarrow \text{H}^+ + \text{HCO}_3^- \rightarrow \text{H}_2\text{O} + \text{CO}_2$.

The reaction is driven to the right in a closed container, and the CO₂ collected in a glass syringe. The amount of CO₂ is read directly off the calibrated syringe, and corresponds to the amount of bicarbonate present in the serum. Thus, the metabolic acid-base status of the patient serum is rapidly determined.

Acidosis:

Intravenous fluids are needed to treat hypovolemia, dehydration, and metabolic acidosis. If available, blood gases or a Harleco Total CO₂ measurement should be used to assess degree of metabolic acidosis. A plasma pH below 7.1 carries a poor prognosis for survival. The normal plasma bicarbonate level is 24 to 28 meq/L. Deficits can be calculated by subtracting the measured value from the normal value and multiplying by the number of liters of extracellular fluid in the patient. ECF volume is arrived at by body weight in Kg X .30 (30% of weight is ECF). For example, you measure a plasma bicarbonate of 10

meq/L in a 500 Kg cow. The calculation is 16 meq/L (26 minus 10) X 500 Kg X .30 = 2400 meq HCO₃⁻ required to correct deficit. One gram of baking soda (NaHCO₃) contains 12 meq HCO₃, so

$$\frac{2400 \text{ meq}}{12 \text{ meq/gm}} = 200 \text{ gm sodium bicarbonate.}$$

Isotonic sodium bicarbonate is 1.3% (13 gms/L), so

$$\frac{200 \text{ gm}}{13 \text{ gms/L}} = 15.4 \text{ L of}$$

1.3% NaHCO₃ should be given I.V. This can be added to water or 5% dextrose and given I.V. at a rate of about 5 L/hour.

Additional volumes of isotonic fluids will be helpful in combating dehydration, promoting diuresis and allowing renal buffering mechanisms to function. Lactate containing fluids should be avoided, as lactate metabolic pathways are overwhelmed and essentially nonfunctioning.

Alkalosis:

If available, blood gases or a Harleco Total CO₂ should be used to assess degree of metabolic alkalosis. Normal plasma bicarbonate level is 24 to 28 meq/L. Markedly elevated bicarbonate levels indicate metabolic alkalosis. When associated with hypochloremia, this alkalosis is best corrected by administering IV chloride. Fluids with normal levels of sodium (140-156 Meq/L), high levels of chloride (156 meq/L or more), and some potassium are indicated. Saline with 30 to 100 meq/L KCl added is an ideal fluid. Flow rates should be around 5 to 6 liters/hr, and potassium infusion rate should be kept around 1 meq/Kg/hr and