BOTTLE JAW

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Intermandibular edema (“bottle jaw”) refers to fluid accumulation under an animal’s lower jaw. It is most commonly associated with heavy parasitism, but any condition that affects the factors involved with moving fluid in and out of the bloodstream could cause bottle jaw. A quick literature search revealed no less than 98 causes of bottle jaw or conditions that could be confused with bottle jaw.

The graphic below depicts the competing forces, pressures and concentration gradients involved with fluid movement in and out of capillaries-- the smallest blood vessels. Blood pressure in the capillary pushes fluid and nutrients out of the bloodstream and into the “interstitial space” (ISS or space between tissues). Fluid is also pulled out of the vessel due to ISS colloidal osmotic pressure, which is a protein concentration gradient that causes fluids to move. Proteins in the bloodstream (plasma colloid osmotic pressure) draw fluids in the ISS back into the vessel at the farther end of the capillary, where blood pressure is lower. Interstitial fluid pressure is generated by animal movement and other factors and encourages fluid to be resorbed into capillaries.

There is usually about 1% inefficiency in the body’s ability to resorb fluids that exited capillaries and entered tissues. The lymph system is usually able to handle this small amount of fluid and return it to the circulatory system.

Source: http://quizlet.com/12528282/cr-physiology-ch-16-microcirculation-lymphatic-system-flash-cards

Any derangement of any of the factors involved with this fine-tuned fluid balance can cause a variety of problems, one of which is bottle jaw:

Fluid Balance Factor Problem Cause Effect

Capillary pressure Blood pressure too high Some heart problems Too much fluid pushed into tissues, causing BOTTLE JAW

Plasma colloid osmotic pressure Protein levels too low • Protein-deficient diet

• Johne’s Disease, coccidiosis or other GIT inflammation

• Liver failure or disease, including flukes

• Kidney failure or disease

• Blood loss

• Parasitism Too little protein in bloodstream to draw fluid back in from ISS following colloid osmotic pressure gradient, causing excess residual tissue fluid and BOTTLE JAW

Interstitial fluid pressure Tissue pressure too low Not enough movement due to illness, lameness, weather, or lack of opportunity to exercise Too little tissue pressure to encourage return of fluid to capillary, causing excess tissue fluid and BOTTLE JAW

Lymphatic return Lack of effective lymphatic system drainage in head and throat area • Lymphadenitis due to C.L. or other infection

• Trauma, tumor, blood clots, hives, snakebite or other regional inflammatory condition that blocks lymphatic return from head Excess fluid accumulation in tissues, resulting in BOTTLE JAW

In grazing animals, excess tissue fluid tends to accumulate in the lowest parts of the body, especially under the jaw, in the lower legs and prepuce. This bottle jaw fluid is called “pitting edema”, which means an imprint remains if one presses on it with a finger. It is not solid swelling such as with a bruise or inflammation, or a resilient balloon of fluid such as a cyst or some abscesses.

Generally speaking, animals with bottle jaw are severely ill and may be close to death; they should not be stressed at all or forced to walk any distance. The underlying cause of bottle jaw in each animal should be diagnosed and treated promptly. Animals heavily parasitized with the Haemonchus contortus parasite will probably also have very pale mucous membranes.