Chicagoland Happenings

WE'RE EXCITED that construction at our Elk Grove Village hospital is finally complete! The additional space and vastly improved environment and aesthetics have made a substantial difference for patient care and overall work flow. We are looking forward to welcoming you to CEs in the new conference room. Please stop by anytime for a tour.

Thanks to those of you who attended our Cabin Fever continuing education event in January. We had a great time, and it was wonderful to see you. If you have any suggestions for CE topics for next year — or anytime — please feel free to contact Kelly Gardella at kelly.gardella@bluepearlvet.com. Kelly recently joined BluePearl as our veterinary relations coordinator. Kelly is a CVT whose name may sound familiar to you, as she previously worked for Heska in Chicagoland.

Like finishing construction at Elk Grove Village, we are equally excited to be wrapping up winter and welcoming spring! Please let us know if there is any way we can further partner with you to serve your clients and patients. Stay warm!

Jen Welser, DVM, DACVO Chief Medical Officer BluePearl Veterinary Partners

Watch out for Pulmonary Contusions

THE STANDARD OF CARE for patients suffering significant trauma, such as being hit by a car, is to take thoracic radiographs checking for internal injuries. In humans, 25 to 30% of individuals suffering trauma to the chest have been reported to demonstrate pulmonary contusions. In these individuals, the estimated mortality resulting directly from these pulmonary contusions is 15 to 40%. Pets are also at risk for lung injury. In pets hit by cars presenting for fractures, it has been reported that up to 44% have pulmonary contusions.

A contusion is a mechanical injury that results in hemorrhage. Contusion of the lungs, i.e. pulmonary contusions, can result from direct trauma to the lungs, such as a penetrating wound. In addition, blunt trauma to the thoracic wall and pressure changes within the airways as the thoracic wall quickly contracts and expands, indirectly damage the lungs by producing shock waves that travel through the lung tissues. These shock waves cause overlying alveolar tissue to shear away from denser underlying supportive tissues. Compression of the lungs from blunt trauma also causes the air-filled alveoli to burst like balloons.

The severity of pulmonary contusions frequently progresses over hours to days as an inflammatory reaction to the injury develops. Blood from damaged capillaries immediately fills the airways and alveoli. Later, protein-rich fluid leaks into the airways as inflammatory cells and chemical mediators alter vascular permeability. Loss of surfactant within the alveoli causes them to collapse. The elasticity and compliance of the affected lung regions become compromised.

Signs of pulmonary contusions can vary from mild to severe. Many patients may be asymptomatic on presentation only to have signs of respiratory compromise progress over several hours. It can take up to 72 hours to determine the full extent of the respiratory compromise in chest trauma patients.

The diagnosis of pulmonary contusions is based on the patient’s history of or physical signs of trauma, clinical evidence for respiratory compromise or hypoxemia, and thoracic radiographic findings.

Signs of pulmonary contusion
- Cyanosis
- Hemoptysis
- Increased respiratory effort
- Mental dullness
- Open mouth breathing
- Tachypnea
- Weakness

The first goal of treatment is to stabilize the patient.

1. Patients demonstrating shock should receive IV fluids in smaller measured increments until the perfusion goals of normalizing blood pressure and volume are achieved. Take care not to over-infuse the patient, or the excessive intra-vascular perfusion pressure and volume could contribute to further fluid leakage into the lungs. Patient monitoring should include pulse quality, mucus membrane color, capillary refill time, blood pressure measurement, patient mentation and strength.

A dog suffering from pulmonary contusions

Radiographs typically demonstrate a patchy or diffuse alveolar and interstitial lung pattern. Repeat radiographs may be needed to monitor the progress of the condition.

Flow-by oxygen support may be necessary while the patient is first being evaluated.

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**FATTY TUMORS**

When should we act?

A LIPOMA is one of the most common subcutaneous tumors found in middle-age to older dogs. They are benign masses composed of mature adipose tissue, and the reason for their development remains unexplained. The tendency for dogs to develop lipomas may be inherited. In most of our patients, subcutaneous lipomas are not clinically significant, and treatment is not warranted. However, surgical removal of a lipoma would be indicated if the mass has been growing rapidly, is causing irritation or interfering with ambulation, or is worrisome to the owner. Marginal resection of simple lipomas would be expected to be curative.

Lipomas will occasionally behave more aggressively, infiltrating deeper into muscle tissue, fascia, nerve fibers, joint tissue and even bone. Infiltrative lipomas are well differentiated and infrequently metastasize. These tumors can frequently be found in the caudal thigh area between the semitendinosus and semimembranosus muscles. Aspirates will demonstrate lipid cells. On radiographs and CT scan, the lipoma will have a distinct hypoechoic finding in the surrounding tissues.

Dogs and cats will also develop liposarcomas, which do NOT result from the malignant transformation of lipomas. Instead, they are similar to other soft tissue sarcomas. Liposarcomas can locally invade surrounding tissues and have a low metastatic rate. Differentiated from lipomas on cytology, liposarcomas are best treated with surgery. Median survival times of 1188 days have been reported after complete surgical excision. Marginal excision has been demonstrated to result in survival times of 649 days.

Extrahepatic biliary tract obstruction (EHBO) can occur with acute pancreatitis. This often resolves spontaneously as the acute pancreatitis improves, although, in rare cases surgery is necessary. Acute pancreatitis may also result in respiratory difficulty due to pleural effusion (from low albumin and/or vasculitis), pulmonary edema (as can be seen with acute respiratory distress syndrome) and pulmonary thromboembolism. In some cases, pancreatitis can be severe, resulting in an abscess or necrotizing pancreatitis that may require surgical intervention. Chronic pancreatitis may result in exocrine pancreatic insufficiency and diabetes mellitus.

Summary

There is currently no specific test for pancreatitis in dogs, and diagnosis should be based on a combination of compatible clinical, clinicopathological and imaging findings. Amylase and lipase can be useful in the diagnosis of pancreatitis; however, there are other causes of elevations in these enzymes, and normal enzyme concentrations do not rule out pancreatitis. Abdominal ultrasound has assumed a major role in the diagnosis of pancreatitis and the differentiation of pancreatitis from other pancreatic disorders. The prognosis depends on the severity of disease with mild disease having a good prognosis and severe or recurrent pancreatitis having a guarded prognosis.

We thank our colleague from BluePearl in Florida, Cathy Meeks, DVM, DACVIM, for letting us use this article for Companion.
Explaining CCL Injury and TPLO to Your Client

Why is tearing the cranial cruciate ligament a problem?
Injury and tearing of the cranial cruciate ligament (CCL) is one of the most common causes of hind limb lameness, pain and progressive arthritis of the knee (also called the stifle) in dogs. Many ligaments support and stabilize the stifle allowing the bone above (femur) and below (tibia) the knee to bend without sliding forward or backwards against each other. The surface of the tibia, called the tibial plateau, has a slope. When the dog bears weight, the tibia wants to slide forward on this slope. The CCL restraints this movement. Rupture of the CCL results in instability and abnormal sliding of the tibia forward with every weight-bearing step. Most dogs with this injury cannot walk normally and experience pain. The resulting instability damages the cartilage and surrounding structures and leads to progressive arthritis. Cartilage pads or cushions within the knee called menisci may also become damaged.

What are the signs of a cranial cruciate ligament tear?
Early signs of CCL damage or partial tears include stiffness or very mild lameness affecting one of the back legs, most noticeably after exercise. Dogs may show subtle changes in gait, a tendency to shift weight off the affected leg when standing in place, or the inability to sit straight. As the CCL continues to tear further, symptoms increase.

A full tear usually results in complete lameness in the affected leg. Many dogs refuse to walk on the affected leg and may hold the leg up in the air. In some cases, the knee will make a clicking or popping sound as the dog walks. This often indicates damage to the cartilage pads (menisci) within the knee.

How is the diagnosis made?
A CCL tear is diagnosed by palpation and radiographs of the knee. Sliding of the tibia forward against the femur with manipulation (called a cranial tibial thrust or cranial drawer sign) indicates that the CCL has torn. Some dogs must be sedated to check for instability and abnormal movement of the tibia. A bone plate and screws are then placed in the tibia using a specially designed saw blade (figure 1). A bone plate and screws are then placed in the tibia using a specially designed saw blade (figure 1).

FIGURE 1

FIGURE 2

FIGURE 3

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When They Can’t Eat Another Bite

Food bloat is diagnosed with radiographs. The food-filled stomach, unlike a GDV, is normally positioned.

4. Administering pro-motility medications such as metoclopramide may also be helpful.
5. Analgesics are indicated in painful dogs. It has been suggested that NSAIDs be avoided so as not to further irritate the stomach.
6. Finally, the resolution of food bloat takes time. Most dogs improve within 12 hours of presentation.
7. Surgery is not recommended to treat food bloat unless the stomach is torsed.

How about lavaging the food out of the stomach?
Lavage is typically not necessary and would likely prove difficult to perform because of the density and dryness of the stomach contents. The risk of inducing aspiration pneumonia in many cases outweighs any potential benefit you might gain. Lavage might be considered if the stomach is distended to the point where perfusion is compromised.

NOTE: The occurrence of food bloat has not been associated with an increased risk of developing GDV.

Next, the surgeon will make a curved cut through the tibia using a specially designed saw blade (figure 1). The top portion of the tibia is then rotated a precise number of degrees in order to change the angle of, thereby leveling, the slope of the tibial plateau to prevent the forward sliding that occurs with a CCL tear (figure 2). A bone plate and screws are then placed in the tibia to stabilize it and allow healing to occur (figure 3). The incision is closed with sutures or skin staples.

What happens if a CCL tear is not surgically treated?
Abnormal sliding of the bones within the knee will damage the cartilage and surrounding support structures. The initial pain may diminish with time, however, severe arthritis will develop more rapidly. Chronic and persistent discomfort, decreased ability to bend the knee, and loss of strength in the leg will develop. The dog’s willingness to play and exercise will likely diminish due to the loss of leg function and discomfort. As weight is transferred from the injured leg to the other healthy rear leg, 40% of dogs will tear the cruciate ligament in the healthy leg.

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2. Oxygen therapy is required by most patients with moderate to severe pulmonary contusions. Oxygen can be supplemented via flow-by techniques, oxygen cages, oxygen hoods or placement of a nasal oxygen cannula. The more severely compromised patients will benefit from positive pressure ventilation. Oxygen is blown into the lungs to open the airways and alveoli. This typically requires placement of an intratracheal catheter or endotracheal intubation. Those patients who cannot adequately ventilate on their own require mechanical ventilation. Pulse oximetry and/or blood gas analysis should be monitored in these patients.

3. Analgesics will benefit patients when discomfort compromises their willingness to take deeper breaths.

How about diuretics, corticosteroids, or antibiotics?

Diuretics are not recommended. In studies they have not been shown to reduce the severity of contusions, and they can lead to dehydration.

Meanwhile, corticosteroids have not been shown to reduce the degree of inflammation when administered after an injury. Corticosteroids, by suppressing the immune response could make the patient more susceptible to infection. Finally, antibiotics are not warranted unless a secondary infection (characterized by increased coughing and fever) develops.

What’s the prognosis?

The severity of the pulmonary lesions will determine whether the patient can survive. Hypoxemia typically becomes the limiting factor in the patient’s life. The more severely affected patients should be hospitalized in a setting where they can receive continuous oxygen therapy, supportive care and monitoring.

NOTE: Patients with chest trauma need to be observed closely for the first 24 hours. The severity of the pulmonary injury may not become apparent for hours to days.