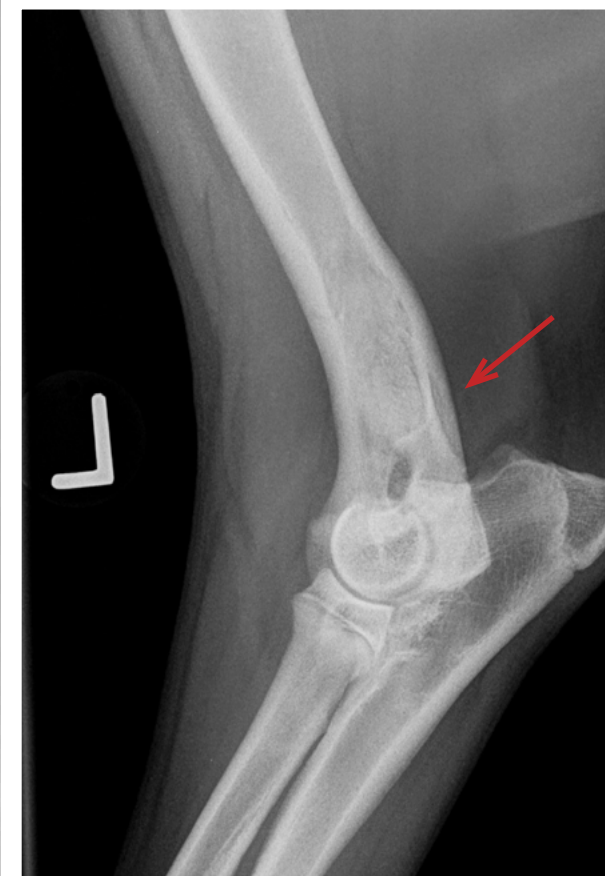


West Coast Veterinarian is pleased to introduce a new topic for "A Year in the Life." Each four-part column is written by one veterinary specialist about one topic that has four distinct life phases. Through the course of a year, each instalment highlights how this topic affects animals at a certain life stage and what veterinarians should know about how to treat it. This year's focus is lameness.

DIAGNOSING LAMENESS IN DOGS ZERO TO SIX MONTHS OLD

BY GEOFF HUTCHINSON, MS, DVM, Dipl. ACVS

Photos courtesy of Tawni Silver, DVM, Dipl. ACVR



Radiographs showing the characteristic sign of panosteitis (left) and a normal joint (right).

Charlie, a 22-week-old male intact Labrador Retriever puppy presents with a history of occasional difficulty rising from rest on slippery floors and reluctance to run and jump while playing, symptoms that were first noted two or three weeks ago. He has no known history of trauma, and the lameness is intermittent and shifting. The dog has cried out a little bit when handled and seems apprehensive about being lifted. Charlie has not eaten breakfast well over the last three days, which is unusual.

On examination, Charlie seems a little subdued but is happy to meet people and moves pretty well. He wiggles a lot and tries to play and chew when he is touched anywhere. However, Charlie seems sensitive around his elbows—the right more than the left. He is also sensitive around his hip region, although no laxity is palpable. His body temperature is at the high end of normal.

Radiographs of his right and left forelimbs and pelvis are relatively unremarkable, although there may be some increased opacity in the proximal ulna on the left side. Charlie's anconeal process seems appropriately fused on both sides, and there is no incongruity or osteoarthritis. The hip joints seem appropriately congruent, although positioning is not ideal as he is an unsedated puppy. What could Charlie's problem be?

In puppies, lameness may result from numerous conditions, and history is important in determining differentials. Veterinarians should ask about the timing of onset, duration, and variability of the lameness and whether lameness is exacerbated by activity or more evident when the dog is rising from rest. Is the lameness isolated to one limb, or is it in multiple legs—or does it shift? Are there clinical signs other than the lameness? What previous treatments have been tried, and what were their effects?

The orthopedic exam should start with gait observation. A dog with mild lameness may stand with its weight shifted forward or off to one side. Leash walking can be used to assess for limping. Generally, the patient will shift weight away from the lame limb; this results in lifting the head when a lame forelimb is placed and dropping the head when a lame hindlimb is placed. Gait evaluation in young puppies can be challenging due to their small size and exuberance. Calmly greet the puppy first, then let him explore the room or pet him gently while taking the history. This gives him a chance to relax, and his reactivity during the exam is usually diminished.

Physical examination should follow the same routine each time, so that the clinician becomes proficient at normals and all aspects are examined. Standardly, the patient is in a standing position with the examiner behind. The examiner's hands can then

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hold the patient still while feeling for asymmetry of muscle mass, joint or soft tissue swelling, joint laxity, and range of motion. To evaluate range of motion, flex and extend each joint and watch for pain or increased lameness after flexion or extension. As puppies are wiggly and react to touch everywhere, try starting at the end and side of the dog that is least suspected of being uncomfortable so that the dog becomes used to being handled and you can better assess a reaction to discomfort.

The differential diagnoses for lameness in puppies include elbow dysplasia, osteomyelitis, osteochondritis dissecans (OCD), panosteitis, hypertrophic osteodystrophy, and hip dysplasia.

Elbow dysplasia, which occurs in medium to large breeds, results from relative overload of either the coronoid or anconeal regions of the ulna. This may result in cartilage damage, medial coronoid fragmentation (FMCP), OCD of the distal humeral condyle, or failure of the anconeal process (a separate centre of ossification) to unite appropriately with the caudal ulna (UAP). Clinical signs typically start during rapid skeletal growth (four to five months of age) and consist of variable unilateral or bilateral forelimb lameness after rest or induced by exercise. Radiographs may be falsely negative in early or mild disease. Findings include increased bone density in the subchondral region of the ulna, arthritic changes over the cranial and medial ulna, indistinct coronoid silhouette on lateral radiographs, and a radiolucent line between the anconeus and ulna that persists beyond 20 weeks of age. CT scan and arthroscopy have higher sensitivity for diagnosis. Treatment typically includes conservative management or arthroscopic or open surgery to include fragment removal, fixation or removal of ununited anconeal process, or osteotomy procedures to alleviate joint incongruity or shift weight away from the medial compartment.

Hip dysplasia occurs in medium to large breeds. It results from abnormal conformation of the hip joint producing laxity of the joint and a dorsal subluxation during stance and movement. The laxity and malpositioning result in damage to the acetabular rim and articular cartilage and progressive joint degeneration. Onset of signs is typically as early as four to six months of age, and these signs manifest as hind limb lameness, exercise intolerance, guarding of the hindquarters, and narrow-based stance. Occasionally clients will note an audible click or visual shift of the hips when the dog walks. Diagnosis is by radiographic assessment of joint incongruity in VD views (sensitivity of diagnosis is enhanced by distraction techniques such as the PennHIP method) and by evidence of osteoarthritic changes. Treatment options include conservative management or surgeries including juvenile pubic symphodesis, double or triple pelvic osteotomy, femoral head/neck ostectomy, or hip arthroplasty/replacement.

Osteomyelitis is a bacterial infection of bone. Puppies with open growth plates are at risk for physeal infections from blood-borne bacteria due to their immature immune systems and the high vascularity of this region at this age. Radiographs have a typical acute periosteal reaction but may also have regions of lytic bone. Diagnosis is confirmed by needle aspirate for cytology and culture. Hospitalization for fluid and IV antibiotic administration (avoid enrofloxacin and tetracycline) may be indicated. Antibiotics are

continued for at least two weeks or until clinical and radiograph signs indicate resolution.

Septic arthritis is a risk in puppies due to direct or hematogenous inoculation combined with their immature immune systems. Diagnosis is confirmed by cytology and culture. Treatment with antibiotics is usually successful, although open or arthroscopic joint drainage and lavage may be indicated.

Osteochondritis dissecans (OCD) is a disease manifested by a cartilage flap in the joints of developing large and giant breed dogs that occurs between 4 and 12 months of age, resulting in single- or multiple-limb lameness. The disease occurs at the bone-cartilage interface, resulting in a free flap that causes inflammation and pain. Diagnosis is typically by a radiolucent defect at the joint margin noted on radiographs. Treatment may be conservative, although open or arthroscopic flap removal and bone debridement is very rewarding.

Panosteitis is a spontaneously occurring disease of unknown etiology that occurs in large and giant breeds. It usually occurs between five months and a year of age, producing lameness that often shifts from limb to limb. Examination findings may include limited pain on direct palpation of long bones. The ulna is the most common bone affected, but any of the long bones of the forelimb or hind limb may be involved. Radiographic changes of panosteitis can often lag a few weeks behind the acute phase of pain and are characterized by circumscribed opacities within the medullary canal usually adjacent to the nutrient foramen. Over time, the medullary pattern may become trabecular, and a periosteal reaction may occur. Treatment of panosteitis is usually supportive, consisting of rest and NSAIDs. In severely affected cases that are inappetent and dehydrated, hospitalization for fluid therapy and administration of narcotics is necessary. In most cases, although episodes may be cyclic, clinical signs diminish by a year of age and prognosis for normal return of comfort and function is excellent.

The etiology of hypertrophic osteodystrophy is unknown. It occurs in young (two to six months, typically male) large and giant breeds and is characterized by soft tissue and periosteal swelling of the metaphyseal regions of long bones. Lesions are usually bilateral. Diagnosis is made by a periosteal reaction in the metaphyseal region and a characteristic “double physis” lucency in the metaphysis parallel to the physis. Treatment is analgesics and supportive care. This condition is usually self-limiting in days to months.

As for Charlie, the puppy I examined and referenced at the start of this article, the diagnosis was panosteitis. **WCV**