Orthopedic Exam and Gait Evaluation: The Forelimb

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Osteoarthritis and associated lameness is present in 20% of the animals over 1 year of age that are seen in small animal practice. The most important clinical tool a clinician has to identify isolate and diagnose the specific cause of lameness in our patients is a proper physical exam. The components of an initial physical exam/lameness evaluation are history, examination and adjunctive diagnostics.

A complete history should be obtained by a staff member prior to your examination/initial meeting with the client. Duration, location, intensity, progression, response to medications, exercise and rest are all critical components of the data set to be obtained and entered into the patient’s medical record prior to your evaluation. I routinely, after introduction, overview the initial data set with the client and ask if they agree with my synopsis (routinely, a client will usually add a critical, sometimes pivotal bit of information that was omitted in the original history). As I get this history I always ask the client to allow their pet to walk freely (if applicable) around the room while talking with them; thereby allowing us to observe the gait, potential lameness and behavior of the pet.

If at all possible I prefer to perform lameness evaluations (gait analysis and physical exam) while outside the clinic. The benefit of being outside is a less stressed pet and owner thereby providing a more reliable observation of lameness on varied terrain with more sure footing. I routinely have the clients or a staff member gait the pet at a walk then a trot, initially on sure footing that is level such as the parking area or a sidewalk. If needed we can then take advantage of curbs, grass surfaces, and uneven terrain inherent to the landscape. If possible the physical exam is immediately performed repeatable manner that is consistently performed the same way in all the cases you see. Some clinicians like to start proximally and work distally on limbs, while others prefer the opposite.

The lameness physical exam generally consists of isolating the orthopedic components from any potential neurologic contributing components. Specific findings include asymmetrical abnormalities between limbs in muscle mass (atrophy), joint range of motion, joint effusion, joint stability, and elicitation of pain during range of motion of a specific limb, joint, spine or muscle group.

Orthogonal radiographic evaluation is the chief adjunctive diagnostic modality in determining the cause of lameness. It is not uncommon to need to perform radiographic stress evaluations of joints to compliment survey studies. In order to obtain high quality studies in a safe manner, appropriate collimation combined with safe radiographic technique MUST be performed. Additionally, advanced imaging modalities continue to be studied, validated and used to aid the clinician in diagnosing lameness. These include linear array ultrasound, CT or MRI analysis, and nuclear scintigraphy.

Joint palpation is a principle component of the orthopedic examination. Generally it is easier to check each joint for effusion while the patient is standing. Joint thickening, range of motion and instability is then routinely evaluated. If size or uncooperative nature of the patient is altering the ability to properly perform a thorough physical exam, the remainder of the exam can be performed during the sedated evaluation.

Unless a patient is extremely compliant, most clinical data is routinely obtained during a sedated evaluation. This includes radiographs, joint palpation and goniometric evaluation for range of motion and potential joint instability. Joint arthrocentesis and fluid evaluation, is a minimally invasive, cost effective way to confirm orthopedic disease in a given joint. This modality is routinely used when joint effusion is palpable, or when radiographic analysis and joint palpation are equivocal. At the time of arthrocentesis, a joint block or intra-articular therapeutic agent can advantageously be administered to the joint in question. Resolution of the lameness can not only confirm efficacy of the joint block, but confirm the arthropathy of the affected joint as the cause of the affected lameness. Unfortunately, persistent lameness after a joint block does not rule the joint and an associated arthropathy out as the cause of lameness.

Forelimb
When lameness is caused by a carpal arthropathy in dogs, there commonly is ligamentous instability, caused by a traumatic or degenerative breakdown of the palmar carpal ligament complex. In acute cases the patient may present non weight bearing lame with obvious carpal instability. In slowly progressive cases, there may be a noticeable change in the standing angle of the affected carpus during the stance phase. This can be confirmed by the use of obtaining orthogonal stress radiographs of the carpus while the patient is under sedation. Treatment of carpal instability is usually via a partial or pancarpal arthrodesis.

I find that the most common cause of lameness in the forelimb is an elbow arthropathy. Given the complex nature of the elbow joint and the small tolerances of joint congruency therein, seemingly small amounts of incongruency and joint pathology can progress to significant lameness and degenerative joint disease. Screening for OA in the elbow can be done by routine radiography and I routinely obtain 3 views of the elbow while the patient is sedated. Advanced imaging via CT or Nuclear bone scan are of tremendous benefit when evaluating the elbow.
Diagnosis of osteochondrosis lesions of the caudal humeral head, are relatively easy to make through routine radiography. Diagnosis of other conditions in the canine shoulder however can and frequently are much harder to make. Instability of the shoulder can be diagnosed by shoulder palpation during sedation. I routinely obtain joint fluid via arthrocentesis for cytological analysis to aid in my decision process for recommending surgery via arthroscopic evaluation.