If Not a Cruciate, then What?

Injury to the anterior cruciate ligament (ACL) in dogs is the most common orthopedic condition we deal with in small animal practice. While the reasons for this explosive increase in the incidence of ACL injuries is debated, it is clear that something has changed over the decades in terms of the canine stifle. Years ago this was a relatively uncommon event. Hip dysplasia is what kept orthopedists busy back then. Up until the 60's and 70's ACL tears were generally isolated events, usually seen in older dogs, usually only occurring in one limb, and often associated with trauma. Today, bordering on epidemic proportions, ACL injuries are seen in younger and younger patients, very often under a year of age, rarely associated with trauma, and now occurs bilaterally in over 50% of the cases.

It has gotten to the point that when we are faced with a canine patient presented for a rear limb lameness we automatically assume that it is an ACL injury until we can prove it is something else. Sometimes we have to remind ourselves that the rear leg of the dog is more than a bunch of ligaments in the stifle joint.

So if a patient presents with a rear limb lameness and we're certain it is not an ACL injury, what else should we be thinking of? In outline format, these are the top contenders.

Pelvis

a. *fractures* - associated with trauma - can involve sacrum, sacroiliac joint, ilium, ischium, pubis, or acetabulum. Treatment depends on location of fracture and individual patient.
b. *neoplasia* - primary and metastatic tumors have been reported in all bones of the pelvis.

Hip Joint

a. *hip dysplasia* - genetic disease leading to degenerative changes of the joint. Treatments may include conservative management, weight loss, triple pelvic osteotomy, hip denervation, femoral head and neck excision, and total hip replacement.
b. *traumatic luxation* - treatments include closed reduction, internal stabilization, femoral head and neck excision.
c. *OCD* - osteochondritis lesions have been reported on the femoral head.
d. *Legg/Calve/Perthes* - avascular necrosis of the femoral head and neck in immature dogs of smaller breeds. Generally treated with femoral head and neck excision.
e. *neoplasia* - primary and secondary tumors of femoral head and neck have been reported
f. *fractures* - fractures of the acetabulum and femoral neck occur and are generally internally repaired.
g. *polyarthritis* - infectious or immune-mediated

Stifle Joint

a. *patellar luxation* - both medial and lateral. Graded 1-4 with grade 2 and above generally surgically repaired.
b. *OCD* - seen on the medial or lateral femoral condyle
c. *meniscal injury* - can occur alone but almost always associated with ACL tear
d. *posterior cruciate ligament tear* - sometimes seen as an isolated injury and generally surgically repaired
e. *collateral ligament injury* - both medial and lateral collateral ligaments can rupture, usually associated with trauma. Most are surgically repaired.
f. *fractures* - intra-articular fractures of the stifle joint occur in the distal femur, proximal tibia, and patella and are generally internally stabilized
g. *polyarthritis* - infectious or immune mediated
h. *neoplasia* - synovial cell sarcoma

Hock Joint

a. *collateral ligament injury* - traumatic, depending on severity will be treated with external splinting or internal repair
b. *OCD* - seen on the medial or lateral ridge of the talus - surgically treated
c. *luxations* - tibial tarsal, intertarsal, tarsal metatarsal - depending on severity and patient will be treated with splinting, internal stabilization, or arthrodesis. Often seen with malleolar fractures.
d. *polyarthritis* - infectious or immune mediated
e. *fractures* - involving distal tibia or tarsal bones - depending on severity will be treated with splinting, internal stabilization, or arthrodesis.
f. *achilles tendon rupture* - can present as acute injury or chronic condition. In general will consider surgical repair for optimal result.
g. *displacement of the superficial digital flexor tendon* - seen in all breeds but most common in Shelties, Collies, and Labs. Posterior of hock is swollen. "Luxating patella" like feel is detected on the posterior aspect of the hock upon manipulation. Must be surgically corrected.

Long Bones

a. *fractures*
b. *panosteitis* - seen in the femur and tibia of large breed puppies
c. *neoplasia* - often seen in distal femur and proximal tibia
d. *osteomyelitis* - usually associated with open fractures but can have a hematogenous route'

Miscellaneous Conditions

a. *rupture of gracilis muscle* - most often seen in racing greyhounds and German Shepherds. Distinct hind limb lameness from inability to extend stifle. May be able to elicit pain on palpation or palpate a cord-like structure on the medial side of the thigh. Conservative or surgical management.

b. *quadriceps muscle contracture* - usually associated with fracture of the distal femur. Characterized by inability to flex stifle. Usually responds to physical therapy.
c. *avulsion of the tendon of origin of the long digitial extensor* - usually seen in young, large dogs. Results in weight bearing lameness and pain on palpation of lateral aspect of stifle. This is very rare and is surgically treated.
d. *avulsion of the head of the lateral or medial gastrocnemius muscle* - rare and associated with hyperflexion of the hock. Surgically treated.
e. *soft tissue tumors*
f. *infections/abscesses*
g. *nail bed infections/tumors*

This outline is presented as a guide to assist in obtaining a diagnosis of a hind limb lameness in a patient once injury to the anterior cruciate ligament has been ruled out as a cause. It is still safe to think of ACL first when presented with rear limb lamenesses because this will still be diagnosis in the majority of these cases. Remember also that dogs can still have ACL injury and not an anterior drawer sign as discussed in a previous article. Partial ACL tears and very chronic ones might present with minimal or no drawer and still be markedly lame. Pain on palpation of the stifle, effusion, arthrocentesis and radiographs aid in evaluating these cases.

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