STIFF GAIT IN ATHLETIC DOGS: HOW TO DIAGNOSE REAR LIMB DISEASES ULTRASONOGRAPHICALLY

Abstract

Hindlimbs lameness can be due to a wide range of diseases. With the increased workload of competing patients, there are increased cases of subtle and chronic changes. These conditions are not so severe to cause lameness but are enough to cause abnormal gait, mainly due to reduction of limbs extension and consequent reduction in competition results. These patients can be a frustration for orthopedic surgeons. They often have a negative physical examination, and it is not easy to detect the cause of pain and lameness. Rarely radiology can be of diagnostic value if the origin of the pain is related to overuse of tendon, muscles, or joints or with acute injuries of the soft tissues. Ultrasound (US) can be of great help if the ultrasonographer is aware of the most common chronic overuse conditions. There is the need to understand which lesions could be related to a specific sport and what are the most common causes responsible for acute tendonitis, strain tendon, or ligament sprain. Scattering artifact is commonly seen on ultrasound and is extremely specific and sensible to detect inflammation. US should be considered as an extension of an accurate clinical evaluation. The US is dynamic and allows to scan the patient in real-time. Checking the muscles and tendons while the patient is flexing or extending the leg allowed to diagnose adhesions and subtle teno-muscular conditions. Another advanced is that US can easily see and check the fascial planes between the muscles, often interested in chronic overused lesions. Muscle is responsible for generating power but is not able to generate motion. Motion is generated when the muscles are linked together. The fascial planes apparatus is responsible for that. Fascias are too thin to be palpated and only seen as static structures in MRI. The US can check if the fascial planes can move and if thickening, inflammation, or lesion at the fascial planes could cause the decreased performance of the sportive patients. Ileo-psoas injuries are one of the most commonly over-diagnosed conditions in dogs. In the author's experience, at least two-third of the patient clinically diagnosed with ileo-psoas injury have a fascial blockage that reduces the caudal extension of the hip joints. Gracilis, semitendinosus, and semimembranosus myopathy is an easy diagnosis when the condition is end-stage due to the typical duck gait and firm consistency of the muscle on physical examination. Early diagnosis dramatically changes the outcome of the patient due to the possibility of stopping the progression of muscle fibrosis and loss of proper leg function. US is very accurate in finding focal loss of muscle fibers alignment and early diagnosis of this condition (Fig. 1). US hold good promises in the possibility of staging for muscle fibrosis, but more studies are needed in that regard.

US has an equivocal rule in the diagnosis of a cranial cruciate ligament rupture. A total rupture is a clinical and radiographic diagnosis and US is not needed. A partial rupture could be clinically challenging to diagnose. The US can define the rule of the stifle in the present mild lameness or abnormal gain and ruled in or out other teno-muscular components for the gait changes in the patient. The major disadvantage of the US is that it is operator-dependent, and a learning curve is needed to increase the accuracy of the examination. There is a lack of papers, books, and learning material in that regard, but the increasing interest in this topic is promising.

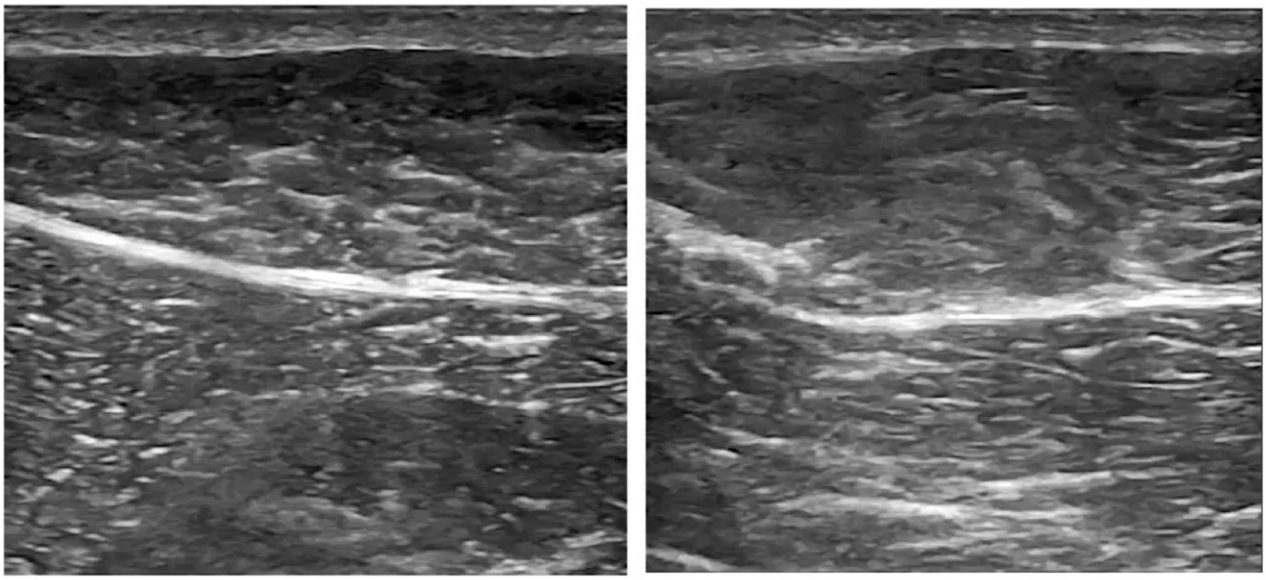

Fig. 1) Gracilis muscles in a Doberman of 6 years old with six months history of abnormal gain on the left hind limb. Wobbler disease was suspected, an MRI of the cervical spine was performed with negative results. The dog was progressively worsening. The orthopedic surgeon had a negative physical examination, and the radiographs were unremarkable. He asked for an ultrasound examination that showed early disarrangement of the left gracilis muscle fibers. An early phase of a gracilis myopathy was suspected and confirmed over time. The dog improved with physical therapy. A) Normal right gracilis, B) Left gracilis with signs of gracilis myopathy.