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Questionable Hindlimb Lameness

A 5-year-old, intact male Portuguese water dog presented with intermittent lameness of the right hindlimb.

History. The dog had been a high-end show dog for over 3 years. His handlers recalled an episode in which he went outside and came back favoring his right hindlimb but did not witness an accident. The ground that day had been wet, and it is thought that he may have slipped.

Physical Examination/Diagnostics. The dog was examined by a veterinarian and a physical therapist. The examination and vital signs were normal. A comprehensive tick panel yielded negative results for all tick-borne illnesses common in the areas where the dog traveled while showing, and extensive blood analysis revealed no abnormalities. Radiographs of the right hip, stifle joint, and hock as well as the lumbar spine and pelvic region were clear. Radiographs ruled out injury to the stifle joint, such as a luxating patella or cranial cruciate tear, and to the coxofemoral joint. Diagnostic ultrasound revealed inflammation at the insertion of the right iliopsoas insertion. Other results of the physical examination are given in the **Box**.

Results of Physical Examination

Gait score: 0 out of 5 at a walk; 1 out of 5 at a trot*

Passive range of motion of the hindlimb was as follows:

Hock flexion/extension: Left 40°/165°, Right 40°/165°

Stifle flexion/extension: Left 40°/165°, Right 40°/162°

Hip flexion/extension: Left 32°/165°, Right 32°/155°

Active range of motion: Measured functionally—unable to stand on hindlimbs and extend lumbar spine with hip extension; jumping self-limited

Cranial drawer and tibial thrust: Negative

Force plate analysis: 35% weight bearing on the right hindlimb compared with 65% on the left hindlimb. This is based on 100% weight bearing on each hindlimb. Each hindlimb should bear 50% of the weight.

Neurologic evaluation: Normal

Palpation: Pain at the iliopsoas complex (**Figure 1**), L4 to L7, and the right longissimus and multifidus system; soreness was also noted in the lumbosacral complex

Muscle girth (measured at 70% of thigh length): Left 31 cm, right 30.5 cm

Functional tests: Was not able to jump up into van, onto the grooming table, onto objects, run up stairs. Prior to this episode, the dog was able to perform these activities without any lameness or hesitation



The iliopsoas muscle is located between the gracilis and the rectus femoris.

*Lameness scale: 0 = normal, 1 = slight lameness, 2 = obvious weight-bearing lameness, 3 = severe weight-bearing lameness, 4 = intermittent weight-bearing lameness, 5 = continuous non-weight-bearing lameness

ASK YOURSELF ...

What is the patient's most likely problem? What treatment would be most practical?

- A. Muscle strain to the sartorius muscle/crate rest
- B. Muscle strain to the iliopsoas muscle/crate rest
- C. Muscle strain to the iliopsoas muscle/physical rehabilitation
- D. Muscle strain to the iliopsoas muscle/surgery
- E. Muscle strain to the sartorius muscle/surgery

continues

Correct Answer: C
Muscle strain to the iliopsoas muscle/physical rehabilitation

The dog presented with restricted active and passive hip extension and passive lumbar extension. The iliopsoas muscle flexes the hip and the lumbar spine. This and the other sacropelvic muscles are subject to stressors induced by speed, endurance, strength, isometrics, and trauma. Any of these stressors can alter the biomechanics of the region and place the involved and surrounding musculature in a state of hypertonicity. Ultrasonography confirmed the injury to the iliopsoas tendon. The restricted hip extension and the tenderness elicited with direct palpation over the insertion of the iliopsoas tendon and the origin up at the lumbar spine indicated a problem in the muscle. The iliopsoas tendinous insertion and muscle belly were palpated just cranial to the lesser trochanter of the femur on the proximomedial aspect of the femur. Decreased weight bearing, as measured by force plate analysis, also indicated an injury to the right hindlimb.

Treatment. The dog was treated with laser therapy with a 500-mW laser at 4 joules/cm² to the iliopsoas (**Figure 2**), L4 to L7, and the right lumbar epaxial muscles (**Figure 3**). The goal of the laser therapy was to reduce inflammation and pain and to promote healing by increasing blood flow and thus oxygen supply to the area. Laser therapy was followed by 5 minutes of cross-friction massage and gentle stretching of the iliopsoas. The massage was performed perpendicular to the end of the iliopsoas, located between the medial pectineus and the lateral rectus femoris. The goal of this therapy was to decrease inflammation and to help realign the fibers of the muscle; the gentle stretching was aimed at elongating the muscle without causing additional inflammation. The handlers were encouraged to hold the dog in hip extension for 15 to 20 seconds at least 5 times a day and to restrict playing with other dogs.

Progress. Laser therapy and cross-friction massage were continued after force-plate analysis showed that weight bearing had improved to near-normal levels. Stretching of the iliopsoas



Laser therapy of the iliopsoas muscle



Laser therapy of the epaxial musculature

was also continued and increased in intensity. Stretching the flexors of the lumbar spine was done through “dancing” motions—with the dog on his hindlimbs moving backward. Stretching of the iliopsoas was also performed over a Thera-ball (Thera-Band, www.thera-band.com). The dog was placed over the ball so that all 4 limbs were off the ground and the right hip was brought back into extension. High-stepping activities over cavalotti rails that were 6 inches in height and 36 inches apart were initiated to encourage hip flexion followed by hip extension. The dog walked on a treadmill for 15 to 20 minutes per day.

When weight bearing was consistently full, treadmill jogging was added to the walking routine in intervals. Steep hill walking was initiated to promote hip extension and to strengthen the gluteal musculature. Joint mobilization was performed on the lumbar spine to encourage proper movement, and low-level jumps were added to the exercise program to promote both concentric and eccentric contractions of the hip and lumbar flexors.

Outcome. Full weight bearing, full range of motion, and ability to perform functional activities were restored 6 weeks after treatment. The dog was seen twice weekly for 6 weeks and reevaluated every other session. The dog was

able to perform all levels of functional activity, including jumping on and off the grooming table and in and out of a van and upper-level crate. Range of motion on right hip extension was 165° and equal to left hip extension. Force plate analysis revealed 52% weight bearing on the left hindlimb and 48% on the right hindlimb with 5 repeated measures. Ultrasonography was not repeated because the dog had no clinical signs at discharge. ■

TAKE-HOME MESSAGES

- The iliopsoas muscle in dogs may be injured as the result of a slip or a fall or may incur a compensatory condition from surgery of the stifle joint, such as a cranial cruciate repair.
- The iliopsoas area should be regularly examined in cases of hindlimb lameness or persistent lumbosacral soreness.
- Proper physical therapy is successful in restoring function and alleviating the problem.

See Aids & Resources, back page, for references, contacts, and appendices. Article archived on www.cliniciansbrief.com