

Intra-articular Corticosteroid Treatment of Biceps Tenosynovitis in a Dog

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Abstract : A 3-year-old, 35 kg, neutered male Borzoi was admitted with a history of intermittent weight-bearing left forelimb lameness. Physical examination revealed pain response on left bicipital tendon during palpation of the tendon and shoulder flexion and extension. Radiographic findings of the left shoulder joint included intertubercular groove osteophytes and periarticular changes. Arthrograms revealed a roughened and irregular appearance to the biceps tendon. Synovial fluid analysis is consistent with degenerated joint disease. It was diagnosed as biceps tenosynovitis on the basis of history, physical examination, radiography and arthrograms. The dog was treated with medical management. Medical treatment included an aseptic intra-articular injection of 40 mg methylprednisolone acetate in the left shoulder and strict exercise restriction. Three weeks later, the dog responded well to glucocorticoid therapy.

Key words : biceps tenosynovitis, arthrogram, intra-articular corticosteroid, dog

Introduction

Biceps tenosynovitis is an inflammation of the biceps tendon of origin, its tendon sheath, and the bicipital bursa within the intertubercular groove of the proximal humerus (2,4,8). This inflammation has been associated with tendon strain, trauma, partial tendon rupture, or joint mice entrapment in the bicipital tendon sheath (6). The disease occurs primarily in large or medium-size, middle-or older-aged dogs. Lameness is usually chronic and progressive (1,8).

Anatomically, the biceps tendon arises from the supraglenoid tubercle and runs distally and caudally through the intertubercular groove. There is no true biceps bursa and tendon invaginates with in the cranial joint capsule, which forms a two-layered synovial sheath between the tendon and the proximal humerus (6).

The mechanism of injury to the tendon of the biceps tendon can be either direct or indirect trauma or simple overuse (7). Thus the pathological changes range from partial disruption of the tendon to chronic inflammatory changes, including dystrophic calcification (7). Pathological changes also can be secondary to others diseases, such as osteochondritis dissecans, in which joint mice migrate to the synovial sheath and create an acute synovitis (9). Proliferation of fibrous connective tissue and adhesions between the tendon and sheath limits motion and cause pain (6). In addition, osteophytes in the

intertubercular groove may encroach on the tendon.

The clinical signs are variable but usually include a chronic intermittent or progressive forelimb lameness, which worsens with exercise (3).

The diagnosis of bicipital tenosynovitis is based on history, pain with flexing the shoulder, and characteristic plain radiographs or arthrograms and ultrasonography (3).

The goal of treatment is to reduce the movement of the inflammatory tissues across the intertubercular groove (6). If the injury is acute and pathological changes are reversible, a one-or two-dose course of an aseptic, intra-articular injection of a long-acting corticosteroid, followed initially by strict rest with a gradual return to activity, may allow for resolution (7). Surgical treatment is recommended for cases in which a mechanical problem is found initially or for those that do not respond to medical therapy (8).

This report documents the diagnosis of biceps tenosynovitis in a Borzoi and the medical management by using intra-articular injection of a long-acting corticosteroid.

Case

A 3-year-old, 38 kg, intact male Borzoi was presented for a left forelimb lameness. The lameness had been one year ago after vigorous exercise and gradually progressed. The patient had acupuncture and nonsteroidal antiinflammatory drug (NSAID) treatment before 3 weeks to presentation.

Physical examination findings included a toe-touching lameness, with pain on shoulder flexion and extension.

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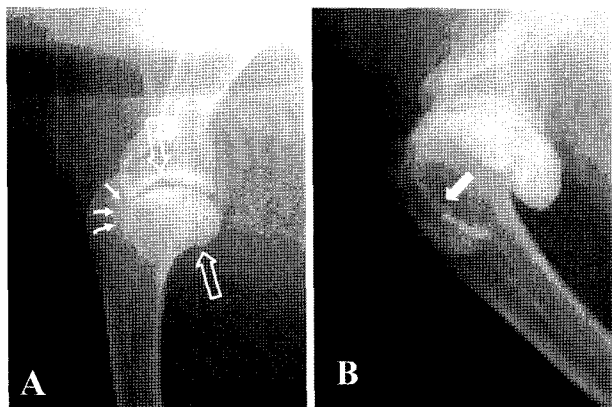


Fig 1. A, Radiograph of shoulder with biceps tenosynovitis in a Borzoi. Note the dense region of sclerosis in the bicipital groove (arrow) and periarticular changes (open arrow). This represents mineralization in the tendon or osteophyte production around the bursa. B, Arthrography of same region showed thickening and irregularity of bursa (arrow).

Orthopedic examination of shoulder joint included a pain on palpation of the biceps tendon. There was no translocation in shoulder drawer test. Muscle atrophy of supraspinatus and infraspinatus was present. There was no abnormality in neurologic examination. Synovial fluid analysis was consistent with degenerative joint disease. Radiographic findings of left shoulder joint included intertubercular groove osteophytes and periarticular changes (Fig 1-A). Arthrograms revealed roughened and irregular appearance of the biceps tendon (Fig 1-B). It was diagnosed as biceps tenosynovitis on the basis of history, physical examination, radiography and arthrograms. The dog was treated with medical management. Medical treatment included an aseptic intra-articular injection of 40 mg methylprednisolone acetate in the left shoulder and strict exercise restriction by cage rest.

Three weeks later, the dog had no pain upon bicipital groove palpation and biceps brachii palpation, normal range of motion in the shoulder. However, slight lameness was observed at walk. Additional NSAIDs treatment was performed to manage this lameness.

Discussion

Pathologic conditions affecting the biceps tendon of dogs has been reported as frequent cause of forelimb lameness and typically requires treatment (1,5). Recognized conditions affecting the biceps tendon of dogs include tenosynovitis, partial or complete rupture, avulsion, tendinitis, tendinosis, displacement, and bipartite tendon (1,5).

Diagnosis of biceps tenosynovitis is controversial and often a diagnosis of exclusion, based primary on history; orthopedic examination finding; synovial fluid cytology; and imaging studies, such as radiographs, ultrasonography, magnetic resonance image, computed tomography, and arthros-

copy. In cases of biceps tenosynovitis, radiographs may reveal intertubercular groove osteophytes and sclerosis, osteophytes on the caudal aspect of the humeral head or caudal aspect of the glenoid rim, and mineralization of the biceps tendon (8). Radiographic changes in the intertubercular groove region are not necessarily associated with clinical signs of the lameness, however (6). Ultrasonographic finding typical of biceps tenosynovitis include a hypoechoic to anechoic area surrounding the tendon with mild to severe tendon thickening (6). Unfortunately in this case, ultrasonographic examination was not undertaken.

Nonsurgical management of biceps tendon pathology may be effective in some case. Results reported in one study revealed excellent to good results in 7 of 17 patients returned for clinical assessment at a mean of 5 months after treatment (9). Administration of methylprednisolone acetate at a dose of 10 to 40 mg into the biceps tendon and tendon sheath was performed at intervals of up to every 2 weeks and at a frequency from one to three times. Exercise restriction was recommended for 2 weeks after each injection (3). However, surgical management often become necessary in a significant number of these animals. Biceps tenodesis via an open approach and open or arthroscopic biceps tendon release are the most common surgical procedures used to treat biceps tendon problems in dogs (3).

In this case, medical treatment included an aseptic intra-articular injection of 40 mg methylprednisolone acetate in the left shoulder, and strict exercise restriction. The overall outcome was rated as good, but the dog had a slight lameness at a walk. Bicipital tenosynovitis is not an isolated disease and is part of a generalized degenerative joint disease of the shoulder. Radiographic or ultrasonographic findings in the majority of these cases showed various degenerative changes, such as areas of humeral and scapular osteophytes, bicipital groove changes, and in some cases mineralization of the tendon. So the dog was needed additional NSAIDs treatment and did not show lameness for 6 months. Long term follow-up might be needed. If there is any evidence of recurrence, surgical management might be considered via tenotomy with or without tenodesis or tenolysis.

References

1. Bardet JF. Diagnosis of shoulder instability in dogs and cats: a retrospective study. *J Am Anim Hosp Assoc* 1998; 34: 42-54.
2. Bloomberg M. Muscles and tendons. In: *Disease mechanisms in small animal surgery*. Philadelphia: Lea & Febiger. 1993: 2016-2017.
3. Fahie MA. Healing, diagnosis, repair, and rehabilitation if tendon condition. *Vet Clin Small Anim* 2005; 35: 1195-1211.
4. Hohn RB, Harrison JW. Biceps tenosynovitis. In: *Scientific presentations of the 42nd annual meeting of the J Am Anim Hosp Assoc* 1974; 1: 428.
5. Kramer M, Gerwing M, Sheppard C, Schimke E.

- Ultrasonography for the diagnosis of disease of the tendon and tendon sheath of the biceps brachii muscle. *Vet Surg* 2001; 30: 64-71.
6. Lincoln JD, Potter K. Tenosynovitis of the biceps brachii tendon in dogs. *J Am Anim Hosp Assoc* 1984; 20: 385-392.
 7. Piermattei DL, Flo GL, Decamp CE. The shoulder joint. In: Brinker, Piermattei, Flo's handbook small animal orthopedics and fracture repair, 4th ed. Philadelphia: Elsevier Inc. 2006: 262-296.
 8. Stobie D, Wallace LJ, Lipowitz AJ, King V, Lund EM. Chronic bicipital tenosynovitis in dogs: 29 cases (1985-1992). *J Am Vet Med Assoc* 1995; 207: 201-207.
 9. Todoroff R.J. Biceps tendon disease and injuries : Arthrographic and surgical experience. *Proceedings of the 6th Annual ACVS Symposium* 1996; 107-109.

개에서 두갈래근 힘줄 윤활막염의 관절강 내 코티코스테로이드 치료 1예

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요 약 : 3개월령, 35 kg의 수컷 불조이가 간헐적인 좌측 전지 파행을 주 증상으로 내원 하였다. 1년 전 심한 운동 후 간헐적인 파행 및 동통을 호소하였으며, 증상은 계속 악화되었다. 신체 검사 상에서 좌측 두갈래근의 촉진과 견관절의 굴곡 및 신장 시에 통증을 호소하였다. 일반방사선 검사에서 좌측 견관절의 결절사이고랑에서 골증식체와 관절주위변성이 관찰되었다. 관절 조영상에서는 좌측 두갈래근 힘줄에 거칠고 불규칙한 영상을 확인할 수 있었다. 활액 검사 상에서는 퇴행성 관절 질환 소견이 보였다. 이상의 검사들을 바탕으로 두갈래근 힘줄 윤활막염으로 진단하고, 내과적 치료를 실시하였다. 무균적으로 methylprednisolone acetate 40 mg을 관절강 내로 주사하고, 3주간 엄격한 운동 제한을 실시하였다. 3주후 내원 시 두갈래근 힘줄의 통증은 완전히 소실되었으나 퇴행성 관절염에 의한 경등도의 파행이 존재하여 NSAIDs의 투여를 실시하였다. 장기적인 예후의 관찰이 필요할 것으로 생각되며, 원발질환의 재발 시에는 2차 약물치료 또는 힘줄 절단술(힘줄 고정술, 힘줄박리술)등을 통한 수술적인 치료가 고려될 수 있다.

주요어 : 두갈래근 힘줄 윤활막염, 관절조영술, 관절강 내 코르티코스테로이드 치료, 개