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Bee-Venom Acupuncture Treatment of Hip Osteoarthritis in a Dog

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Abstract : Two weeks of therapy with intra-articular hyaluronic acid and oral caprofen failed to improve the clinical signs of hip osteoarthritis radiologically confirmed in a dog. Then, over the period of 30 days (7 sessions at 5-day intervals), bee- venom acupuncture (BV-AP, injection of bee venom at acupoints, also called apitoxin-aquapuncture) plus Trigger Point (TP) therapy was used. Five acupoints on the affected right limb were injected each time: GB30 (as local point), plus ST35, GB33, BL40 and LIV08 (as distant points). The injection mixture (0.2 ml/point; total 1 ml/session) was saline + apitoxin + 2% lidocaine, so that the injected solution contained 100 μg apitoxin diluted in 0.2% lidocaine-saline solution/ml. The total dose of apitoxin used was, therefore, 100 μg/session, divided over the 5 acupoints. One TP in the middle of the right *quadriceps* muscle was injected with 2% lidocaine (0.2 ml/point) each time. BV-AP improved the clinical signs rapidly; lameness and ataxia were disappear after 7 sessions (30 days); the right hind limb muscular atrophy was much improved and the hip radiograph was almost normal two weeks after 7 sessions (44 days). The present patient was a case with canine hip osteoarthritis which showed favorable therapeutic response by BV-AP plus TP therapy.

Key words **:** Bee-venom, acupuncture, hip osteoarthritis, dog.

Introduction

Canine hind limb lameness occurs in many conditions, including intervertebral disc disease, femoral luxation, hip dysplasia, degenerative osteoarthritis, arthritis and fracture, etc. Corticosteroids or NSAIDs and analgesic medication usually are used to treat canine lameness and improve the clinical signs (26).

Acupuncture (AP) therapy including needle-AP, injection-AP (aquapuncture) and laser-AP were effective to treat human musculoskeletal diseases (12,20). Needle-AP, injection-AP with dexamethasone and electro-AP (EA) were effective in canine hind limb paralysis (5,6,11,13,28). EA was effective in canine thoracolumbar disc disease (27), and postoperative EA was effective in dogs with continuous lameness after reduction of medial patellar luxation (22).

Intradermal injection of bee venom (apitoxin) was effective for various inflammatory diseases and pain control in humans (21,29). Veterinary medical literature has a few reports, all from Korea, of therapeutic effects of apitoxin therapy, or bee venom injection-AP (BV-AP). Choi *et al.* (2) reported good results in pre-weaning diarrhoea in piglets, Choi *et al.* (4) also reported good results in sows with postpartum hypogalactia by apitoxin. However, there was few report about apitoxin therapy in small animal practice up to now.

Here, we report the successful use of BV-AP in a case of hip osteoarthritis in a dog.

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Case

History

A male Pointer, 6-year-old, 35 kg, was referred with right hind limb lameness that began 6 months earlier after a traffic accident. Some local veterinarians had treated the dog with drugs for 6 months without clinical improvement.

Clinical findings

The dog was depressed, lame and ataxic. The right hind limb had severe muscular atrophy. He could turn to the left

but turning to the right was difficult. Vital signs and haematological profiles were normal. Radiological examination showed calcified lesions in the right hip joint (Fig 1). His case was diagnosed as osteoarthritis of the right hip joint.

Treatment

The dog was treated with intra-articular injection of sodium hyaluronic acid (Hyruan®, LG CIE, Korea, 6 mg/time, once/week) for 2 weeks, plus analgesics (Caprofen®, Pfizer Co., Korea, 25 mg/tablet PO, 4 times/d) for 2 weeks. However, that programme failed to improve the clinical signs at all.

Therefore, we decided to try BV-AP, also called apipuncture plus trigger point (TP) therapy. Five acupoints on the affected right limb were injected each time(approximately 1 cm depth using 1 ml of syringe): GB30 (depression cranial to the greater trohcanter of the femur, as the Local Point), plus ST35(in the fossa between the patella and the tibial tuberosity), GB33(in the depression dorsal to the lateral epicondyle of the femur), BL40(in the center of the popliteal space) and LIV08 (on the middle side of the stifle joint, near the canial border of the insertion of the semitendinosus, as distant points). The injection mixture (0.2 ml/point; total 1 ml/session) was saline +apitoxin (Guju Pharmacological Co., Korea, 1 mg/bottle)+ 2% lidocaine hydrochloride (Huons Co., Korea), so that the injected solution contained 100 μg apitoxin diluted in 0.2% lidocaine-saline solution/ml. The total dose of apitoxin used was, therefore, 100 μg/session, divided over the 5 acupoints. One TP in the middle of the right *quadriceps* muscle was injected with 2% lidocaine (0.2 ml/point) each time. Over a 30 day period, this treatment was used 7 times at 5 days intervals.

Outcome

At session 2 (5 d after session 1), the right hind limb lameness was much improved. At session 3 (10 d after Session 1), the dog was more active than before. At session 4 (15 d after Session 1), the dog could hunt with his ower. At sessions 5-6, he could turn in any direction. At session 7 (30 d after session 1), compared with his pre-treatment status, the right hind limb muscular atrophy was much improved and clinical symptoms were disappeared completely. The dog was discharged as clinically normal. There was a follow-up examination on two weeks later, the lesions of the right hip joint had remained a little bit (Fig 2), but the dog was clinically normal.

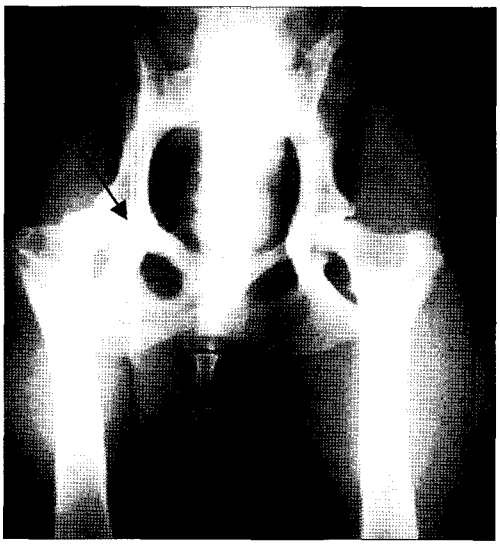

Fig 1. Radiograph before treatment, showing osteoarthritis with calcification of the right hip joint.

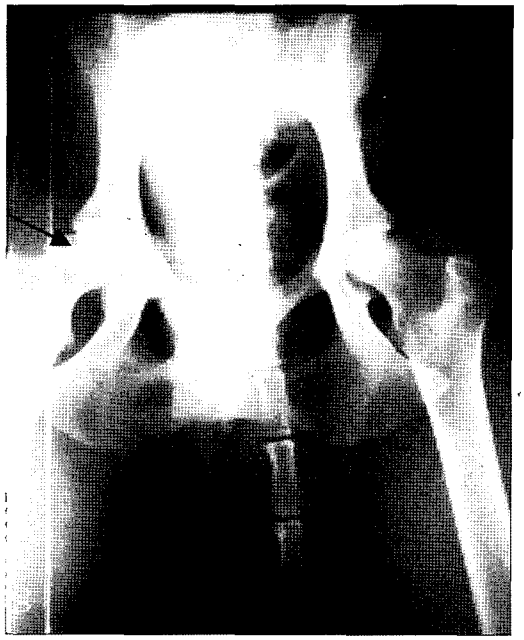

Fig 2. Radiograph of 2 weeks after treatment with apitoxin aquapuncture for 30 days, showing an almost normal appearance of the right hip joint.

Discussion

There are many options to treat canine osteoarthritis (26). Conventional options include advice on how to help overweight dogs to lose weight safely, exercise limitation, physical rehabilitation (including swimming, hydrotherapy passive flexion, and extension), pharmacological treatment with NSAIDs, chondroprotective agents (polysulphated glycosaminoglycans and hyarulonic acid), corticosteroids, dimethysulphoxide (DMSO) and surgical treatments (including joint replacement, resection arthroplasty and arthrodesis), etc. Options used in complementary (integrative) medicine include herbal medicine, homeopathy and many forms of acupuncture (AP), gold-bead AP implantation, and BV-AP. Most research published on BV-AP is very recent (2-4,7-10,15-21,25,30).

Apitoxin contains various peptides such as melittin, apamin, adolapin and protease inhibitor etc., enzymes including hyaluronidase, phospholipase A2 and alpha-glucosidase etc., physiologically active amines including histamine, dopamine nore-

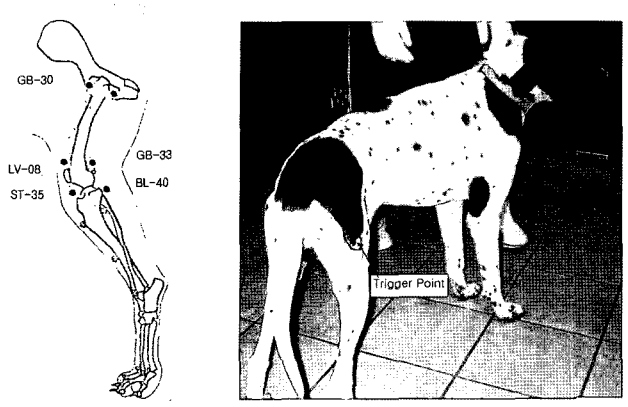

Fig 3. The acupoints used in the present study.

pinephrine, and nonpeptide components such as carbohydrates, lipids and amino acids, respectively (1,10,15.25). Intradermal apitoxin injection was effective in various human inflammatory diseases and in pain control (10,11,24). Melittin, its main component, increases the cortisol level (10) and causes the anti-inflammatory and immunological actions of apitoxin (10,15). Melittin had powerful *in vitro* inhibitory effects on the Lyme disease spirochete (23). The water-soluble fraction of apitoxin had antinociceptive and anti-inflammatory effects on rheumatoid arthritis in rats (15) and catecholamine release from the adrenal medulla probably mediates the anti-inflammatory effect of apitoxin (10,14,19).

This report describes the success of BV-AP therapy for a dog with hip osteoarthritis. Having failed to respond to 6-months of conventional treatments prescribed by local practitioners, and 2-weeks of intra-articular hyaluronic acid plus oral caprofen treatment, the dog responded to BV-AP dramatically, and without side-effects. As we were unable to find any other report of successful therapy of canine hip osteoarthritis by BV-AP, this may be the first report of its kind.

Five acupoints were used: GB30, ST35, GB33, BL40 and LIV08 . Song *et al.*(28) added other acupoints, such as GV05 +animal Baihui (lumbosacral space) and SP06, to treat canine hind limb paralysis using injection-AP and electro-AP. The combination of GB30+ST35, GB30, BL40 and LIV08+ a *quadriceps* TP was successful in our case. However, other acupoints, such as GV06, GV07, GB31, ST36 and GB34, were also successful in canine hind limb paralysis (11). Therefore, the efficacy of those and other points should be examined further in canine hip osteoarthritis.

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개에서 둔부 골관절염의 봉침 치료

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요 약: 개에서 방사선 검사로 확진한 둔부 골관절염 증례에 대하여 hyaluronic acid의 관절강내 주사 및 caprofen의 경구투여를 2주간 치료를 하였으나, 임상증상이 개선되지 않았다. 봉독 수침요법(5일 간격, 7회)과 압통점 치료를 병용하였다. 수침에 사용된 혈위는 이환 된 우측 환지의 5개 혈위를 사용하였다: GB30(국소혈), ST35, GB33, BL40 및 LIV08(원위혈). 수침재료(0.2 ml/혈위, 전체 1 ml/회)는 apitoxin 100 μg+2% 리도카인 (1:1)+생리식염수로 제조하였고, 5개 혈위에 각각 0.2 ml씩 수침하였다. 또한 우측 환지의 대퇴사두근의 압통점에 2% 리도카인(0.2 ml/압통점)을 매회 치료 시 각각 수침하였다. 봉침 수침 요법은 임상증상을 급속하게 개선시켰는데, 파행 및 보행실조가 7회 치료(30일) 후 소실되었으며, 우측 후지의 근육 위축이 많이 호전되었고, 치료 종료 2주 후(44일)에 방사선 검사 상 환부는 거의 정상소견을 나타내었다. 본 환축은 봉독 수침 요법과 압통점 치료의 병용으로 양호한 치료반응을 나타난 개의 둔부 골관절염의 증례이었다.

주요어: 봉독, 침, 둔부골관절염, 개