

Treatment of Canine Cervical and Lumbar Disc Disease by Injection-Acupuncture

Duck-Hwan Kim¹, Jianzhu Liu, Young-Won Lee, Kun-Ho Song, Sang-Kyu Kang, Ho-Jung Choi, Kang-Moon Seo*, Seok Hwa Choi**, Tchi-Chou Nam* and Phil A.M. Rogers***

College of Veterinary Medicine, Chungnam National University, Gung-Dong 220, Yuseong-Gu, Daejeon 305-764, Korea

*College of Veterinary Medicine, Seoul National University, Shinrim-Dong 59-1, Kwanak-Gu, Seoul 151-742, Korea

**College of Veterinary Medicine, Chungbuk National University, Gaeshin-Dong 12, Hungduk-Gu, Cheongju 361-763, Korea

***Teagasc, Grange Research Centre, Dunsany, Co. Meath, Ireland

(Accepted : February 7, 2006)

Abstract : Two cases of canine intervertebral disc disease (IVDD) were treated twice a week with injection-acupuncture (injection-AP) using 0.1 ml/acupoint. In case 1, a paralysed dog with cervical intervertebral disc disease (C3-C4), was submitted to injection-AP with dexamethasone (1 mg/ml) at session 1-2 and thiamine (25 mg/ml) at session 3-5. Injected acupoints included GV-16, GB-20, BL-10, LU-7, LI-4 and SI-6. The acupoints GV-6, GV-20 and SP-6 were added at session 2-5. Trigger point (TP) therapy with 0.2 ml of 2% lidocaine was used in session 3-5 at TP in the *infraspinatus* and *triceps* muscles. Treatment was stopped when paralysis disappeared after 5 injection-AP treatments; there were no recurrent symptoms in the follow-up period of 5 months. In case 2, an ataxic dog with lumbar IVDD (L1-L2), was submitted to injection-AP with dexamethasone at session 1 and 2 and thiamine at session 3-4. Injected acupoints included GV-6 as the main point, ST-36, GB-30, ST-40, GB-34, ST-41 and BL-40. TP therapy with 0.2 ml of 2% lidocaine was used at TP in the *ileocostorum lumborum* and *quadriceps* muscles. Treatment was stopped when ataxia disappeared after 4 treatments; there were no recurrent symptoms in the follow-up period of 5 months. Injection-AP using dexamethasone and thiamine, combined with TP therapy using lidocaine, effectively alleviate the symptoms of canine cervical and lumbar IVDD.

Key words : treatment, canine discs, injection-acupuncture.

Introduction

Protrusion or extrusion of an intervertebral disc causes intervertebral disc disease (IVDD). Affected dogs may develop limb paralysis. IVDD is classified into Hansen type 1 (acute IVDD) and Hansen type 2. Hansen type 1 is common in chondrodystrophoid breeds and is secondary to chondroid metaplasia and mineralization of the *nucleus pulposus*. Hansen type 2 generally occurs in non-chondrodystrophoid breeds. Fibrous degeneration and protrusion of the *annulus fibrosus* are the characteristic (1,3,13).

Canine IVDD cases usually produce pain, paresis and ataxia. Upper motor neuron (UMN) of hindlimb signs usually appear in cases with cranial to L3-L4 lesions. Lower motor neuron (LMN) of hindlimb weakness appears in animals undergoing lesions between L3 and S1 (2,13,14).

Conventional treatment of IVDD is usually carried out by surgery and/or symptomatic therapy including analgesics and anti-inflammatory drugs (NSAIDs or corticosteroids), ATP and thiamine hydrochloride (13,16).

Several recent papers reported the successful use of traditional oriental medicine, based on acupuncture (AP), in human and animal diseases (15). Methods included *needle-AP* (19), *injection-AP*¹ (4,5,8,12,20), *electro-AP*(6,7,9,10), *laser-AP* (4) and *moxibustion* (6,11). However, there was only limited report about the therapeutic effect of IVDD by AP treatment (17).

Here we report about injection-AP therapy in 2 dogs with IVDD, one in cervical and the other lumbar that showed favourable therapeutic response by injection-AP.

Case 1

History. A 6-year-old Maltese bitch was referred to the Veterinary Teaching Hospital, Chungnam National University with ataxia for 2 months and neck stiffness for 1 month. A local veterinarian had treated the dog with drugs for one month but no clinical improvement.

¹Injection-AP (also called acupoint injection or aquapuncture) is a therapy in which one injects a small amount of solution into acupoints relevant to the case. The solution may contain vitamins, DMSO, conventional drugs, hormones, homeopathic remedies, diluted venoms, other agents, or mixtures of those.

¹Corresponding author.
E-mail : dhkim@cnu.ac.kr

Clinical findings. The dog was depressed and ataxic. Vital signs were normal. Radiological findings showed calcified intervertebral disc between C3 and C4 (Fig 1) and patellar luxation. The binding of blood tests were normal. Myelography showed characteristic findings at intervertebral disc between C3 and C4 (Fig 2). The case was diagnosed as IVDD at C3-C4.

Treatment. Dexamethasone (1 mg/ml, Eagle Vet. Korea) was used for injection-AP (0.1 ml/acupoint, twice/week) at session 1-2 and thiamine (25 mg/ml, Jaecil Med. Co., Korea) at session 3-5. Injected acupoints included GV-16, GB-20, BL-10, LU-7, LI-4 and SI-6 (Fig 6). GV-6, GV-20 and SP-6 were added at session 2-5. Trigger point (TP) therapy with 0.2 ml/muscle of 2% lidocaine (Hyuons Co., Korea) was also used at session 3-5 at the TP in the *infraspinatus* and *triceps* muscles.

Outcome. At session 2, the dog lifted one limb and tended to stagger sideways but she could not move her neck. At session 3, she was more active but the improvement of the clinical signs was little. At session 4, clinical signs were so much improved that she was able to move her neck and change to dorsal position by herself. At session 5, the unilateral limb lifting and sideways stagger had disappeared completely and she could look up easily while moving her neck. Treatment was stopped. Five months later, she was clinically normal and radiological examination showed no cervical lesions (Fig 3).



Fig 1. Radiograph of a Maltese bitch showing cervical IVDD lesion.

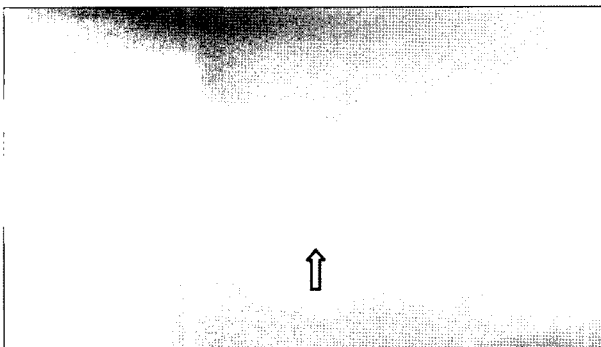


Fig 2. Myelogram of a Maltese bitch showing T-tree sign.

Case 2:

History. A 2-year old male Pekingese was referred with hindlimb paralysis for one month. A local veterinarian had attempted treatment with little success.

Clinical findings. The dog had hindlimb paralysis and was depressed and anorexic. Radiography showed lesion between L1 and L2 space (Fig 4); myelography also showed narrowing of the L1-2 space (Fig 5). The case was diagnosed as IVDD at L1-L2.

Treatment. Dexamethasone (2 mg/kg, IV for 3 days and 1 mg/kg, PO, BID, for 4 days) was given but the clinical signs did not improve. Treatment was changed to injection-AP (0.1 ml/acupoint, twice/week) with dexamethasone (1 mg/ml) at session 1-2 and thiamine (25 mg/ml) at session 3-4. Injected acupoints included GV-6, ST-36, GB-30, ST-40, GB-34, ST-41 and BL-40 (Fig 6). TP therapy with 0.2 ml of 2% lidocaine was used at TP in the *ileocostorum lumborum* and



Fig 3. Radiograph of a Maltese bitch 5 months after injection-AP treatment.

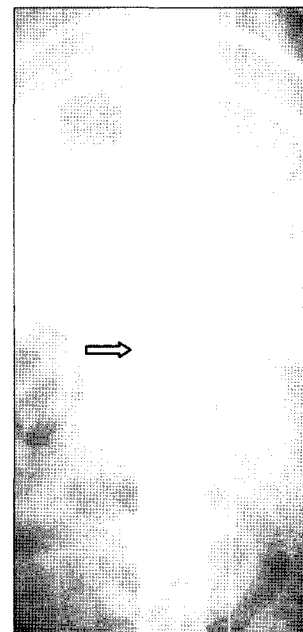


Fig 4. Radiograph of a Pekingese dog showing lumbar IVDD lesion.

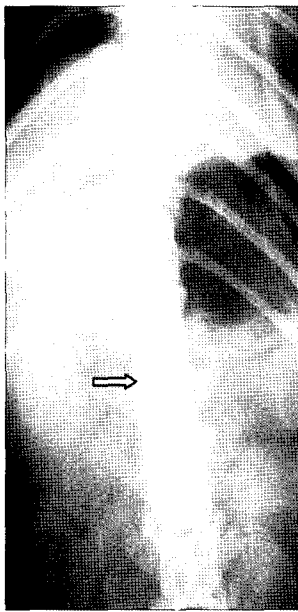


Fig 5. Myelograph of a Pekingese dog showing lumbar IVDD lesion.

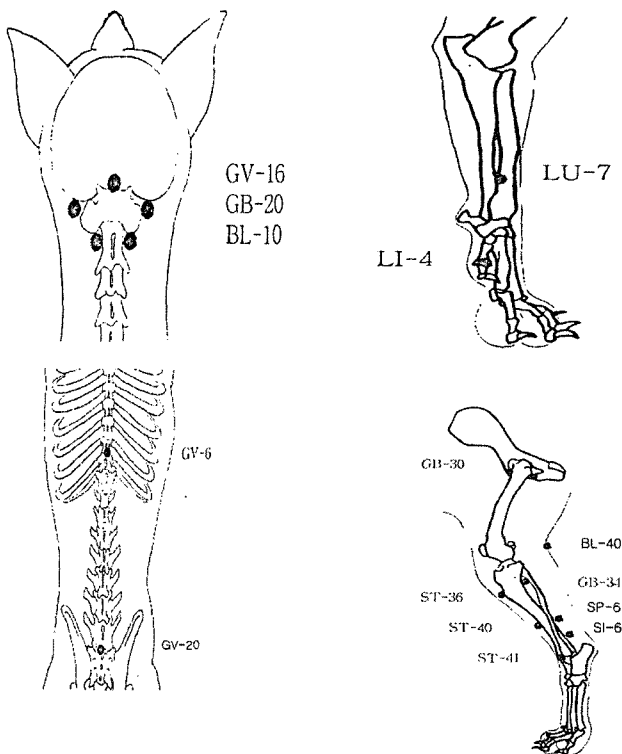


Fig 6. Acupoints used for the treatment of IVDD.

quadriceps muscles.

Outcome. The dog was able to walk normally after 4 session, when treatment was stopped. He was clinically normal during the five months follow-up period.

Discussion

Therapy based on traditional oriental medicine is effective in many human and animal diseases. Well known methods include needle-AP (7,18,19), injection-AP (4,5,12,20), electro-AP (6,7,10) and laser-AP (4).

Injection-AP produces better therapeutic effects on various diseases than conventional treatment methods, such as subcutaneous or intramuscular injection with the same drugs. Injection-AP stimulates the acupoints continuously before the injected drugs are absorbed, and the absorbed drugs also induce their effects after absorption (6,7,20). Song *et al.* (17) reported that injection-AP with Korean Ginseng saponin at BL-18 was more effective than intramuscular injection to heal experimentally induced liver damage in rats. You *et al.*²⁰ reported that injection-AP with liver tonics at BL-18 was more effective than intramuscular injection to heal experimentally induced liver damage in dogs. Hong *et al.* (4) reported that injection-AP with methionine at BL-18 was more effective than laserpuncture to heal experimentally induced liver damage in rats. Kim *et al.* (7) reported that injection-AP with ketamine at GV-5 and lumbosacral space prolonged the duration of anaesthesia when compared to intramuscular injection of ketamine. Hwang *et al.* (5) reported that injection-AP with canine parvovirus vaccine at GV-1 produced more effective immunomodulation than subcutaneous vaccination in dogs.

In this study, two IVDD cases recovered after 4-5 sessions of injection-AP therapy using dexamethasone and thiamine hydrochloride, combined with TP therapy with lidocaine hydrochloride. Song *et al.* (17) reported that one case with hind limb paralysis responded to electro-AP (2V, 30 Hz, for 3 weeks) at GV-6, GV-20 and SP-6, and another with hind limb paralysis responded to electro-AP (2 V, 30 Hz, for 3 weeks) and injection-AP treatments with dexamethasone (once/day, for 5 days). However, the therapeutic effects by AP were less favourable in advanced chronic IVDD. Therefore, it is important to start AP therapy early after the onset of clinic signs.

In these cases, TP therapy was combined with injection-AP with dexamethasone. TP therapy is very helpful for pain control in canine IVDD therapy. This can be supported by the findings that the cervical lesion disappeared 5 months after admission in case 1. More research is necessary to investigate whether injection-AP can induce resolution of IVDD lesions.

Conclusion

Injection-AP therapy with dexamethasone and thiamine hydrochloride, combined with TP therapy with lidocaine, can be an effective treatment modality for the early cases to cervical and lumbar IVDD in dogs.

References

1. Bray JP, Burbidge HM. The canine intervertebral disk. part II: Degenerative changes-nonchondrodystrophoid versus

- chondrodystrophoid disks. *J Am Anim Hosp Assoc* 1998a; 34: 135-44.
2. Bray JP, Burbidge HM. The canine intervertebral disk: Part I: Structure and function. *J Am Anim Hosp Assoc* 1998b; 34: 55-63.
 3. Frost GE. Canine cervical intervertebral disc disease. *J S Afr Vet Assoc* 1979; 50: 205-206.
 4. Hong MS, Lee JY, Lee B, Lee SE, Seo JM, Song KH, Kim DH, Cho KW Kim MC. The effect of laserpuncture and aquapuncture with methionine on the recovery in artificially induced hepatic damaged rats. *J Vet Clin* 2002; 19: 125-131.
 5. Hwang SH, Seo JM, Hong MS, Choi YS, Song KH, Kim DH, Kim MC Shin KS. Immunomodulatory effect of aquapuncture with canine parvovirus vaccine. *J Vet Clin* 2001; 18 : 368-373.
 6. Jang KH, Lee JM, Nam TC. Electroacupuncture and moxibustion for correction of abomasal displacement in dairy cattle. *Kor J Vet Res* 2003; 24: 93-95.
 7. Kim DH, Cho SH, Song KH, Lee SE, Lee SH, Kwon GO, Kim IB, Kim YC, Cho JH, Kwan YY, Kim JW. Electroacupuncture analgesia for surgery in cattle. *Am J Chin Med* 2004; 32: 131-140.
 8. Kim HW, Kwon YB, Han HJ, Yang IS, Beitz AJ, Lee JH. Antinociceptive mechanisms associated with diluted bee venom acupuncture (apipuncture) in the rat formalin test: involvement of descending adrenergic and serotonergic pathways. *Pharmac Res* 2005; 51: 183-188.
 9. Lee HJ, Lee B, Choi SH, Hahn DH, Kim MR, Roh PU, Pyun KH, Golden G, Yang CH, Shim I Electroacupuncture reduces stress-induced expression of c-fos in the brain of the rat. *Am J Chin Med* 2004; 32: 795-806.
 10. Lee SE, Song KH, Liu J, Kwon HJ, Youn SB, Lee YW, Cho SH, Kim DH. The effectiveness of auriculoacupoint treatment for artificially induced acute hepatic injury in dogs. *Am J Chin Med* 2004; 32: 445-451.
 11. Li Y, Liang FR, Yu SG, Li CD, Hu LX, Zhou D, Yuan XL, Li Y, Xia XH. Efficacy of acupuncture and moxibustion in treating Bell's palsy: a multicenter randomized controlled trial in China. *J Chin Med* 2004; 117: 1502-1506.
 12. Lin JH, Wu LS, Wu YL, Lin CS, Yang NY. Aquapuncture therapy of repeat breeding in dairy cattle. *Am J Chin Med* 2002; 30: 397-404.
 13. Morgan RV, Bright RM, Swartous MS. Handbook of small animal practice. 4th ed. Elsevier Science. 2003: 263-265.
 14. Nwaas A. Clinical aspects of surgical treatment of thoracolumbar disc disease in dogs. A retrospective study of 300 cases. *Acta Veterinaria Brno* 1999; 68: 121-130.
 15. Schoen AM. Veterinary acupuncture: Ancient art to modern medicine. 1st ed., Mosby. 2004: 191-199.
 16. Sether LA, Nguyen C, Yu SN, Houghton VM, Ho KC, Biller DS, Strandt JA, Eurell JC. Canine intervertebral disks: correlation of anatomy and MR imaging. *Radiology* 1990; 175: 207-211.
 17. Song KH, Hong MS, Seo JM, Lee SE, Lee YW, Kim DH. Cases applied the electroacupuncture and combined therapy with electroacupuncture and aquapuncture for canine hind limb paralysis. *JVM*. 2003; 56: 889-892.
 18. Paraskeva A, Melemini A, Petropoulos G, Sifaka I, Fassoulaki A. Needling of the extra 1 point decreases BIS values and preoperative anxiety. *Am J Chin Med* 2004; 32: 789-794.
 19. Yung KT. A birdcage model for the Chinese Meridian System: part I. A channel as a transmission line. *Am J Chin Med* 2004; 32:815-828.
 20. You MJ, Kim DH, Cho SW, Yun WK, You KD. The effect of aquapuncture with hepatonics on the recovery in artificially induced hepatic damaged dogs. *J Vet Clin* 1997; 14: 308-318.

개 경부 및 요부 디스크의 수침치료

김덕환¹ · 유건주 · 이영원 · 송근호 · 강상규 · 최호정 · 서강문* · 최석화** · 남치주* · Phil A.M. Rogers***

충남대학교 수의과대학, *서울대학교 수의과대학

충북대학교 수의과대학, *Teagasc, Grange Research Centre(아일랜드)

요 약: 개 추간관 디스크의 2증례를 수침치료를 하였다. 증례 1은 경부 디스크(C3-C4)의 증례이었으며, 1-2차 치료에서는 텍사메타손(1 mg/ml), 3-5차 치료에서는 염산치아민(25 mg/ml)을 각각 수침하였다. 사용혈위는 GV-16, GB-20, BL-10, LU-7, LI-4 및 SI-6이었다. 2-5차 치료에는 GV-6, GV-20 및 SP-6의 혈위를 추가하였다. 3-5차 치료에는 2% 염산리도카인(0.2 ml)를 이용하여 견갑아래근 및 상완세갈래근의 압통점에 각각 수침하였다. 5차 치료 후 마비증상은 소실되어 치료를 중단하였으며, 5개월 후 증상의 재발은 인정되지 않았다. 증례 2는 요부디스크의 증례(L1-L2)로 1-2차 치료에는 텍사메타손 수침을 3-4차치료에는 염산치아민을 각각 수침하였다. 사용혈위는 GV-6를 주혈로, ST-36, ST-40, GB-34, ST-41 및 BL-40을 부혈로 각각 사용하였다. 또한 허리장골 늑골근 및 대퇴네갈래근의 압통점에 2% 염산리도카인(0.2 ml)를 각각 수침하였다. 4차 치료 후 마비증상이 호전되어 치료를 중단하였고, 5개월 후 현재 까지 증상의 재발은 인정되지 않았다. 이상의 증례를 통하여, 텍사메타손과 염산치아민의 수침 및 리도카인을 이용한 압통점치료의 병용은 개의 경부 및 요부디스크의 증상을 효과적으로 콘트롤 할 수 있는 것으로 판단되었다.

주요어: 개 디스크, 수침, 치료