

Acupuncture Therapy for Pyometra in Small Animal

Tchi-chou Nam, Hee-yung Kim, Seong-chan Yeon, Kang-moon Seo* and Jong-tae Cheng**
College of Veterinary Medicine, Seoul National University, *College of Animal Husbandry, Kang Won University,
**College of Agriculture, Cheju University

소동물의 자궁축농증에 대한 침술요법의 개발

남치주 · 김희영 · 연성찬 · 서강문* · 정종태**
서울대학교 수의과대학, *강원대학교 수의학과, **제주대학교 수의학과

요 약 : 개에서 정상 발정주기 때와 자궁 축농증에 이환 되었을 경우 이에 대한 전침 자극의 효과를 알아보기 위하여 본 실험을 실시하였다. 정상 자궁 운동은 발정기 때에 최대이었으며 발정정지기 때에 운동성이 감소되거나 결여되었다. 발정정지기 때에 전침자극을 하거나 Prostaglandin F_{2α}를 투여하였을 경우에는 자궁의 운동성이 크게 증가하였다. 자궁경관이 열린 자궁축농증에 이환된 두 마리에서 전침자극을 3~4일간 실시하였다. 자궁의 직경은 감소되었고 질 분비물은 증가한 후 이후 감소하였다. 환축은 회복되는 경향을 보였으나 축주의 요구에 의하여 난소자궁절제술을 시행하였다. 본 실험의 결과를 통하여 전침자극은 자궁 축농증에 이환된 환축에서 축주가 번식용으로 계속 기르기를 원한다거나 또는 난소자궁절제술을 환축에 적용하는데 있어서 수술적인 위험이 높을 때에 적용 가능한 새로운 치료적 대안이 될 수 있음을 알 수 있었다.

Key words : Estrous cycles, pyometra, electro-acupuncture, prostaglandin F_{2α}

Introduction

Canine pyometra is a relatively common reproductive disorder during diestrus in aged bitches. Pyometra results from firstly complex interrelationship between estrogen and luteal progesterone and secondarily microorganism⁵.

Ovariohysterectomy is the best treatment for pyometra in bitches. However, an alternative to surgery may be sometimes required in breeding bitches, in cases which operation may not be desired by pet owners, and in animal that might be a questionable surgical risk.

Prostaglandin F₂ alpha offers an alternative treatment but its effects may not be allowed as general use for canine pyometra¹.

The authors wish to acknowledge the financial support of the Korea Research Foundation made in the program year of 19997.

Electroacupuncture may be tried to dilate the cervix and to contract the uterus². However, scientific researches of clinical cases have not been reported.

The purpose of this study is to ascertain that electroacupuncture accelerates the uterine motility and to examine the effects of electroacupuncture on pyometra in dogs.

Materials and Methods

Experiment 1

This study was performed to compare the effects of prostaglandin F₂ alpha (PGF_{2-α}) and electroacupuncture (EA) on uterine motility during normal estrous cycle.

Experimental Animals : Healthy mongrel bitches weighing 10 to 15 kg, aging 2 to 3 years were used to record uterine motility after the treatment of PGF_{2-α} and electroacupuncture during estrous cycle. Vaginal smears were taken to determine the estrous cycle.

Recording of Uterine Contractility : Experimental bitches were anesthetized with premedication of atropine sulfate and tiletamine-zolazepam (Telazol®). Uterine wall was exposed and needle electrodes were implanted under sub-serosa of both uterine horns 5cm distant to uterine cervix.

Uterine contractility was determined by electromyograph which was recorded through physiograph (Narco-Biosystem) connected to the implanted needle electrodes.

PGF_{2-α} : PGF_{2-α} was administered intramuscularly at the dose of 0.1 mg/kg of body weight

EA : Acupuncture points selected for uterine stimulation were bilateral Luan-Chao-Shu and Zi-Gong-Shu. Luan-chao-shu is on 3 cm ventral to the tip of the transverse process of the 4th lumbar vertebra. Zi-Gong-Shu is on 3 cm ventral to the tip of the transverse process of the 5th lumbar vertebra.

Sterile filiform acupuncture needles were inserted perpendicularly to these acupuncture loci 1-2 cm deep. The needles were connected to the electrodes of an electrical stimulator (TEC pulse stimulator AM3000, Japan).

The frequency and voltage used were 5 to 10 cycle per min and 2 to 4 volts, respectively. The duration of stimulation was approximately 30 minutes.

Experiment 2

The purpose of this study was to determine whether PGF_{2-α} and EA would be effective for the treatment of pyometra in bitches.

Experimental Animals : Clinical cases used were bitches with a tentative diagnosis of pyometra which were admitted to veterinary hospital and on which pet owner required non-surgical treatment by owner's desire.

Diagnosis of Pyometra : Diagnosis was based on clinical signs, pathological values, radiograph and ultrasonograph, etc.

PGF_{2-α} with Traditional Acupuncture and EA : PGF_{2-α} was combined with traditional acupuncture to prevent the side effect of PGF_{2-α}. Acupoint selected for traditional acupuncture was Shan-gen which is at the midpoint of the dorsal surface of nose. Electroacupuncture was the same as experiment 1. Antibiotic was

administered along with these treatments.

Successful Responses to PGF_{2-α} and EA : Indications include loss or lack of clinical signs, development of vaginal discharge and then stop completely, decrease of uterine diameter and return of a normal leukogram.

Results

Uterine Motility(UM) during Normal Cycle in Bitches :

Natural uterine motility was greatest during estrous, moderate during proestrous, decreased or lacking during diestrus and lacking during anestrus (Fig 1).

Uterine motility after PGF_{2-α} administration during diestrus in bitches :

Uterine motility was greatly increased in amplitude and intervals after IM PGF_{2-α} administration (Fig 2).

Uterine Motility after EA during Diestrus in Bitches :

Electrostimulation at the acupoint of Luan-chao-shu and Zi-gong-shu also increased greatly uterine motility during diestrus in bitches (Fig 3).

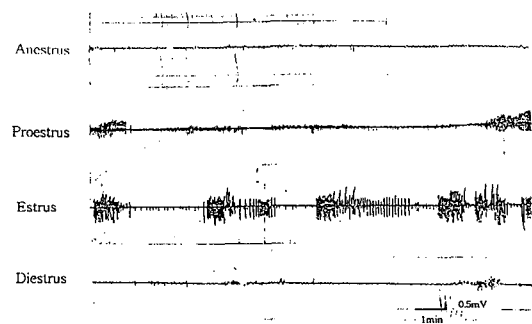


Fig 1. Uterine motility during the estrous cycle in the dog.

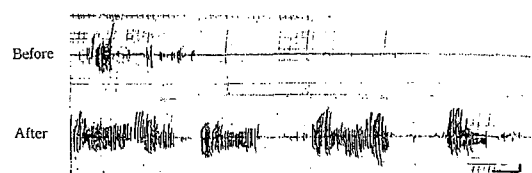


Fig 2. Uterine motility after traditional acupuncture and PGF_{2α} administration during the diestrus in the dog.

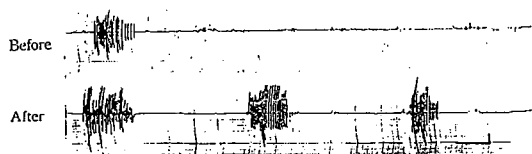


Fig 3. Uterine motility after electrostimulation during the diestrus in the dog.

PGF_{2α} for medical treatment of pyometra :

Two cases with open-cervix pyometra were treated with PGF_{2α}.

A case was treated for 4 days. Uterine diameter decreased to 1.2~1.3 cm from 1.8 cm before treatment and volume of vaginal discharge increased after treatment then began to decrease at the 4th day treatment. The patient, however, was ovariahysterctomized by owner's desire.

And a case was treated for 2 days. But the patient was dead 2 days after treatments (Table 1).

EA for Nonsurgical Treatment of Pyometra :

Two cases with open-cervix pyometra were attempted to treat by EA.

A case was treated for 4 days. Uterine diameter decreased to 1.2 cm from 3 cm before electro-stimulation and volume of vaginal discharge increased and then decreased. The patient showed a trend to recover but was ovariohysterctomized by pet owner's demand.

Other case was treated for 3 days. Uterine diameter also decreased to 0.6 cm from 1.3 cm before treatment and volume of vulvar discharge increased along with electro-stimulation. The patient also was ovariohysterctomized by owner's desire (Table 2).

Discussion

Open-cervix pyometra is characterized by purulent or sanguinolpurulent vaginal discharges. Some bitches

Table 1. Effects of prostaglandin F₂ alpha on canine pyometra

Breed	Age (yr)	B.W. (kg)	Item	Before	After treatment(days)					Remarks
					1	2	3	4	5	
Pomeranian	8	4	US	18	15	12	12	13	—	Ovariohysterctomy by owner's demand
			VD	*	***	***	***	**	—	
Mongrel	12	3.5	US	12	8	8	—	—	—	dead
			VD	*	**	**	—	—	—	

US: Uterine size (mm)

VD: Volume of vaginal discharge

* : mild

** : moderate

*** : severe

Table 2. Effects of electroacupuncture on canine pyometra

Breed	Age (yr)	B.W. (kg)	Item	Before	After treatment(days)					Remarks
					1	2	3	4	5	
Chihuahua	12	2.5	US	30	12	12	12	22	—	Ovariohysterctomy by owner's demand
			VD	*	***	*	*	**	—	
Mongrel	11	3	US	13	6	6	6	—	—	Ovariohysterctomy by owner's demand
			VD	*	*	*	*	—	—	

US: Uterine size(mm)

VD: Volume of vaginal discharge

* : mild

** : moderate

*** : severe

may have systemic signs, such as lethargy, pyrexia, depression, anorexia, polyuria, and polydipsia. With closed-cervix pyometra, vaginal discharge is not present. Abdominal enlargement may occur. These animals often become severely ill from toxemia, vomiting, dehydration, and azotemia progressing to shock, collapse, and coma.

Ovariohysterectomy is the preferred treatment for pyometra unless the owner strongly desires maintaining the reproductive potential of the bitches. Relatively healthy patient are usually excellent surgical risks. Severely ill bitches should be vigorously treated with intravenously fluids and closely monitored.

Medical treatments with PGF_{2α} and antibiotics have been reported for canine pyometra, but its effects in animal practice might be uncertain yet.

PGF_{2α} has several physiologic effects on the female reproductive system, including uterine contraction of the myometrium and relaxation of the cervix. These effects facilitate expulsion of exudate accumulated in the uterus^{3,4}.

The results of PGF_{2α} for open cervix pyometra in bitches have been successful⁵⁻¹¹. The period required to treat the uterine disease was varied from 3 to 26 days.

On the other hand, the results of PGF_{2α} was ineffectiveness or doubtful¹²⁻¹⁵.

Therefore, owners should be informed that the use of PGF_{2α} for treating canine pyometra is experimental.

In this study uterine motility after PGF_{2α} administration during diestrus in mongrel bitches was greatly increased. This results suggested that PGF_{2α} contract uterine wall and expel the contents in the uterus. Two clinical cases with open-cervix pyometra attempted to treat with PGF_{2α}. A case was treated only for 4 days. The patient was ovariectomized by owner's desire. The pet owner did not want long period to treat the disease. The other case was died during 2 days treatment.

In human, electroacupuncture may become a useful trial in controlling labor^{16,17}. The induction of cervical dilatation using acupuncture was successful in 90% of patients¹⁸. A significant increase in frequency and strength of uterine contraction following electrical stimulation was found¹⁹.

Unfortunately there are few reports on the effects of acupuncture on uterine contraction in dogs.

In this study, uterine motility following EA during diestrus in normal bitches was also greatly increased.

Two cases with the open-cervix pyometra was treated with EA for only 3 or 4 days. After EA diameter of uterus decreased and vaginal discharge was developed.

The tendency to recovery from the disease was shown, but the pet owner did not want to wait till complete treatment for long period. After all the patients were ovariohysterectomized.

Treatment of canine pyometra by EA or PGF_{2α} needs long period to complete recovery. Therefore, these treatment could be useful alternative to operation in cases which clients wish to try to salvage reproductive on animals function, and in cases that might be suspected high risk.

Conclusions

The effects of electroacupuncture (EA) on uterine motility during normal estrous cycle and its treatment on pyometra were examined in dogs.

Normal uterine motility was greatest during estrus, decreased or lacking during diestrus.

Uterine motility after EA as well as PGF_{2α} administration during diestrus increased greatly.

Two cases with open-cervix pyometra were treated with electroacupuncture for 3 to 4 days. Uterine diameter decreased, and volume of vaginal discharge increased and then decreased. The patients showed a trend to recover but were ovariohysterectomized by pet owner's demand.

It is suggested that EA could be possible alternative to operation in breeding bitches and in bitches that might be a questionable surgical risk.

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