Correlation of Acupuncture Point Sensitivity and Lesion Location in 259 Horses

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ABSTRACT

Palpation of Channels and acupoints is part of the equine traditional Chinese veterinary medicine examination. Sensitivity of acupoints and acupoint combinations have been used to localize disease to certain regions and structures in horses. The objective of this clinical observational study was to scan and record sensitive acupoints of horses presented for lameness, poor performance or pre-purchase examinations and then evaluate the anatomic sites previously suggested for problems, using ultrasound, radiography or nerve blocks. Between January and April 2007, 259 horses, presented for examination, had sensitive acupoints and were evaluated for lesions. Of these, 139/259 (53.7%) horses were presented for lameness and pain, 91/259 (35.1%) horses were presented for general complaints about poor performance and 29/259 (11.2%) horses were presented for pre-purchase examinations. Sensitive acupoints were associated with disorders of tendons (12.9%), ligaments (19.4%), muscles (5.8%), bone (1.4%), joints (23%), hooves (7.2%) and sciatic nerves (10.8%), as well as back pain (13.7%), metacarpal and metatarsal fractures (1.4%) and general poor performance issues (5.81%). Diagnosis was confirmed with ultrasonography (44%), radiography (40%) and/or nerve blocks (16%). In this group of 259 horses, there was 100% correlation with acupoint sensitivity and lesion location reported elsewhere. Integration of palpation of acupoints into the routine conventional examination can be useful to localized lesions in horses with musculoskeletal and performance problems and detect potential problems during pre-purchase examinations.

Key Words: Equine, acupoint sensitivity, acupoint scanning, lameness, poor performance, pre-purchase examination, traditional Chinese veterinary medicine, TCVM

ABBREVIATIONS

TCVM	Traditional Chinese veterinary medicine
TMJ	Temporomandibular joint

To competently perform lameness and pre-purchase examinations veterinarians must acquire an accurate history and have excellent skills in observation, inspection, manipulation and gait analysis.[1] Gait evaluation is performed during walking, trotting and galloping with and without a saddle and any other appropriate gear. The horse should also be observed while performing the intended sport. The ability to accurately localize lesions and knowledge of conformational defects that can lead to future performance problems are also essential. The nutritional status, especially of young animals, is very important to evaluate, as it may relate to current and future problems. The ability to accurately perform and interpret imaging are also necessary for an accurate diagnosis. The traditional Chinese veterinary medicine (TCVM) evaluation includes the conventional physical examination plus added historical questions, tongue and pulse examination and palpation of Channels and acupoints.[1]

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Acupuncture stimulates neuroendocrine responses *via* the same somato-somatic and somatic-visceral neural reflexes used to regulate normal physiological processes and heal the body.[1] Because of these neural reflexes, sensitivity of specific acupoints have been observed to indicate disease locally, elsewhere along the Channel and of specific internal organs.[1-5] Appendicitis in humans has been diagnosed since 1891 by finding pain on palpation of a visceral-somatic reflex point called McBurney's point.[6] McBurney's point is in the same location as the acupoint ST-30 in traditional Chinese medicine.[1,6]

Acupoints can be used for both diagnosis and treatment. Methodically palpating and scanning acupuncture Channels with the tip of the finger or a blunt rounded object, such as a plastic hypodermic needle cap, pen or a smooth wooden or metal probe, can be useful to detect sensitivity of specific acupoints and regions of the body.[1-5] Many equine TCVM practitioners find acupoint and regional scanning to be an effective tool to detect current and potential problems, during the routine lameness and pre-purchase examinations.[1-5]

The objective of this clinical observational study was to scan and record sensitive acupoints of horses presented for lameness or pre-purchase examinations and confirm problems at specific anatomic sites with ultrasound, radiography or nerve blocks.

MATERIALS AND METHODS

Horses were presented to the author for examination between January and April 2007 and all horses with sensitive acupoints found on palpation were included in the study. As part of the complete TCVM examination, the author methodically palpated acupoints along the regular TCVM Channels of the head, neck, thoracic limb, dorsolateral vertebral column and pelvic regions (Table 1). Classical acupoints previously suggested to be diagnostic for specific locations were also palpated (Table 1).[1-5] A 3 ml mepivicane vial with a smooth, rounded metal tip was used to put pressure on acupoints and along the Channels to detect sensitivity. Acupoint sensitivity was graded either +, ++ or +++ based on the criteria outlined in Table 2. Anatomic sites, previously suggested to be associated with sensitive acupoints, were

Table 1: Sensitive acupoints and location of lesions[1-5]

Head and Neck and Thoracic Limb Acupoint Scanning	
Sensitive Acupoints	**Location of Disease***
GB-1, ST-7, GB-2, SI-19	Temporomandibular joint and teeth
ST-6, GB-2, SI-19, GB-20, BL-10, SI-16	Atlanto-occipital and atlanto-axial joints
BL-10, SI-16	Contralateral sacral dysfunction; if ipsilateral *Ba-jiao*, *Lu-gu* and *Ba-shan* also sensitive
LI-18	Hoof
TH-16 and SI-16	Fetlock and pastern
TH-15 and TH-16	Thoracic limb tendons
TH-15, GB-21, LI-16, SI-9	Shoulder
LI-17 and C3-C4 or C4-C5 *Jing-jia-ji*	Carpus
LI-16 to LI-17	Suspensory ligament
PC-1	Chronic heel pain and navicular disease (LI-18 usually also reactive and sometimes BL-14, Bl-15)
Paravertebral Acupoint Scanning	
Sensitive Acupoints	**Location of Disease***
BL-14, BL-15	Medial foot when LI-18 also reactive
BL-20, BL-21, *Qi-hai-shu*, ST-7	Behavior disorder associated with equine gastrointestinal disorders (CV-12 usually also reactive)
BL-51, BL-52, BL-23, GB-24, GB-25, LIV-13	Behavior disorder associated with hormone imbalance
Hua-tuo-jia-ji	Local *Qi*/Blood Stagnation at the site of sensitivity
Pelvic Acupoint Scanning	
Sensitive Acupoints	**Location of Disease***
GB-27, SP-13, BL-35, BL-39	Hock
SP-11, SP-12, ST-31, *Dan-tian*, *Ju-liao*, BL-36, BL-37 and BL-38	Stifle
BL-53, *Huan-tiao*, *Huan-zhong*, *Huan-hou*, *Ba-jiao*, *Lu-gu*, *Ba-shan*	Coxofemoral joint

*Lesions are ipsilateral to the sensitive acupoints unless otherwise indicated; Classical acupoint locations: *Jing-jia-ji* (above and below the lateral vertebral process), *Hua-tuo-jia-ji* (½ cun lateral to the dorsal midline between the thoracolumbar dorsal spinous processes), *Dan-tian* (cranioventral to the tuber coxae), *Ju-liao* (caudoventral to the tuber coxae), *Huan-tiao* (2 cun cranial to the greater trochanter), *Huan-zhong* (2 cun cranial and dorsal to greater trochanter), *Huan-hou* (dorsal to the greater trochanter), *Ba-jiao* (1.5 cun lateral to midline between the spinous processes of the sacrum), *Lu-gu* (⅓ the distance between *Bai-hui* and the greater trochanter) and *Ba-shan* (midpoint between the greater trochanter and *Bai-hui*)

evaluated for lesions with ultrasound, radiography or nerve blocks. The author was the sole examiner of acupoint sensitivity and performed all the diagnostic tests.

RESULTS

A total of 259 horses had 1 or more sensitive (reactive) acupoints to different degrees on palpation. Of these, 139/259 (53.7%) horses were presented for lameness and pain, 91/259 (35.1%) horses were presented for general complaints about poor performance and 29/259 (11.2%) horses were presented for pre-purchase examinations. To obtain a diagnosis at the suspected anatomic lesion location, ultrasonography was performed on 44% of horses, radiography on 40% of horses and nerve blocks on 16% of horses. An overview of the sensitive acupoints, locations and types of lesions and number of affected horses are outlined in Table 3. The percentages of the different types of tissue disorders diagnosed are shown in Figure 1. Sensitive acupoints were associated with disease of tendons (12.9%) ligaments (19.4%), muscles (5.8%), bones (degeneration 1.4%), joints (23%), hooves (7.2%) and sciatic nerves (10.8%), back pain (13.7%), metacarpal and metatarsal fractures (1.4%) and functional performance issues associated with equine ulcerative gastritis complex, temporomandibular (TMJ) disease, occipito-atlanto-axial disease and generalized Bladder Channel imbalances (5.81%). There was 100% correlation with acupoint sensitivity and lesion location suggested in the literature.[1,5] No structural lesions were found in 5.81% of the cases with Bladder Channel pain.

DISCUSSION

In the author's clinical experience and from the results of this study, acupoint palpation can be a valuable diagnostic aid. The author generally begins the palpation of acupoints around the head and TMJ, specifically GB-1, ST-7, GB-2 and SI-19. Pain around this area will normally indicate dental or occipito-atlanto-axial disease (if GB-20 and BL-10 are also sensitive). If only BL-10 and SI-16 are sensitive, then a possible contralateral sacral problem should be considered. In sacral disease, ipsilateral *Ba-jiao, Lu-gu* and *Ba-shan* acupoints are usually also sensitive.

Next the author palpates LI-18 for ipsilateral hoof problems, followed by TH-16 and SI-16 for ipsilateral fetlock and pastern disorders. Sensitivity of SI-16 and TH-15 usually indicates ipsilateral tendon disorders. If a very sensitive area between TH-15, GB-21 and LI-16 is found, then ipsilateral shoulder disease is suspected, and more severe structural damage is suspected if SI-9 is also painful. Sensitivity of LI-17 and *Jing-jia-ji* at C3-4 or C4 -5 indicates ipsilateral carpus disease. If scratching with the probe from LI-16 to LI-17 generates sensitivity, then suspensory ligament disease should be suspected. Acupoint PC-1 is located at the level of the point of the olecranon, in the 5th intercostal space and is more reactive if chronic heel pain, including navicular disease is present. Most of the time in the author's experience LI -18 will also be reactive.[1]

Normally, the acupoints along the Bladder Channel are used as "mirror" points to find out whether lesions are more medial or lateral or to support the diagnosis of a hoof problem. For example, if LI-18 and PC-1 are reactive and so are BL-14 and 15, then ipsilateral hoof disease is more likely. If the presenting complaint is a behavioral problem, then sensitivity of *Qi-hai-shu*, ST-7, BL-20, 21, CV-12 suggests equine gastric ulcerative complex causing the behavioral problems. If sensitivity is found at acupoints BL-51, BL-52, BL-23, GB-24, GB-25 and LIV-13 the behavioral problem may be due to equine hormone-associated syndrome. For segmental intervertebral problems, the author prefers digital palpation over the paravertebral muscles and *Hua-tuo-jia -ji* acupoints to detect sensitive acupoints and local *Qi* Stagnation.

In the pelvic area, sensitive acupoints around the tuber coxae have a great deal of clinical significance. Sensitivity of GB-27 and SP-13 ("hock-point") indicate ipsilateral hock disease, in which case usually BL-35, BL-39a and BL-39b are sensitive also. If acupoints SP-11, SP-12, ST-31, *Dan-tian* and *Ju-liao* are sensitive, then stifle disease is likely and more severe if sensitivity is also found at BL-36, BL-37 and BL-38. If BL-53, *Huan-tiao, Huan-zhong* and *Huan-hou* are sensitive along with sensitivity at acupoints *Ba-jiao, Lu-gu* and *Ba -shan*, then coxofemoral joint disease is likely.

The detection of sensitive acupoints during the TCVM examination can be useful to localize lesions to local and distant sites (Table 1). The results of acupoint sensitivity and lesion localization of the 259 horses in

Table 2: Criteria for the grades of acupoint sensitivity

Degree of Response	Symbol used	Criteria
Mild	+	Palpation generates a short local muscle contraction that stops when palpation is discontinued
Moderate	++	Palpation generates a local muscle contraction that continues after palpation is discontinued
Severe	+++	Palpation generates obvious pain as manifested by moving away or acts of aggression (e.g. biting, striking or kicking)

Table 3: Sensitive acupoints, diagnostic tests and diagnosis in 259 horses

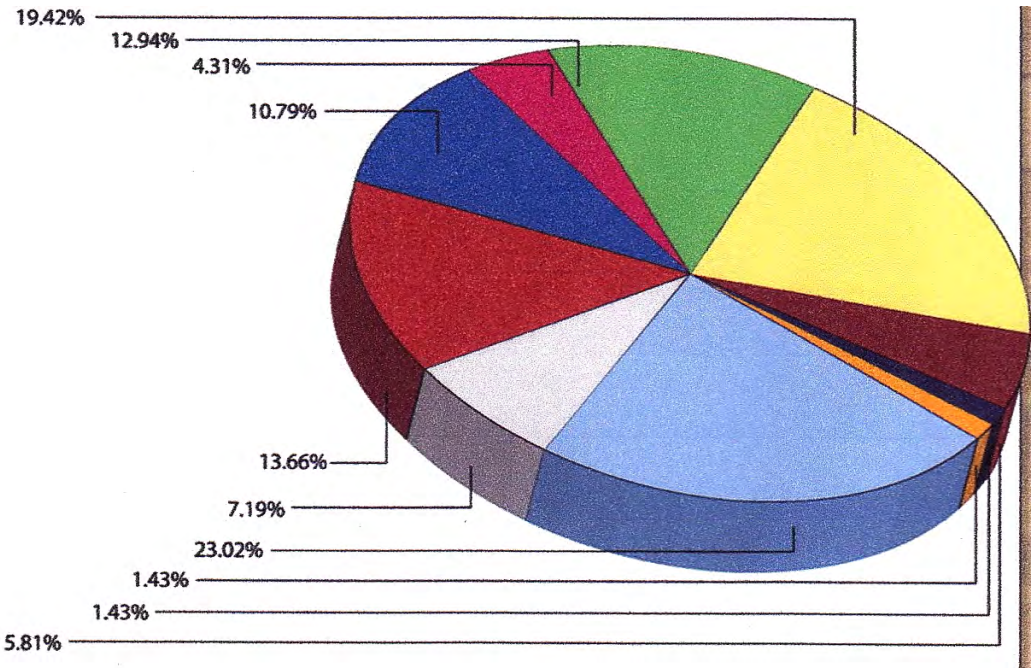
Sensitive Acupoints	Diagnostic Tests	Diagnosis	Number of Horses Affected	Percentage of Total Cases
TH-15, SI-16	Ultrasound	Ipsilateral limb tendon disease	33	12.94%
Sensitivity when scratching from LI-16 to LI-17 and TH-16, SI-16	Ultrasound	Ipsilateral ligament disease	50	19.42%
Local Bladder Channel and *Hua-tuo-jia-ji* acupoints	Laboratory analysis (LDH)* ultrasound	Local muscle disorder	15	5.81%
TH-16 and SI-16 (fetlock and pastern)	Nerve block, ultrasound and radiography	Degenerative bone disease at each respective site	4	1.43%
BL-13, BL-25 (metacarpus II) and BL-19, BL-28 (metatarsus IV)	Radiography	Metacarpal II and metatarsal IV fractures	2 at each site	1.43%
GB-27, BL-35 and BL 39 (hocks) and *Dan-tian, Ju-liao,* SP-11, SP-12, ST-31 (stifle)	Ultrasound, radiography	Joint disease	59	23.02%
LI-18, PC-1	Ultrasound, radiography	Hoof disorders	18	7.19%
Local *Hua-tuo-jia-ji*	Ultrasound	Back problems	35	13.66%
Shen-shu, Shen-peng, Shen-jiao Ba-jiao, BL-10 contralaterally	Transrectal ultrasound	Sciatic nerve disorders	30	10.79%
ST-7, BL-20, 21, CV-12	Ultrasound, local anesthesia	Equine gastric ulcer syndrome	2	Behavioral issues leading to poor performance 5.81%
ST-7, GB-1, GB-2 and SI-19 for temporomandibular disorders	Ultrasound, local anesthesia	Temporomandibular disorder	4	
ST-7, GB-1, GB-2 and SI-19 with BL-10 for occipito-atlanto-axial disorders;	Ultrasound, local anesthesia	Occipito-atlanto-axial disorder	5	

*LDH = lactate dehydrogenase

this study outlined in Table 2 were in agreement with suggested sensitivity and locations for tendon and ligament disease, fetlock and pastern, metacarpus and metatarsus, stifles, hocks, hoofs, back, sciatic nerve, equine gastric syndrome, TMJ and atlanto-occipital and atlanto-axial disorders described in Table 1 from other authors.[1,5]

During acupoint palpation, a superficial or mild response (+) usually indicates superficial functional damage associated with *Qi* Stagnation (e.g. mild myositis).[1,3,5] A moderate response (++) indicates a more serious problem with structural damage (e.g. early degenerative joint disease). Most of the time the lesion can be confirmed by thermography, ultrasonography or radiography. A severe response (+++) is related to damage of tissues and disease of the ligaments, tendons, joints or bones that can be confirmed with ultrasonography or radiography.[1,3,5] The author also found this to be the case in this clinical observational study.

Based on the acupoint diagnosis and confirmation with other diagnostic tests, all horses were treated with acupuncture, Chinese herbal medicine and *Tui-na* alone



	Tendon
	Ligament
	Muscle
	Bone
	Metacarpal and metatarsal fractures
	Joint
	Hoof
	Back
	Sciatic nerve
	Functional performance issues

Figure 1: Types of problems diagnosed by acupoint sensitivity in 259 horses

or combined with conventional treatment. By the end of 2007, the clinical signs of 94% of the horses in this study had resolved and the horses had returned to national and international competitions. Integration of Channel and acupoint palpation into the routine conventional examination may provide another tool to better evaluate horses with musculoskeletal and performance problems. Acupoint sensitivity may also be useful to better detect potential problems during the pre-purchase examination.

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