

Tutorial Article

Acupuncture and 'traditional Chinese medicine' in the horse. Part 1: A historical overview

D. W. RAMEY* AND P. D. BUELL†

PO Box 5231, Glendale, California 91221 and †6206 25th Avenue, NE Seattle, Washington 98115, USA.

Keywords: horse; acupuncture; Chinese medicine

Introduction

The last 3 decades have brought a wave of interest in a variety of unrelated therapeutic approaches commonly referred to as 'alternative', 'complementary' or 'integrative'. Among the most curious of those approaches is **acupuncture**, a minor tradition in the historical medical practice of China. Investigations into acupuncture in human medicine have increased since interest began approximately 30 years ago and veterinary investigations have also been conducted. However, historical and scientific information about acupuncture, particularly pertaining to the horse, is rather scattered, somewhat incoherent and often inaccurately cited. **This article, the first of a 2 part series, attempts a brief overview of the history of equine acupuncture and 'traditional Chinese medicine' (TCM).**

The history of Chinese medicine

The most recent wave of interest in Chinese medical practises dates to 1972, when a delegation including US President Richard Nixon visited the People's Republic of China. During the visit, traditional Chinese healing practices were presented to the Western media as the quintessential Chinese medicine, and were even employed on one delegation member. However, the introduction of traditional Chinese healing practices, and the subsequent curiosity about them, has also been accompanied by the introduction of some rather widespread and fundamental misunderstandings of what traditional Chinese medicine is, and was.

One basic misconception is that Chinese medicine, as currently practised in the West as 'traditional Chinese medicine' (TCM), is a reflection of the medicine that is most commonly practised in China, and, furthermore, that such medicine is a true reflection of ancient practice. Neither premise is correct. In fact, the 'Chinese medicine' of the 10th century is different from that of the 1st century, which is different from that of the 19th century (Unschuld 2000). The 'Chinese medicine' being

practised in the USA and Europe is not the same as the healing systems being practised in East Asia. Furthermore, the systems being practised in either locale are removed from the practice of Chinese medicine prior to the 20th century. Indeed, Unschuld (1998a) wrote: "What is very much now an 'alternative' Chinese medicine is only a minimal vestige of ideas and practices...extracted from a highly impressive variety of medical thought, and supplemented with modern elements of Western rationality...". Chinese medicine, in the sense of a homogeneous system of ideas and therapeutic practices - even as a series of empirical observations codified over time - did not exist prior to its promotion as such in the 20th century and does not exist today.

Neither is Chinese medicine a homogeneous or 'complete' treatment approach. Several conceptual ideals supposedly unmet by Western medicine have been erroneously attributed to Chinese medicine; for example, the assertion that Chinese medicine is more 'holistic' than Western medicine. Historical reality does not lend itself to the support of such attributions. Nevertheless, one of the early bestsellers on Chinese medicine (Kaptchuk 1983) made just such false claims and has influenced the perception of Chinese medicine accordingly.

Similarly, the notion that there is a vast gulf between 'traditional' Chinese and traditional 'Western' medical practices is baseless. In fact, the theoretical bases for some traditional Chinese medical practices were very much like those expounded by contemporaneous European physicians (e.g. the Chinese had 'qi'; the Greeks had 'pneuma'). Similarly, in China, throughout history, the primary therapeutic approach was a well-described tradition of drug and herbal-based therapies. This tradition was not based on mystical concepts. Its prescriptions were based on recognition of the problem and subsequent selection of the desired substance (Unschuld 1986), mirroring medical therapeutics in contemporaneous cultures. Only the more recent development of science-based medicine in the West brought Chinese ('Eastern') and 'Western' practices into opposition.

The earliest traditions of Chinese medicine (Shang dynasty, 17th–11th centuries BC) were tied to beliefs in ancestors who were capable of endangering or destroying human life.

*Author to whom correspondence should be addressed.

Healing practices were directed at restoring not only the living, but also the dead. Later, magical, demonological or supernatural beliefs pushed ancestral medicine into the background, and unseen demons became the cause of all disease (such beliefs still persist in some parts of the Chinese population). Demons residing in the body caused such things as swellings, and insertion of such things as needles or lancets could be employed in an effort to kill them (Loewe 1982).

The most influential period in Chinese medical history occurred during the Han Dynasty (approximately 2nd century BC to 2nd century AD). It was during this time that the Chinese intellectual elite attempted to reduce the phenomena of the world to a limited number of causes and effects. This 'systematic' way of thinking made it possible to try to understand natural processes, as well as to influence them. Therefore, theories involving such ideas as 'yin and yang,' 'qi' and 'five phases' evolved, and were used in an effort to explain normal and pathological body functions. Such constructs have been described as theories of 'systematic correspondence,' whereby the body and all its functions were said to correspond to entities in the larger world.

However, such theories were neither generally accepted nor consistent. For example, one school of Chinese thought subdivided the 2 categories of yin and yang into 4 yin and yang subcategories, whereas a second school proposed 3 subcategories for both. Both of these schools of thought, although contradictory, appear to have agreed in their rejection of the 'five phases' doctrine that is important to other Chinese theories (Unschuld 1985). The Chinese apparently never made any attempt to resolve such contradictions. This resulted in many factions within the domain of TCM and acupuncture.

Over time, 2 distinct traditions of medical literature became apparent in post Han China. Pharmaceutical and prescription literature was developed and applied without mystical concepts such as yin and yang. On the other hand, an acupuncture literature developed that elaborated those arcane notions, although this was clearly a minor tradition, relative to the traditions of Chinese herbal medicine. However, as theories of systematic correspondence became more influential in Chinese medical thought, factors such as anatomy and physiology tended to become less significant. As a result, as Epler 1980 wrote: "In the history of Chinese medicine, rather than progressing from a reasonable, although incomplete, knowledge of the body to a more detailed one by systematic dissection, the medical writers go in the opposite direction, under the sway of the cosmologists, to a less accurate picture". Although efforts to unite the 2 traditions were made, particularly in the 12th–15th centuries, those efforts were never successful. Indeed, Chinese medicine "took the form of a stream flowing into an increasing number of separate and

sometimes crisscrossing river beds" and became "nothing more than a complex labyrinth, in which those thinkers seeking solutions to medical questions wandered aimlessly in all directions, lacking any orientation, and unable to find a feasible way out" (Unschuld 1999).

Western medicine was introduced into China in the 19th century and the 20th century essentially stopped the further development of Chinese medicine within the confines of its traditional theoretical foundations. Science-based medicine has largely supplanted traditional practices in China and traditional beliefs appear to be dwindling following a government campaign to eradicate pseudoscience (Hepeng 2003).

The history of acupuncture

While not synonymous with TCM, of all traditions of the historical practice of medicine in China acupuncture appears to be the primary subject of the most recent wave of curiosity in the West. The chronology of acupuncture in human therapy is fairly well established, albeit along a somewhat rough and uneven timeline.

No archaeological or historical evidence has been discovered that suggests acupuncture was practised in China (in humans) prior to the mid-2nd century BC. Currently, the earliest reliably dated Chinese medical texts were discovered in 1973 at the Mawangdui graves, sealed in 168 BC (Harper 1987). The Mawangdui documents, a total of 14 medical texts written on silk and wood, appear to provide a comprehensive picture of Chinese medicine as it existed during the 3rd and early 2nd centuries BC. Acupuncture is not among the numerous therapeutic interventions mentioned. The earliest archaeological findings, discovered in the 1970s, were 4 gold and 5 silver needles, discovered in the tomb of Han Dynasty Prince Liu-Sheng (?–113 BC) in Hebei Province. These artefacts, found in association with other therapeutic instruments, may have been employed in therapeutic 'needling' of some sort (Yamada 1998). However, the precise nature of this 'needling' is unclear. For example, according to the Chinese classic medical text *Huang Di neijing*, 'needles' were also used to remove 'water' from joints, to lance abscesses or for bleeding.

The earliest reference to any kind of therapeutic 'needling' (*zhen*) is found in a historical text, the *Shiji* [*Records of the Historian*] of Sima Qian, written c. 90 BC. The *Shiji* mentions one instance of 'needling' in the texts, in which a dead prince was resuscitated with a needle placed in the back of his head. However, 'needling' was not associated with a system of insertion points or conduits and the reference may refer merely to lancing a boil or abscess.

The *Huang Di neijing*^a, introduced the practice and theoretical underpinnings of what clearly became human

^aThe title *Huang Di neijing* has been the subject of numerous English translations. There is some apparent confusion about the title, which appears to stem from an apparent misconception by Dr Ilza Veith who suggested, in her translation of the book, that the title should be translated as '*The Yellow Emperor's Classic of Internal Medicine*'. However, the title simply means '*The Inner Classic of Huang Di*'. Huang Di is the name of the mythological 'Yellow Emperor', who, being considered god-like, is also sometimes referred to as the 'Yellow Thearch' (Thearch = god-ruler). The 'inner' (the Chinese *nei*) means an inner or esoteric tradition transmitted from master to student, as opposed to *wai*, an 'outer' tradition for public consumption. The Chinese word *jing* means simply 'Canon' or 'Classic'. Accordingly, any translation referring to this text as being related to 'internal medicine' is simply incorrect.

acupuncture in the historical sense (i.e. the manipulation of *qi* flowing in vessels or conduits by means of needling). The book, made up of 3 distinct texts, comprises pieces written by various authors from various periods. It is not clear when individual pieces were written or included in the larger text (Keegan 1988). However, the book is not ancient. The main content of the book dates from later centuries and the earliest known versions date from the 5th to 8th centuries AD (Akahori 1989), although none of the earlier versions survive as such. The text available today went through its final revision in the 11th century. The *Huang Di neijing* introduced the idea that the body contained functional centres ('depots' and 'palaces') connected by a series of primary and secondary conduits that allowed for influences (*qi*) to pass within the body and to enter from without. The text largely ignores specific skin points at which needles can be inserted. In fact, older parts of the *Huang Di neijing* are influenced by instructions to treat illness by phlebotomy (blood-letting). It has been theorised that blood-letting eventually developed into acupuncture, and the focus shifted from removing visible blood to regulating invisible *qi*.

The concept of an invisible agent responsible for maintaining life and health - *qi* - is not uniquely, nor even initially, Chinese. Indeed, the concept of a vital air or spirit is a fundamental concept of ancient medicine of virtually every culture. For example, the Greek physicians Praxagoras and Erasistratus, among others, hypothesised that arteries conducted the vital force *pneuma*, and not blood (Pioreschi 1996). In light of the interactions that occurred between China and the West in Han times, it is not unreasonable to speculate whether much of the information presented in the *Huang Di neijing* is simply an adaptation of Greek medicine.

Doubts about the efficacy of treatments that pierce the body appear early on. Quotes that if one does not believe in needling ('needling' may not be synonymous with acupuncture), one should not use it, appear in purported Han dynasty writings (Lu and Needham 1980). Over time, for unknown reasons, acupuncture lost much of its appeal. By at least 1757, the 'loss of acupuncture tradition' was lamented and it was noted that the acupuncture points, channels and practices in use at the time were very different from those described in the ancient texts (Unschuld 1998b). Eventually the Chinese and other Eastern societies took steps to try to eliminate the practice altogether. In an effort to modernise medicine, the Chinese government attempted to ban acupuncture for the first of several times in 1822 and the Japanese officially prohibited the practice in 1876 (Skrbanek 1985). Even before the 1911 revolution, acupuncture was no longer a subject for examination in the Chinese Imperial Medical Academy (Pioreschi 1995).

However, during the 'Great Leap Forward' of the 1950s and the Cultural Revolution of the 1960s, Chairman Mao Zedong promoted acupuncture and traditional medical techniques as pragmatic solutions to providing healthcare to a vast population that was undersupplied with doctors (Huard and Wong 1968), and as a superior alternative to 'imperialist' practices. Although Mao apparently eschewed such therapies

for his own personal health (Li 1994), acupuncture and traditional herbal therapies provided Chinese political leaders with an expedient and face-saving alternative to the only other healthcare option available to the masses; no healthcare at all. Although the subsequent promotion and revival of interest in various Chinese medical traditions has been an economic boon for China, there is no evidence that such a revival has resulted in improved health for the Chinese citizens. In fact, 'Western' medicine is in high demand in China.

Acupuncture in the West

Chinese medicine was first mentioned by a European in the 13th century in the travelogue of William of Rubruck; however, Europeans became generally aware of acupuncture only in the 16th century upon the return of early missionaries from the Chinese interior and the Chinese Imperial Court. It reached the USA somewhat later. It has since been rejected, forgotten and rediscovered again in at least 4 major waves, including the current one. For a time, acupuncture became fairly well established in parts of Europe, particularly in France and Germany (concurrent with Chinese attempts to ban the practice). Several prominent French physicians advocated acupuncture in the 18th and 19th centuries, but other equally prominent doctors were not impressed and accused proponents of resurrecting an absurd doctrine from well-deserved oblivion (Lacassagne 1954). Nineteenth century England also saw a brief period of popularity for acupuncture. However, by 1829, the editor of the *Medico-Chiurgical Review* wrote: "A little while ago the town rang with 'acupuncture,' everybody talked of it, everyone was curing incurable diseases with it; but now not a syllable is said upon the subject" (Anon 1829). Georges Soulié de Morant, a French diplomat resident in China who became fascinated by acupuncture as a treatment for cholera, subsequently published his influential book *L'Acupuncture Chinoise* in 1939, and kindled the first of the 20th century waves of interest in acupuncture (Soulié de Morant 1994).

In the USA, acupuncture enjoyed a brief period of popularity during the first half of the 19th century, particularly among physicians in the Philadelphia area (Cassedy 1974). In 1826, 3 local physicians conducted experiments with acupuncture as a possible means of resuscitating drowned people, based on claims by European experimenters that they had successfully revived drowned kittens by inserting acupuncture needles into their hearts. Those same physicians were unable to duplicate those reported successes and subsequently 'gave up in disgust' (Coxe 1826). The 1829 edition of Tavernier's *Elements of Operative Surgery* included 3 pages on how and when one might perform not only acupuncture, but also 'electro-acupuncture' (Tavernier 1829). Publications extolling the practice appeared on occasion for the next 20 years.

Although none of the early American accounts of acupuncture mention acupuncture 'points' or 'meridians,' they all claimed substantial success as a result of inserting needles directly into, or in the immediate vicinity of, painful or otherwise afflicted areas. However, by the second half of the 19th century, Western practitioners had largely abandoned



Fig 1: 'Needles' - rather, lancets and sharp blades for bleeding - as shown in an 18th century Japanese text.

acupuncture. In 1859, it was concluded that "its advantages have been much overrated, and the practice...has fallen into disrepute" (Gross 1859). The *Index Catalogue* of the Surgeon-General's Library includes barely half a dozen titles on the subject for the entire half-century of 1850-1900.

The history of veterinary acupuncture

In contrast to the history of human acupuncture, that of veterinary acupuncture is somewhat more obscure and has not been extensively studied. However, assertions that acupuncture has been practiced on animals for thousands of years are baseless. From the historical record, it is clear that veterinary acupuncture, as currently practiced, is a relatively recent invention.

As in Chinese medicine for humans, the bases of traditional veterinary medicine in China have been described as "imaginary, religious, mystic and empirical" (Bossut 1990). However, there is no evidence that acupuncture, unambiguously defined by Chinese medicine historians as puncturing the skin with needles in association with theories

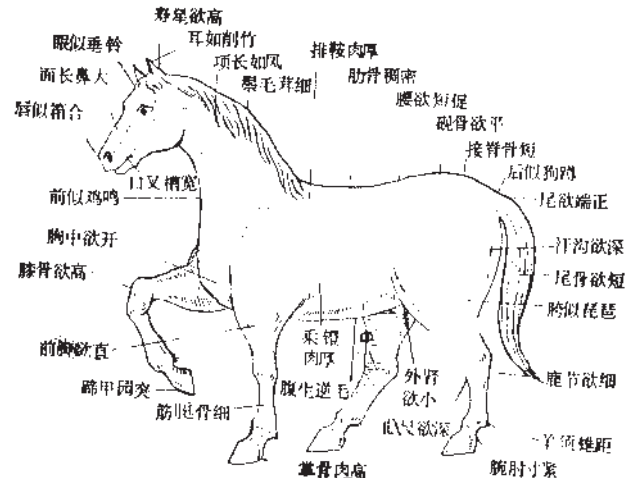


图 1 三十二相形骏之图

Fig 2: Physiognomy points for determining a horse's character may have been interpreted incorrectly as acupuncture points by modern practitioners.

involving *qi* and with the *mai* or 'vessels' containing *qi*, was even a historical veterinary practice in ancient China.

Bits and pieces of information on the treatment of animals survive from early texts such as the 6th century *Qimin yaoshu*, although they contain nothing remotely resembling acupuncture (Ramey and Buell 2001). The first recorded veterinary therapeutic tradition involving 'needling' of any sort appears to begin in Song times, possibly around AD 1000 or, more likely, after this date. Among Song sources calling for the 'needling' of animals is the *Fanmu zuan yanfang* (*Compendium of Efficacious Recipes from the Nomadic Tradition*), compiled by Wang Yu in either the late 11th or early 12th century AD (although the surviving version is from the late 13th or early 14th century), which deals with camel medicine (Franke and von den Dreisch 1997). Although 'needling' is mentioned, that described is very much a minor tradition and is clearly not associated with the kind of theoretical underpinnings necessary to call it acupuncture. The key works in Chinese veterinary medicine date from the 17th and 18th centuries and relate primarily to horses and other large animals. Perhaps the most important of them is the Ming Dynasty *Yuan Heng liaoma ji* (Yuan and Heng's Collection for Treating the Horse), published in AD 1608 and commonly attributed to two brothers, Yuan and Heng (Guo 1988a,b).

Much of the confusion regarding animal acupuncture appears to have arisen around the Chinese word *zhen* ('needling'). Whereas 'needling' may be applied in various forms in traditional Chinese veterinary texts, it is always secondary to herbal treatments. Furthermore, in reading the texts, it is clear that this 'needling,' as described in the traditional texts, has little or nothing to do with modern acupuncture. Instead, it appears to refer to any intervention with a sharp or hot object. Completely lacking is simple 'needling' using very fine needles of the type found in modern human or veterinary acupuncture (except in a very few surgical interventions, such as cataract

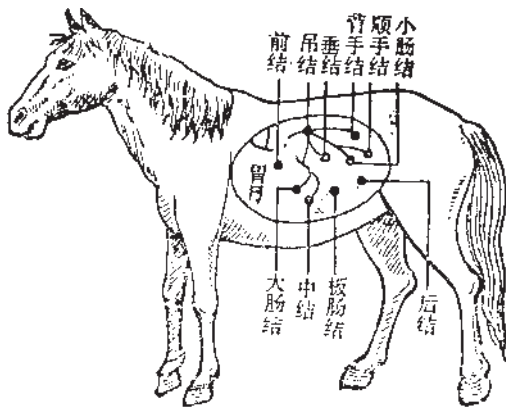


图 27 十结之图

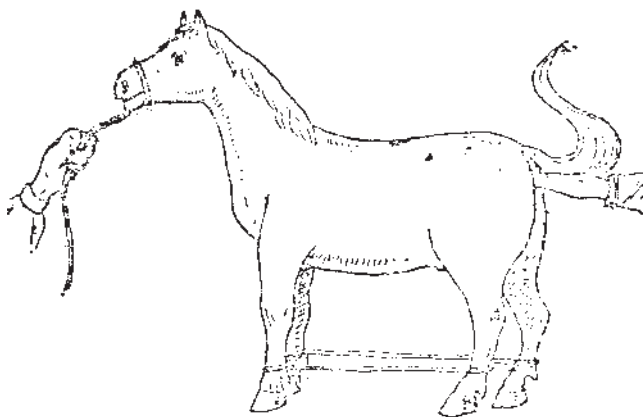


图 28 立取粪之图(后五结)

Fig 3: Points at which faeces purportedly accumulate and causes colic - not acupuncture points - and the manual method of removing such accumulations.

removal). Indeed, contemporaneous Japanese sources show 'needles' that look far different from those currently employed in modern acupuncture (Ryoyaku baryo benkai 1859). Rather than the slender, filiform needles employed by modern practitioners, the 'needles' of 17th and 18th century Eastern veterinary literature appear to be lancets or blades, such as would be used for bleeding or lancing abscesses and other lesions (Fig 1). Such 'needles' are even represented in modern literature (Kao and Kao 1974). The *Yuan Heng liaoma ji* and similar texts thus describe 'needling' (bleeding, lancing, surgery, etc) traditions that have little or nothing in common with acupuncture as currently practised.

Additional confusion surrounds 'points' (*xue*) described in such texts. The relevant points are clearly used for such interventions as bleeding, surgery, cauterisation or divination - not acupuncture (Fig 2). In the numerous illustrations in the *Yuan Heng liaoma ji* associated with 'needling', it is significant that, although individual points are often associated with organs, there is no association of a connected series of points (e.g. conduits or conduit vessels); rather, the points are individual and the theoretical system developed in human acupuncture is entirely lacking. The authors of the

Yuan Heng liaoma ji clearly distinguish between acupuncture and other human medical traditions and those of veterinary medicine. Furthermore, they insist that the relevant treatment points are different between humans and animals, in part because animals are 'things' (Guo 1988a). In fact, the roots of 'modern' veterinary acupuncture can be most clearly traced to 19th century Europe (Jochle 1978) and treatment 'points' to European literature that predates the Chinese sources (Stork 1971).

Misconceptions about the antiquity of veterinary acupuncture arise from veterinary sources. For example, "One of the first veterinary textbooks, Bai-le's (Bo Le's) Canon of Veterinary Medicine," was "written around 650 B.C. [sic], [and] was based primarily on acupuncture" (Jaggar 1992; Ridgway 1999). However, such assertions are unsupported. While Bo Le (also known as Sun Yang) was probably a historical figure and is assigned some knowledge in the treatment of horses in sources written long after he lived, his primary reputation in later times was as a physiognomist, one skilled in divination based on physical features such as hair whorls (Sterckx 2002). Texts associated with Bo Le's name are only mentioned more than 1000 years after his death, and these texts appear to have been lost. The *Simu anji ji* (*Collection of Herdman's Ways for Pacifying Stallions*), a collection of veterinary texts that, in its present form, was published only in 1384 (although much of the material is a few centuries older), is apparently the first Chinese book to include actual texts of veterinary works attributed to Bo Le (*Simu anji ji* 1957). The texts include the *Bo Le zhen jing* [*Bo Le's Canon of 'Needling'*]. However, the traditions described therein are primarily bleeding, cauterisation and physiognomy, not acupuncture.

Much of the 'historical' practice of human and veterinary acupuncture is quite recent and of curious origin. For example, ear acupuncture has been recommended for various procedures in equine medicine and surgery (Klide and Kung 1977; Schoen 1994a), although it was developed by a French physician, P.M.F. Nogier, based on his 'sudden intuition' that the antihelix of the ear was actually an upside-down model of the fetal human vertebral column (Nogier 1957). Acupuncture analgesia, perhaps the most commonly promoted application of the practice, is an invention of the late 1950s (Hsu 1996). Acupuncture anaesthesia, claimed by proponents to be evidence of its effectiveness, is not popular in China and was used for clinical anaesthesia in 0–10% of cases in 10 large Chinese hospitals surveyed in 2001 (Nishimura 2002). Finally, the association with and translation of *qi* as a form of energy was not made until 1939, at the same time that the term *meridian* was coined (Soulié de Morant 1994).

Similarly, some of the 'traditional' theoretical aspects of veterinary acupuncture are also modern. Animal acupuncture meridians date only to the 1970s and were invented at the insistence of Western practitioners (White 1994), although even some acupuncture practitioners question their existence. However, various authors (mostly Western) have 'discovered' meridians in cattle, pigs, dogs, cats and various other species, mostly by 'transposition' from one of many human charts even though such transposition fails to find a single point of

agreement between such charts and traditional Chinese animal illustrations (Panzer 1993). In addition, such transposition might seem inappropriate in light of the Confucian tradition that the human civilised world should never mix with that of the savage (animal) one (Despeux 1981) and the explicit historical Chinese reference that treatment points - whatever the treatment - were not the same in humans as in animals (Guo 1988a).

Conversely, numerous historical Chinese veterinary practices appear to have been largely abandoned. For example, prohibitions against 'needling' on certain days associated with the 60 day cycle of the traditional Chinese calendar or with phases of the moon appear not to be followed. Similarly, 'divination' techniques, whereby through close examination of physical and morphological features such as 'swirl' patterns in the coat one may determine whether a particular horse will be 'lucky' or 'unlucky,' appear to have lost their historical importance (Heerde 1998).

Finally, traditional Chinese texts appear to have been misinterpreted in the veterinary literature, leading to a false impression about animal acupuncture history. For example, a chart from the *Yuan Heng liaoma ji* has been claimed to show lateral acupuncture points (Schoen 1994b). However, the accompanying text indicates that such 'points' are, in fact, 'knots' (*jie*) where faeces accumulate and cause colic (Guo 1988b). A subsequent illustration in the same text even shows an arm inserted rectally in an effort to remove the impactions at their source (**Fig 3**). A philological approach to Chinese veterinary medicine, with accurate translations from original source material, is mandatory for its understanding.

Conclusions

D. C. Epler Jr., historian of medicine, has observed: "The technique [acupuncture] is said to be over 2000 years old and contemporary authors continue to cite ancient texts when describing its theoretical foundations. However, when these ancient texts are approached as historical documents, rather than as source books that can be continually reinterpreted for medical practitioners, then they indicate vast differences between the early use of needles and the present form of acupuncture. What is now known as acupuncture is thus the result of a long development and bears little resemblance to its ancestral version" (Epler 1980). So it is with the putative history of veterinary acupuncture. In fact, claims for the extreme antiquity of human and veterinary acupuncture are widely reported in the veterinary acupuncture literature, but are not supported by the historical record.

References

- Akahori, A. (1989) The interpretation of classical Chinese medical texts in contemporary Japan: achievements, approaches, and problems. In: *Approaches to Traditional Chinese Medical Literature*, Ed: P. Unschuld, Kluwer Academic Publishers, Dordrecht. pp 19-27.
- Anon (1829) Acupuncturation. *Medico-Chirurgical Review (London)* **11**, 166-67.
- Anon (1859) *Ryoyaku baryo benkai [Explanations of Good Medicinals for Treating Horses]*, Yedo (org. 1759) 2, 24B.
- Anon (1957) *Simu anji ji*, Zhonghua shuju, Beijing.
- Bossut, D. (1990) Development of veterinary acupuncture in China, In: *Proceedings of the 16th IVAS Congress of Veterinary Acupuncture*, International Veterinary Acupuncture Society, Noordwijk, Holland. p 5.
- Cassedy, J. (1974) Early uses of acupuncture in the United States [Addendum (1826) by Franklin Bache]. *Bull. N.Y. Acad. Med.* **50**, 892-906.
- Coxe, E. (1826) Observations on asphyxia from drowning. *N. Am. Med. Surg. J.* 292-293.
- Despeux, C. (1981) Aperçu historique de l'art vétérinaire en Chine. *Rev. Acupunct. Vet.* **9**, 21-22.
- Epler, D. (1980) Bloodletting in early Chinese medicine and its relation to the origin of acupuncture. *Bull. Hist. Med.* **54**, 357-367.
- Franke, H. and von den Dreisch, A. (1997) Zur traditionellen Kamelheilkunde in China. *Sudhoffs Archiv.* **81**, 84-89.
- Gross, S. (1859) *A System of Surgery*, Blanchard & Lea, Philadelphia. pp 575-576.
- Guo, H. (1988a) *Xinke zhushi ma niu to jing da quan ji [Newly Printed and Annotated Horse, Ox, and Camel Classics]*, Nongye chubanshe, Beijing (org. 1795). p 40.
- Guo, H. (1988b) *Xinke zhushi ma niu to jing da quan ji [Newly Printed and Annotated Horse, Ox, and Camel Classics]*, Nongye chubanshe, Beijing (org. 1795). pp 107-109.
- Harper, D. (1997) *Early Chinese Medical Literature: The Mawangdui Medical Manuscripts*, Kegan Paul International, London.
- Heerde, M. (1998) Song on the observation of the hair whorls of good and bad horses. In: *Pferdeklassiker*, PhD Thesis, University of Munich. pp 33-34.
- Hepeng, J. (2003) China loses its faith in traditional beliefs. *Sci. Dev. Net.* <http://www.scidev.net/News/index.cfm?fuseaction=readNews&itemid=1034&language=1>
- Hsu, E. (1996) Innovations in acumoxa: acupuncture analgesia, scalp and ear acupuncture in the people's Republic of China. *Soc. Sci. Med.* **42**, 421-430.
- Huard, P. and Wong, M. (1968) *Chinese Medicine*, Weidenfeld & Nicholson, London. p 150.
- Jaggar, D. (1992) History and basic introduction to veterinary acupuncture. In: *Problems in Veterinary Medicine: Veterinary Acupuncture*, Ed: A. Schoen, Lippincott, Philadelphia. pp 1-11.
- Jochle, W. (1978) Veterinary acupuncture in Europe and America: past and present. *Am. J. Acupuncture* **6**, 149-156.
- Kao, F.F. and Kao, J.J. (1974) Veterinary acupuncture. *Am. J. Chin. Med.* **2**, 89-102.
- Kaptchuk, T. (1983) *The Web That Has No Weaver*, St. Martin's Press, New York.
- Keegan, D.J. (1988) *The Huang-Ti Nei-Ching: The Structure of the Compilation, the Significance of the Compilation*. Dissertation, UMI Dissertation Service Order 8916728.
- Klide, A. and Kung, S. (1977) *Veterinary Acupuncture*, University of Pennsylvania Press, Pennsylvania. pp 265-270.
- Lacassagne, J. (1954) Le docteur Louis Berlioz - introducteur de l'acupuncture en France. *Presse Medicale* **62**, 1359-1360.
- Li, Z. (1994) *The Private Life of Chairman Mao: The Inside Story of the Man Who Made Modern China*, Chatto & Windus, London. p 84.
- Loewe, M. (1982) *Chinese Ideas of Life and Death, Faith, Myth and Reason in the Han Period (202 BC-AD 220)*, George Allen and Unwin Ltd., London.
- Lu, G. and Needham, J. (1980) *Celestial Lancets: A History and Rationale of Acupuncture and Moxa*, Cambridge University Press,

- Cambridge. pp 225-226.
- Nishimura, N. (2002) Anesthesiology in People's Republic of China in the year 2001. *Masui* **51**, 314-317 [Article in Japanese].
- Nogier, P.F.M. (1957) Le Pavillion de l'Orielle. *Bull. Soc. l'Acupunct.* **25**, 25.
- Panzer, R. (1993) A comparison of the traditional Chinese versus transpositional zangfu organ association acupoint locations in the horse. *Am. J. Chin. Med.* **21**, 119-131.
- Prioreschi, P. (1995) *A History of Medicine*, Vol. I, Horatius Press, Omaha. p 179.
- Prioreschi, P. (1996) *A History of Medicine*, Vol. II, Horatius Press, Omaha. pp 176, 514.
- Ramey, D.W. and Buell, P. (2001) Equine medicine in sixth century China: Qimin yaoshu. In: *Guardians of the Horse II*, Eds: P.D. Rossdale and R.E. Green, Romney Publications, Suffolk. pp 154-161.
- Ridgway, K. (1999) Acupuncture as a treatment modality for back problems. *Vet. Clin. N. Am.: Equine Pract.* **15**, 211-221.
- Schoen, A. (Ed.) (1994a) *Veterinary Acupuncture: Ancient Art to Modern Medicine*, Mosby, St. Louis. p 315.
- Schoen, A. (Ed.) (1994b) *Veterinary Acupuncture: Ancient Art to Modern Medicine*, Mosby, St. Louis. p 14.
- Skrbanek, P. (1985) Acupuncture: past, present and future. In: *Examining Holistic Medicine*, Eds: D. Stalker and C. Glymour, Prometheus Books, Buffalo, New York. pp 182-186.
- Soulié de Morant, G. (1994) *Chinese Acupuncture*, Ed: P. Zmiewski, Paradigm Publications, Brookline, Massachusetts.
- Sterckx, R. (2002) *The Animal and the Daemon in Early China*, State University of New York Press, Albany, New York. pp 157-239.
- Stork, M. (1971) Teaching systems in European veterinary medical textbooks from the 16th to 18th century. *Z. Veterinarmed.* **18**, 661-701 [Article in German].
- Tavernier, A. (1829) *Elements of Operative Surgery*, Ed: S. Gross, Grigg, Crissy, Towar & Hogan, Auner, Philadelphia. pp 55-57.
- Unschuld, P. (1985) *Medicine in China: A History of Ideas*, University of California Press. Berkeley, California. pp 57-58.
- Unschuld, P. (1986) *Medicine in China: A History of Pharmaceuticals*, University California Press, Berkeley, California.
- Unschuld, P. (1998a) *Chinese Medicine*, Paradigm Publications, Brookline, Massachusetts. p 3.
- Unschuld, P. (1998b) *Forgotten Traditions of Ancient Chinese Medicine*, Paradigm Publications, Brookline, Massachusetts. p 244.
- Unschuld, P. (1999) Chinese Medicine, *Lancet, Suppl.* **4**, 354.
- Unschuld, P. (2000) *Medicine in China: Historical Artifacts and Images*, Prestel Verlag, Munich. p 7.
- White, S. (1994) Acupuncture of horses in China. In: *Veterinary Acupuncture: Ancient Art to Modern Medicine*, Ed: A. Schoen, Mosby, St. Louis. p 584.
- Yamada, K. (1998) *The Origins of Acupuncture, Moxibustion, and Decoction*, International Research Center for Japanese Studies, Kyoto, Japan p 56.