Western medical acupuncture: a definition

Adrian White and Editorial Board of *Acupuncture in Medicine*

EDITOR'S CHOICE

Western medical acupuncture is a therapeutic modality involving the insertion of fine needles; it is an adaptation of Chinese acupuncture using current knowledge of anatomy, physiology and pathology, and the principles of evidence based medicine. While Western medical acupuncture has evolved from Chinese acupuncture, its practitioners no longer adhere to concepts such as *Yin/Yang* and circulation of *qi*, and regard acupuncture as part of conventional medicine rather than a complete "alternative medical system". It acts mainly by stimulating the nervous system, and its known modes of action include local antidromic axon reflexes, segmental and extrasegmental neuromodulation, and other central nervous system effects. Western medical acupuncture is principally used by conventional healthcare practitioners, most commonly in primary care. It is mainly used to treat musculoskeletal pain, including myofascial trigger point pain. It is also effective for postoperative pain and nausea. Practitioners of Western medical acupuncture tend to pay less attention than classical acupuncturists to choosing one point over another, though they generally choose classical points as the best places to stimulate the nervous system. The design and interpretation of clinical studies is constrained by lack of knowledge of the appropriate dosage of acupuncture, and the likelihood that any form of needling used as a usual control procedure in "placebo controlled" studies may be active. Western medical acupuncture justifies an unbiased evaluation of its role in a modern health service.

INTRODUCTION

This article aims to define and describe the principles and practice of Western medical acupuncture (WMA) as used in this journal and agreed by the editorial board. The reason for developing this modern definition of acupuncture is to encourage the objective evaluation of the therapy within a modern health service without the distractions of an ancient ideology.

DEFINITION OF WESTERN MEDICAL ACUPUNCTURE

Western medical acupuncture is a therapeutic modality involving the insertion of fine needles; it is an adaptation of Chinese acupuncture using current knowledge of anatomy, physiology and pathology, and the principles of evidence based medicine.

About two millennia ago, the Chinese made the significant discovery that needling can influence various functions of the body, and explained this in terms of the ideology current at that time. The conceptual advances since the scientific revolution, particularly the relatively recent discoveries of the neurotransmitters and neuroplasticity, have lead to a new understanding of the mechanisms of acupuncture and justify the use of a new term, WMA. The term "Western medical acupuncture" is used to distinguish it from acupuncture used as part of Chinese traditional medicine. Two important distinctions between WMA and Chinese acupuncture are that WMA does not involve the traditional concepts such as *Yin/Yang* and circulation of "*qi*", and that WMA does not claim to be an "alternative" medical system.

DEVELOPMENT

The ideology which formed the basis of Chinese acupuncture has been discarded by medical practitioners in the Western world for some time. As long ago as the 19th century, doctors in the UK simply needled the sites of maximal tenderness to relieve musculoskeletal pain.[1] The current surge of interest in the scientific approach to acupuncture owes much to an influential, medically trained acupuncture teacher, Felix Mann, who declared in the 1970s: "Acupuncture points and meridians, in the traditional sense, do not exist". This resonated with those conventional healthcare practitioners who could see that their patients were benefiting from needling, but who had reservations about the traditional explanations of acupuncture which were difficult to reconcile with a scientific world view. Simultaneously, acupuncture itself gained credence because of the discovery that it can stimulate the release of opioid peptides, and because of the formulation of the gate control theory.[2]

WMA is the form of acupuncture that is practised predominantly by conventionally trained healthcare practitioners in western countries particularly the UK and Sweden, though Chinese acupuncture concepts are still widely used by these professional groups in other countries. The understanding of WMA is not uniform, and a number of variations are practised, including minimal needling of a restricted number of points,[3] identification of "acupuncture treatment areas",[4] subcutaneous needling over tender muscle trigger points[5] or attempts to match the therapy more precisely to neurophysiological concepts.[6]

MODES OF ACTION

Acupuncture has been used to treat the symptoms of many conditions, but current evidence from clinical trials mainly supports its efficacy (compared with placebo) in alleviation of nausea,[7] and relief of various types of pain.[8–10] Its activity in these different symptoms suggests that acupuncture does not have a single mode of action but a range of effects on various functions which increases the complexity of both understanding and researching acupuncture.

The main therapeutic effects of needling are achieved through stimulation of the nervous system (sensory stimulation),[11] with some overlap with transcutaneous electrical nerve stimulation and spinal cord stimulation. Acupuncture needling has local effects through local antidromic axon reflexes, releasing neuropeptides such as calcitonin gene related peptide[12] and increasing local nutritive blood flow,[13] improving, for example, the function of salivary glands.[14] In the spinal cord and brain, there is well established evidence that acupuncture causes the release of opioid peptides and serotonin.[15] The clinical effects on musculoskeletal pain are best explained by inhibition of the nociceptive pathway at the dorsal horn (segmental effects)[16] by activation of the descending inhibitory pathways,[17] and possibly by local or segmental effects on myofascial trigger points.[17]

There are clearly other actions of acupuncture on the central nervous system that remain to be fully explored, including its effect on nausea. Imaging studies with functional MRI and positron emission tomography have provided good evidence of effects on various brain centres involved in pain control, notably the limbic structures,[18 19] including the insula.[20] These effects are somewhat greater than are seen when the skin is simply stimulated by needles, and seem to depend on elicitation of the particular needling sensation.[21]

Another clinical area in which acupuncture is widely used is myofascial pain, a condition which remains controversial but which has been most fully explored within conventional medicine.[22] No satisfactory mode of action has yet been

described, but it is noteworthy that myofascial trigger points described conventionally match some of the traditional acupuncture points described many centuries ago.[23]

USE OF WESTERN MEDICAL ACUPUNCTURE

WMA is mainly practised by conventional doctors, physiotherapists, nurses and other healthcare practitioners working within the Western health service, mostly in primary care but also in rheumatology, orthopaedic and pain clinics.[24] It is practised using the principles of evidence based medicine, though it has to be admitted that there is scope for more clinical trials, and treatment in many clinical areas relies on clinical experience.

The most widespread application of acupuncture is for pain relief, most commonly musculoskeletal pain but also other forms of chronic pain such as neuralgia and cancer pain. In practice, it is less often used to suppress procedural pain, postoperative pain or nausea though it has been shown to be effective in these situations.[9] It is used in management of infertility, particularly as an adjunct to conventional treatments such as in vitro fertilisation, though the evidence is equivocal.[25 26]

Practitioners who employ a WMA approach to acupuncture would not generally consider using it as a "tonic" for generalised ill health, nor claim that it can maintain good health, both of which have been traditional indications for acupuncture.

Treatment with WMA follows when a conventional medical examination, appropriate investigations and diagnosis confirm that the symptoms are suitable for treatment with acupuncture. Needles are inserted and stimulated to obtain the required physiological effect, and may be local to, or segmentally linked with, the presenting condition. Additionally, extrasegmental or general effects may be sought by needling general points, particularly in hands and feet, that are common to many Chinese formulae.

Traditional acupuncture holds that individual points have specific effects, but in WMA attention is less focused on choice of one point over another. Classical points are used by many—though not all—practitioners of WMA on the assumption that they are probably optimal for sensory stimulation of the nervous system. More attention is focused on the tissue level (eg, muscle rather than skin) and the type and amount of stimulation given. The classical nomenclature of points is generally used for convenience of communication with other acupuncturists.

Thus there are relatively few differences between traditional acupuncture and WMA in terms of treatment techniques. Both manual and electrical stimulation of needles are used; duration of needling is variable, ranging from very brief to up to 20 or 30 minutes.

IMPLICATIONS FOR ACUPUNCTURE RESEARCH

An approach to acupuncture that regards it as a form of sensory stimulation has certain clear implications for designing and interpreting clinical research. Firstly, there is still sadly insufficient valid information on what constitutes an adequate "dose" of stimulation for any particular condition.[27] The dose obviously must be tailored to take account of the responsiveness of the individual's central nervous system, but there are few data to guide how this should be done and so treatment used in trials may be suboptimal. Secondly, although classical acupuncture points may be the "best" sites to needle, they are obviously not the only places where the nervous system can be stimulated. Needling at "incorrect" sites is thus not a valid placebo control. So-called "sham" acupuncture is probably best regarded as a less effective form of therapeutic needling but not as an inert placebo.

These problems lead to significant difficulties in interpreting the results of studies. Evidence shows that, for several conditions, acupuncture is as effective or more effective than standard conventional care.[28–30] When compared to sham needling, acupuncture often shows only a small positive trend, but this may be expected since such studies are comparing two forms of sensory stimulation. Systematic reviews combining all the studies show that acupuncture is significantly superior to sham for nausea,[7] low back pain,[8] postoperative pain,[9] knee pain[10] and tension-type headache.[31]

In conclusion, WMA is a form of treatment based on sound neurophysiological principles and for this reason justifies an unbiased evaluation of its place in a modern healthcare service.

Adrian White

Correspondence to: Adrian White, Peninsula Medical School, N32 ITTC Building Tamar Science Park, Plymouth PL6 8BX, UK; adrian.white@pms.ac.uk

Competing interests: Two of the authors employed by the British Medical Acupuncture Society, a not-for-profit organisation that encourages the use and scientific understanding of acupuncture within medicine for the public benefit; one as editor of this journal, one as the Society's Medical Director. Two other members of the editorial board have received payment for lecturing on acupuncture.

Acupunct Med 2009;**27**:33–35.
doi:10.1136/aim.2008.000372

REFERENCES

1. Baldry P. The integration of acupuncture within medicine in the UK—the British Medical Acupuncture Society's 25th anniversary. *Acupunct Med* 2005;23:2–12.
2. Melzack R, Wall PD. Pain mechanisms: a new theory. *Science* 1965;150:971–9.
3. Mann F. *Reinventing acupuncture*. Oxford: Butterworth-Heinemann, 1992.
4. Campbell A. *Acupuncture in practice: beyond points and meridians*. Oxford: Butterworth-Heinemann, 2001.
5. Baldry PE. *Acupuncture, trigger points and musculoskeletal pain*. 3rd ed. Edinburgh: Elsevier, 2005.
6. White A, Cummings M, Filshie J. *An introduction to western medical acupuncture*. Edinburgh: Churchill Livingstone Elsevier, 2008.
7. Lee A, Done M. Stimulation of the wrist acupuncture point P6 for preventing postoperative nausea and vomiting. *Cochrane Database Syst Rev* 2004;3:CD003281.
8. Furlan AD, van Tulder MW, Cherkin DC, *et al*. Acupuncture and dry-needling for low back pain. *Cochrane Database Syst Rev* 2005;1:CD001351.
9. Sun Y, Gan TJ, Dubose JW, *et al*. Acupuncture and related techniques for postoperative pain: a systematic review of randomized controlled trials. *Br J Anaesth* 2008;101:151–60.
10. White A, Foster NE, Cummings M, *et al*. Acupuncture treatment for chronic knee pain: a systematic review. *Rheumatology (Oxford)* 2007;46:384–90.
11. Zhao ZQ. Neural mechanism underlying acupuncture analgesia. *Prog Neurobiol* 2008;85:355–75.
12. Dawidson I, Angmar-Mansson B, Blom M, *et al*. The influence of sensory stimulation (acupuncture) on the release of neuropeptides in the saliva of healthy subjects. *Life Sci* 1998;63:659–74.
13. Sandberg M, Lundeberg T, Lindberg LG, *et al*. Effects of acupuncture on skin and muscle blood flow in healthy subjects. *Eur J Appl Physiol* 2003;90:114–9.
14. Blom M, Dawidson I, Angmar-Mansson B. Acupuncture treatment of xerostomia caused by irradiation of the head and neck region: case reports. *J Oral Rehabil* 1993;20:491–4.
15. Han JS, Terenius L. Neurochemical basis of acupuncture analgesia. *Annu Rev Pharmacol Toxicol* 1982;22:193–220.
16. Sandkuhler J. Learning and memory in pain pathways. *Pain* 2000;88:113–18.
17. Staud R, Price DD. Mechanisms of acupuncture analgesia for clinical and experimental pain. *Expert Rev Neurother* 2006;6:661–7.
18. Hui KK, Liu J, Makris N, *et al*. Acupuncture modulates the limbic system and subcortical gray structures of the human brain: evidence from fMRI studies in normal subjects. *Hum Brain Mapp* 2000;9:13–25.
19. Dhond RP, Yeh C, Park K, *et al*. Acupuncture modulates resting state connectivity in default and sensorimotor brain networks. *Pain* 2008;136:407–18.
20. Pariente J, White P, Frackowiak RS, *et al*. Expectancy and belief modulate the neuronal substrates of pain treated by acupuncture. *Neuroimage* 2005;25:1161–7.
21. Hui KK, Nixon EE, Vangel MG, *et al*. Characterization of the "deqi" response in acupuncture. *BMC Complement Altern Med* 2007;7:33.
22. Simons DG, Travell JG, Simons LS. *Myofascial pain and dysfunction: the trigger point manual. Volume 1. Upper half of body*. 2nd ed. Baltimore: Williams & Wilkins, 1999.
23. Melzack R, Stillwell DM, Fox EJ. Trigger points and acupuncture points for pain: correlations and implications. *Pain* 1977;3:3–23.
24. Price J, White A. The use of acupuncture and attitudes to regulation among doctors in the UK—a survey. *Acupunct Med* 2004;22:72–4.

25. Manheimer E, Zhang G, Udoff L, *et al*. Effects of acupuncture on rates of pregnancy and live birth among women undergoing in vitro fertilisation: systematic review and meta-analysis. *BMJ* 2008;336:545–9.
26. El-Toukhy T, Sunkara SK, Khairy M, *et al*. A systematic review and meta-analysis of acupuncture in in vitro fertilisation. *BJOG* 2008;115:1203–13.
27. White A, Cummings M, Barlas P, *et al*. Defining an adequate dose of acupuncture using a neurophysiological approach—a narrative review of the literature. *Acupunct Med* 2008;26:111–20.
28. Vickers AJ, Rees RW, Zollman CE, *et al*. Acupuncture for chronic headache in primary care: large, pragmatic, randomised trial. *BMJ* 2004;328:744.
29. Haake M, Muller HH, Schade-Brittinger C, *et al*. German Acupuncture Trials (GERAC) for chronic low back pain: randomized, multicenter, blinded, parallel-group trial with 3 groups. *Arch Intern Med* 2007;167:1892–8.
30. Scharf HP, Mansmann U, Streitberger K, *et al*. Acupuncture and knee osteoarthritis—a three-armed randomized trial. *Ann Intern Med* 2006;145:12–20.
31. Linde K, Allais G, Brinkhaus B, *et al*. Acupuncture for tension-type headache. *Cochrane Database Syst* Rev 2009;(1):CD007587.

Western medical acupuncture: a definition

Acupunct Med 2009 27: 33-35
doi: 10.1136/aim.2008.000372