

THE SAFE USE OF DIFFICULT & DANGEROUS ACUPUNCTURE POINTS

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Safety is an important area of both public and medical concern. Following the vigorous growth of acupuncture in the west, more attention has been paid to recent reviews of adverse events. This does not need to surprise us; as far back as the Tang dynasty in China a famous author Wang Tao wrote a book called *Wai Tai Mi Yao* (A Medical Selection from the Secret Collection of the Royal Library). One sentence reads "Needles can kill people but cannot save dead peoples' lives". Later many scholars criticised this sentence because Wang Tao was a director of the Royal Library and not an acupuncturist. In fact it was not his 'invention' - it is a quote from the *Ling Shu* (chapter 60). This sentence was intended to warn practitioners to be careful to use needles safely and to learn TCM theory and technique in its entirety - it does not mean acupuncture is dangerous or useless.

However, there are some acupuncture points which are difficult and potentially dangerous to needle if one does not have a good technique. In the past, textbooks had no special chapter listing such points. Only two relatively modern books, each called "The Prevention and Treatment of Acupuncture Accidents", published in Chinese in 1988 and 1996, contain one chapter on the acupoints in ancient Chinese acupuncture books that some doctors regarded as requiring special caution. Our paper aims to explain clearly how to use these points safely. A knowledge of anatomy and pathology is essential. Good technique includes the exact angle and accurate depth of insertion. This can avoid many accidents.

From the anatomical viewpoint

In general a dangerous acupoint means that it is near important organs, nerves or arteries.

The head and face area

- Jingming BL-1 is near the ophthalmic and angular arteries and veins. With the eye closed the patient is asked to look laterally away from the side being needled, the eyeball is gently rolled aside and held with one hand and the needle inserted 0.3-0.5 cun perpendicularly along the orbital wall. No manipulation is performed.

- Chengqi ST-1 has branches of the infra-orbital and ophthalmic arteries and veins. Insertion is perpendicular,

0.3-0.5 cun along the infra-orbital ridge, and before insertion the patient is asked to look upwards and the eyeball is gently pressed upwards with a finger of the practitioner's other hand. The extra point Qiuhou (M-HN-8) is often used in preference. No manipulation is performed.

- Tinghui GB-2, Ermen SJ-21 and Tinggong SI-19 are near the auricular branches of the superficial temporal artery and vein. Palpate to feel the pulse so that it may be avoided, and needle to a depth of 0.3-0.5 cun.

- Some acupoints are near the medulla oblongata, e.g. Fengchi GB-20, Fengfu DU-16 and Yamen DU-15. At Fengchi GB-20 insertion should be perpendicularly 0.5-1.0 cun towards the tip of the nose. For the other two potentially dangerous points, insertion is perpendicular to the same depth. Deeper insertion could cause loss of consciousness and the needle, if angled towards one side, may injure the vertebral artery, causing headache and dizziness.

The neck

- Renying ST-9 lies very close to the carotid body and the carotid sinus. Interference with the former will affect respiration and with the latter cause a lowering of blood pressure which may lead to loss of consciousness. Insertion should be perpendicular to a depth of 0.2-0.4 cun.

- Tianrong SI-17 is close to the common carotid artery, which should be palpated and pressed aside. Insertion is perpendicular 0.3-0.5 cun.

- Tiantu REN-22 lies in front of the trachea and the needle is first inserted perpendicularly in the middle of the suprasternal fossa 0.2-0.4 cun. If the trachea were perforated it would produce a strong cough but not a pneumothorax. The needle may then be directed downwards along the posterior aspect of the sternum to a depth of 0.5-1.0 cun. If it should be angled sideways however, it could touch either the lung, resulting in a pneumothorax, or the aorta, producing haemoptysis with possible fatal consequences.

The chest

The lung in a thin person lies 10-20mm under the skin and there is danger of pneumothorax if the needle punctures the lung or pleural cavity. There are 90 incidents of this in the literature. The following points need special care because if the angle and depth are not correct the lung may be punctured.

- Jianjing GB-21. On the anterior aspect of the chest (at the mid-clavicular line) the pleural cavity extends down to the 8th intercostal space, and the upper lobe of the lung rises into the supra-clavicular fossa on inspiration. Although Jianjing GB-21 is usually needled perpendicularly to a depth of 0.3-0.5 cun, the authors prefer to pick up the trapezius muscle and insert the needle obliquely, then release the muscle, especially with emaciated patients.

- Quepen ST-12 and the adjacent extra point Jingbi (M-HN-41)¹ lie near the lung and are needled obliquely and posteriorly to a depth of 0.2-0.4 cun.

- Zhongfu LU-1 and Yunmen LU-2 lie just outside the lung but oblique insertion towards the lateral aspect of the chest is recommended to a depth of 0.5-0.8 cun.

- Tianchi P-1 is inserted obliquely only 0.2-0.4 cun.

- Riyue GB-24 is inserted obliquely 0.3-0.5 cun.

- Points Bulang KID-22 to Shufu KID-27, Shidou SP-17 to Zhoulong SP-20 and Qihu ST-13 to Rugen ST-18 should be needled obliquely laterally to a depth of 0.3-0.5 cun.

- On the axillary line, laterally, the pleural cavity extends down to the 10th intercostal space. All points over this area should be needled obliquely to a depth of 0.3-0.5 cun, for example Dabao SP-21, Yuanye GB-22 and Zhejin GB-23.

The back

- On the posterior chest (back), under the thoracic spine, the pleural cavity extends to the twelfth rib at the lateral border of the erector spinae muscles, and this includes acupoints on both Bladder channel lines, namely Dazhu BL-11 to Weishu BL-21 and Fufen BL-41 to Weicang BL-50, which should be needled obliquely 0.3-0.5 cun. Similar care needs to be taken with acupoints Sanjiaoshu BL-22 to Shenshu BL-23 and Huangmen BL-51 to Zhishi BL-52 as these lie over the kidney area of the back.

- On the Small and Large Intestine channels, Jianwaishu SI-14, Jianzhongshu SI-15 and Jugu L.I.-16 lie over the lung and should therefore be needled obliquely to a depth of 0.3-0.6 cun.

The abdomen

In general, points on the abdomen are safe when not needled more than 0.5-0.8 cun deep. When the urinary bladder is full, deep needling at points Qugu REN-2 and Zhongji REN-3, and even Guanyuan REN-4, Shuidao ST-28, Guilai ST-29, Henggu KID-11, Dahe KID-12 and Qixue KID-13 may penetrate the bladder causing risk of infection. Wherever possible the patient should be asked to empty the bladder before needling. In cases of urinary retention scrupulous clean needle technique should be observed.

Infants

The top of the head should not be needled before the anterior fontanelle has closed (at up to 2 years old).

Blood vessels

It is advisable to palpate before needling to avoid certain blood vessels e.g. the radial artery at the wrist at Taiyuan LU-9, the dorsal pedal artery at the foot at Chongyang ST-42 (Chongyang), the superficial temporal artery at the ear at Tinghui GB-2, Ermen SJ-21 and Tinggong SI-19, the carotid

artery at the neck at Renying ST-9 and the angular artery near the eye at Jingming BL-1. Also, when needling Jiquan HE-1 the axillary artery should first be palpated to avoid puncturing it. Insertion is perpendicular, 0.5-1.0 cun.

Anatomical aberrations

- Sternum: 5-8% of people in the western world have a sternal foramen, which may lie beneath the point Shanzhong (Tanzhong) REN-17. This does not show on X-ray but only on a CT scan, nor is it palpable as it is covered by a thin layer of membrane. Penetration through the sternal foramen may lead to a cardiac tamponade; seven instances have been recorded, including one fatal case in Norway. The needling depth for Shanzhong REN-17 should be no greater than 2 cm using horizontal (transverse) needling technique.

- Blood vessels: when palpating for the radial artery before needling Taiyuan LU-9, it may be found to be absent in a small minority of subjects. This is usually due to an anatomical aberration whereby the radial artery has bifurcated and the larger branch is then palpable between Lieque LU-7 and Yangxi L.I.-5. In TCM this is called "fan guan mai".

From a physiological viewpoint

- Pregnancy: Do not needle Sanyinjiao SP-6, Hegu L.I.-4 and Kunlun BL-60 at any stage of pregnancy unless the patient is overdue and the purpose is to induce labour. Zhiyin BL-67 should also not be needled during pregnancy unless you want to turn a foetal breech position at 32+ weeks.

In the *Lei Jing Tu Yi* (by the Ming Dynasty author Zhang Jing Yue) it was mentioned that Jianjing GB-21 should not be used during pregnancy, but is indicated for difficult labour. In 1981 an article in the journal *Jiang Xi Zhong Yi Yac*² reported that Jianjing GB-21 was very successful for preventing vomiting, including morning sickness - using only that single point. In our experience Jianjing GB-21 is effective for morning sickness but we would only recommend that it be used by an experienced acupuncturist when other methods have failed.

During the first 3 months of pregnancy do not needle points on the lower back such as Baliao (Shangliao BL-31 to Xialiao BL-34), and avoid using the auricular point Uterus (Zigong). After the third month do not needle points on the lower back or abdomen, such as Qugu REN-2, Zhongji REN-3 and Tianshu ST-25, and in addition after the fifth month avoid points Xiawan REN-10 to Zhongwan REN-12, although the latter may be needled, with shallow insertion and no manipulation, for stomach pain.

In Chinese textbooks since the 1980s it has been emphasised that Sanyinjiao SP-6, Hegu L.I.-4, Kunlun BL-60, Jianjing GB-21, Qugu REN-2, Zhongji REN-3 and auricular point Uterus, which are all contraindicated in pregnancy, should also be avoided during menstruation unless one is actually treating an abnormal menstrual condition.

- Weak, debilitated, hungry, thirsty or stressed patients have an increased tendency to faint. Allow them to rest, eat or drink first. Avoid using strong points such as Fengchi

GB-20, Quchi L.I.-11, Hegu L.I.-4 and Zusanli ST-36 and avoid manipulation of the needle.

Any patient may faint in response to needling. When inserting needles the practitioner should observe the patient's face for tell-tale signs of pallor or sweating and all patients should be asked to report if they feel nauseous or dizzy. All patients are preferably treated on a treatment couch, lying or supported in a sitting position, both because they will be less likely to faint when supine and because the first action in case of fainting must be to remove the needles, and this can be difficult if they have slumped to the floor from a chair. They may also injure themselves falling. If faintness is reported or observed, the top of the treatment couch can be quickly lowered, increasing circulation to the head.

From a pathological viewpoint

- Bleeding tendency: this may occur with patients on warfarin or else on long-term cortisone treatment which thins the skin. Haemophilia is a total contraindication to acupuncture. As far as cortisone is concerned, in our experience, injections of a cortico-steroids into a joint will render acupuncture of that joint ineffectual for several weeks
- Scrupulous clean needle technique should be observed when needling points in the potentially dangerous triangle formed by Yintang (M-HN-3) and bilateral Dicang ST-4, as well as at Jingming BL-1, especially when treating facial skin infections such as acne. If the posterior wall of the frontal sinus is infected, infections of the central nervous system can result. This invasion may occur through direct invasion of venous channels and can spread to the skull by septic thrombophlebitis via the valveless veins of Brechet and can be life-threatening. In the area of Jingming BL-1 veins link to the cerebral veins. In western medicine the triangular area bordered by the middle of the eyebrows and the corners of the mouth - approximating to Yintang (M-HN-3) and Dicang ST-4 - is regarded as especially susceptible to the introduction of infection via the veins.
- Enlarged organs: the liver, spleen, gall bladder, kidney and heart may all be enlarged due to disease, and all practitioners should have sufficient training in palpation to determine if this is so. When the liver or spleen are enlarged, take care with Jiuwei REN-15, Juque REN-14, Jingmen GB-25, Qimen LIV-14, Burong ST-19, Chengman ST-20 and Liangmen ST-21, which in this case should be punctured obliquely 0.3-0.5 cun. The kidney, if not greatly enlarged, will not be endangered by needling nearby points at a correct depth. If greatly enlarged, the patient's pathology will reflect this, and extreme caution should be exercised with local and adjacent needling.
- Epidemic disease: here it is the acupuncturist who needs to take care not to contract the patient's disease, e.g HIV or hepatitis B and C, by accidentally pricking themselves when removing the needles.
- Patients with pacemakers may not be given electro-acupuncture to the chest area.
- The following points may cause faintness in some people:

Zhongzhu SJ-3, Waiguan SJ-5, Hegu L.I.-4, Quchi L.I.-11, Shousanli L.I.-10, Jianyu L.I.-15, Renying ST-9, Tianzong SI-11, Tianjing SI-13, Jianwaishu SI-14, Fengchi GB-20, Jianjing GB-21, Yanglingquan GB-34 and the auricular point adrenal. This is usually because they have a strong sensation or are particularly sensitive.

Causes of risk

From consideration of the above guidelines and from analysing reports of accidents with acupuncture, we can define the following main risk factors:

- inadequate training in acupuncture
- limited knowledge of anatomy or of certain physiological or pathological conditions
- failure to check for abnormal anatomy
- poor needling technique (depth and angle or stimulating too strongly)
- inadequate knowledge of records in ancient books or recent articles
- not paying attention to the patients' condition when they arrive

Safety can be guaranteed

The principle is to understand and remember why a point can be dangerous; every risk can be avoided if due care is taken. There is no need to be apprehensive: the British Acupuncture Council recently surveyed 34,407 treatments for adverse effects³. There was an underlying serious adverse effect rate of between 0 and 1.1 per 10,000 treatments. A total of 43 minor adverse effects were reported, a rate of 1.3 per 1,000. A survey by Exeter University of 31,822 treatments by members of BMAS (British Medical Acupuncture Society) and the AACP (Acupuncture Association of Chartered Physiotherapists) also resulted in 43 minor adverse effects⁴. Among the 43 adverse effects reported by each, most complaints were of a few common short-term symptoms that usually automatically disappeared, some of which are really regarded by acupuncturists as positive, such as a feeling of relaxation (11% of the 43) and feeling energised (6.6%). However even if acupuncture is so demonstrably safe we still need to be cautious for the patients' benefit and should remember that unexpected accidents have occurred. By avoidance of the risk factors, safety can be guaranteed.

Regarding needling technique, we would like to emphasise the following:

- Check that the needles are not in close proximity to organs or arteries.
- Consider the patient's build with regard to depth of needling. It is noted in the *Huang Di Nei Jing* (Yellow Emperor's Classic of Internal Medicine) that the recommended depth of insertion is for a patient of average build. All cun measurements refer of course to the patient's cun, not the acupuncturist's, who should check their hands against the patient's.
- If it is possible for the needle to touch a bone at a special

point, e.g. Shanzhong REN-17 but it has not done so at the normal recommended anatomical depth, do not insert deeper: this is how the cardiac tamponade accident occurred in Norway. This also applies to Tianzong SI-11 as the scapula can also have a foramen.

- If the skin is lifted on insertion of the needle, penetration of the organ can be avoided.
- On the chest and back over the lung the angle of insertion is oblique or horizontal. The tip of the needle is usually directed obliquely towards the midline on the urinary bladder channel and obliquely and laterally on all other channel points passing over the trunk.
- When needling points around the eye, the patient is asked to look in the opposite direction to the point being needled and the practitioner gently holds the eyeball in that position while carefully inserting the needle. The needle is not retained for very long.
- Points near arteries should be palpated to ascertain the exact position of the artery and one finger should press against the artery while the other hand inserts the needle. Following the above techniques will ensure that your practice will be safe and effective.

Notes

- 1 Jingbi M-HN-41 is located 1 cun superior to the junction of the medial third and lateral two thirds of the clavicle, at the posterior borer of the sternocleidomastoideus.
- 2 Jiang Xi Zhong Yi Yao (1) 39:1981.
- 3 MacPherson H. et al., *British Medical Journal*, 2001, 323:486-487.
- 4 White A, Hayhoe S. et al. *British Medical Journal* 2001, 323:485-6.

Source texts

- 1 Huang Di Nei Jing, Ling Su, People's Health Press, 1963.
- 2 Wang Tao, Wai Tai Mi Yao, People's Health Press, 1955.
- 3 Huangfu Mi, Zheng Jiu Jia Yi Jing, People's Health Press, 1956.
- 4 Sun Simiao, Bei Ji Qian Jin Yao Fang & Jian Jin Yi Fang, People's Health Press, 1955.
- 5 Wang Weiyi, Tong Ren Shu Xue Zhen Jiu Tu Jing, People's Health Press, 1955.
- 6 Wang Zhizhong, Zhen Jiu Zi Shen Jing, Shanghai Science & Technology Press, 1959.
- 7 Xu Feng, Zhen Jiu Da Quan, People's Health Press, 1958.
- 8 Gao Wu, Zhen Jiu Ju Ying, Shanghai Science & Technology Press, 1961.
- 9 Yang Jizhou, Zhen Jiu Da Chen, People's Health Press, 1983.
- 10 Wu Qian, Yi Zhong Jing Jian, People's Health Press, 1957.
- 11 Yang Jiasan et al, Shu Xue Xue, Shanghai Science & Technology, 1984.
- 12 Zhen Jiu Xue, People's Health Press, 1993.
- 13 Zhang Ye et al, Shi Yong Ling Chuang Zhen Jiu Xue, Shanghai Medical University Press, 1998.
- 14 Zhang Ren et el, Zhen Jiu Yi Wai Yu Fang Ji Chu Li, Shanghai Science & Technology, Press, 1988.
- 15 Wan Xiuying et al, Zhen Jiu Yi Wai Ji Fang Zi, Shandong Science & Technology Press, 1996.
- 16 Lewith, G T, MacPherson, H. Reporting Adverse Events

Following Acupuncture, *Physiotherapy*, 2001; 87.1.

- 17 Peuker, E T, 'The need for practical courses in anatomy for acupuncturists'. *FACT* 2: 194. (1997).
- 18 Peuker, E T, Fischer G, Filler T J, 'Facial vein terminating in the superficial temporal vein. (A potential risk for acupuncture in the face).'
- 19 Ernst E, White AR editors, *Acupuncture – a scientific appraisal*. London: Butterworth-Heinemann, 1999; p.128-52.
- 20 Halvorsen T B, Anda, S S, Naess, A B and Levang, O W. 'Fatal cardiac tamponade after acupuncture through congenital sternal foramen', *Lancet*, 1995; 345, 1175.
- 21 Ernst E, White A. 'Life-threatening adverse reactions after acupuncture? A systematic review'. *Pain*, 1997; 71: 123-126.
- 22 House of Lords Select Committee 6th Report on *Complementary and Alternative Medicine*, London, The Stationary Office, 2000.
- 23 Kirschgatterer, A et al, Cardiac tamponade following acupuncture. *Chest* 2000;117(5):1510-1.
- 24 Lord RV, et al, False aneurysm of the popliteal artery complicating acupuncture. *Aust NZ J Surg*; 1996; 66(9):645-7
- 25 Odsberg A, Schill U, Haker E. Acupuncture treatment side effects and complications reported by Swedish physiotherapists. *Complementary Ther Med* 2001;9(1)17-20.
- 26 Kelsey JH. Pneumothorax following acupuncture is a generally recognised complication seen by many emergency physicians. *J Emerg Med* 1998;16(2)224-5.
- 27 Bensoussan A and Myers, SP (1996). *Towards a safer choice: the practice of traditional Chinese medicine in Australia*, Faculty of Health, University of Western Sydney, McArthur.
- 28 MacPherson H (1999). 'Fatal and adverse events from acupuncture: Allegation, evidence and the implications', *Journal of Alternative and Complementary Medicine* (USA), 5, 1, 47-56.
- 29 Lu GD, Needham J. *Celestial Lancets: a history and rationale of acupuncture and moxa*. Cambridge University Press; 1980.
- 30 *Chinese Acupuncture and Moxibustion*, Beijing Foreign Languages Press 1987.
- 31 Choo DC, Yue G. Acute intracranial haemorrhage caused by acupuncture. *Headache* 2000; 40(5):397-8.
- 32 Wang, Qi Cai (1983) *Journal of Traditional Chinese Medicine*, 1, 25-26.
- 33 White A, Hayhoe S. et al. Adverse events following acupuncture: prospective survey of 32 000 consultations with doctors and physiotherapists. *BMJ* 2001; 323(7311): 485-6.
- 34 McPherson H, Thomas K, et al. The York acupuncture safety study: prospective survey of 34 000 treatments by traditional acupuncturists. *BMJ* 2001; 323(7311): 486-7.
- 35 Zhang Jing Yue, *Lei Jing Tu Yi* (1624 AD).
- 36 Jiang Xi Zhong Yi Yao; (1):39.1981.
- 37 Hasegawa J, Noguchi N, Yamasaki J et al. Delayed cardiac tamponade and hemothorax induced by an acupuncture needle. *Cardiology* 1991; 78(1):58-63.
- 38 Cheng TO. Pericardial effusion from self-inserted needle in the heart. *Eur Heart* 1991; 12(8):958.
- 39 Kataoka H. Cardiac tamponade caused by penetration of an acupuncture needle into the right ventricle. *J Thorac Cardiovasc Surg* 1997; 114(4):674-6.
- 40 Schiff AF. A fatality due to acupuncture. *Med Times* (Lond) 1965; 93:630-1.

- 41 Stark P, Midline Sternal Foramen: CT demonstration. *J Comput Assist Tomogr* 1985; 9(3):489-90.
- 42 Schratte M, Bijack M, Nissel H, Gruber I et al. (The foramen sternale: a minor anomaly – great relevance). *Rofo Fortschr Geb Rontgenst Neuen Bildgeb Verfahr* 1997; 166(1):69-71.
- 43 *Gray's Anatomy*; p 71,86,91.
- 44 Nieda S, Abe T, et al. Case of a cardiac injury resulting from acupuncture, *Kyobu Geka* 1973; 26(12):881-3.
- 45 McCaffrey T V. *Rhinologic Diagnosis and Treatment*. Thieme Medical Publishers Inc; 1997; p297.
- 46 Deadman, P. Al-Khafaji, M. Baker, K. *A Manual of Acupuncture*, Journal of Chinese Medicine Publications, 2002.

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