

Introduction to acupuncture

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Historical development of acupuncture

Acupuncture (*acus*, needle; *punctura*, to penetrate) refers to the insertion of solid needles through the skin. Acupuncture-like techniques have been described in a variety of historic cultures, including Egyptian, Hindu and Chinese (Lindley and Cummings 2006). The 'Iceman', discovered frozen in a glacier of the Tyrolean Alps and thought to have lived over 5000 years ago, had multiple small tattoos with many located in sites corresponding to acupuncture points and situated near joints affected by arthrosis (Dorfer *et al.* 1999). The awareness of acupuncture in modern times has developed greatly since the 1970s, following the visit of President Nixon to China where reporters observed surgery on human patients using analgesia provided only by acupuncture. Acupuncture is still readily available from a Traditional Chinese Medicine (TCM) standpoint, however with the growth of research in this area, scientific understanding of how acupuncture works is increasing and evidence-based Western acupuncture treatment is also offered.

Veterinary acupuncture

Many sources indicate the historic use of acupuncture treatment of animals. A report describing the use of veterinary acupuncture was published in *The Veterinarian* in 1828. The International Veterinary Acupuncture Society was formed in 1974 and still provides training and certification in many parts of the world for veterinarians interested in the modality. Courses in Western Veterinary Acupuncture (WVA) and Traditional Chinese Medical (TCM) acupuncture are now provided by various organisations throughout the world.

Types of acupuncture

1. Dry needling
Thin filament (non-hypodermic) needles are inserted through the skin. Commonly-used needle sizes range from 0.18–0.40mm in diameter and 13–40mm in length, and sizes are chosen depending on the species being treated, the point location and the required depth of penetration. Depth of tissue penetration varies from superficial to deep, depending on the tissues being accessed and practitioner preference. Needles remain in place for 10-20 minutes and are stimulated periodically by twisting or withdrawing slightly and repositioning.
2. Aquapuncture
Aquapuncture involves injecting a liquid into the acupuncture point location. Various substances have been used including vitamin B12, local anaesthetic and saline, although there is no apparent difference between them in terms of effect and efficacy is not considered to be any greater than dry needling (Cummings and White 2001). One advantage is that the animal does not have to be restrained for as long, however use of hypodermic needles (larger in size compared to acupuncture needles) and potentially irritant substances can be more uncomfortable for the patient.
3. Electroacupuncture
Electroacupuncture involves connecting needles to a device to deliver electrical stimulation to tissues at a range of frequencies (2–80Hz) with varying wave forms. It is considered to stimulate production of a greater range of neurotransmitters (Lindley and Cummings 2006) and is used to produce analgesia.

4. Laser acupuncture

Non-thermal, low level laser delivers energy to the tissues, with energy density considered an important parameter. The depth of penetration of laser light into tissues is still under debate, as are mechanisms of action of laser therapy, although it is thought that neurotransmitter release occurs at sites distant from the stimulated area (Lindley and Cummings 2006).

5. Acupressure

Digital pressure can be used to stimulate acupuncture points. It is not considered to be as effective as needling but can be used by owners.

The following discussion primarily refers to dry needling.

Side effects and contraindications

Acupuncture is a relatively safe procedure. Potential side effects include needle breakage, infection, minor bleeding and minor bruising. Needle breakage is less common with modern single-use needles, and is less likely if needles are not inserted up to the handle. As with any technique that involves skin penetration, infection is a possibility, but sterile filament needles inserted into clean skin are low risk. Caution should be used with animals that are, for example, immunocompromised or have bleeding disorders, and needles should not be inserted into wounds, oedema, tumours or infected areas. Penetration of the thoracic or abdominal cavities should be avoided, and this needs to be considered also with respect to animals moving or lying down during treatment. According to TCM theory there are acupuncture points that should be avoided during pregnancy.

Meridians and acupuncture points

Acupuncture points are anatomically defined by TCM and are primarily found on meridians, or channels, running through the body. In TCM the flow of Qi (energy) occurs along the meridians. Various theories exist regarding the physiological or anatomical existence of meridians, including relationships to fascia (Bai *et al.* 2010, Langevin and Yandow 2002) and primo-vessels (small thread-like vessels; see review article by Longhurst 2010). Acupuncture points have been examined for distinguishing morphologic and physiologic features (see Langevin and Yandow 2002), and although no definitive identifier has been found some points are associated with, for example, nerve bundles and nerves surfacing from deep fascia or in joint capsules or ligaments (Dung 1984). There is a high degree of overlap between acupuncture points and myofascial trigger points (see following article) (also known as Ah Shi points in TCM) (Dorsher and Fleckenstein 2008, Melzack *et al.* 1977).

Acupuncture stimulates the peripheral and central nervous systems. The neurophysiology of acupuncture will be discussed in the next section by Dr Chris Thomson; briefly, local, segmental, heterosegmental and general effects have been determined. As an example, when using segmental techniques to control pain A delta sensory fibres are stimulated, causing activation of interneurons in the dorsal horn of spinal cord segments which then inhibit sensory C fibre activity. The latter fibres are stimulated by chronic, noxious stimuli.

Acupuncture point selection

TCM diagnosis and point selection involves a number of steps that are comparable to a routine clinical examination procedure. A detailed and broad history is taken and includes questioning the owner as to the animal's diet, temperament and habits, as well as the history of the specific presenting complaint. Observations include inspecting the tongue, ears, eyes, and pulses. Models such as the Five Elements (Fire, Earth, Metal, Water and Wood) or the Eight Principles are used to recognise patterns of findings from the clinical examination and to determine the points that should be treated. Some practitioners apply a 'recipe' approach, treating points that are commonly used for particular disorders, and while this can be beneficial it does not take into account the findings from the individual being treated. In WVA, the examination and diagnostic procedures are those of standard veterinary practice. The anatomically-defined TCM points are used for treatment. However point selection takes into account the proximity of the point to the location of pathology, and the presence of tender areas or trigger points (Lindley and Cummings 2006). Points can also be used that are distant to the pathology, for example on the contralateral limb at the same segmental level.

Acupuncture case selection

Acupuncture is frequently used to relieve pain, or as an adjunct to control pain, for example musculoskeletal pain associated with osteoarthritis (OA). As well as treating pain arising from the pathology involved in OA, acupuncture can be used to treat trigger points and tender points arising as the animal compensates for OA pain, overloading other limbs and tissues. Acupuncture is considered to have a normalising effect on the autonomic system and could therefore affect visceral structures and functional problems such as urinary incontinence and megacolon could benefit from acupuncture treatment (Lindley and Cummings 2006). The point PC6 on the distal thoracic limb is considered effective in combating postoperative nausea and vomiting in people (Lee and Fan 2009); it is a point traditionally used for antiemesis and can also be used in veterinary patients. Acupuncture is also considered helpful in wound healing, using a technique colloquially known as “fencing the dragon”.

There appear to be species differences in response to acupuncture. Horses are considered to be ‘good responders’ and relatively sensitive to the effects of acupuncture treatment, followed by cats, dogs and humans. Individual responsiveness is generally considered to follow a normal curve, with most individuals having a moderate response and a smaller number being either very sensitive or not responding at all.

Application of acupuncture

For chronic conditions, acupuncture is generally given as an initial course, with 4-6 treatments 5-7 days apart. If the condition is ongoing (for example OA) the frequency of treatment can be decreased to a level that maintains the animal’s response.

Animals can be sedated if required (note that local anaesthesia should not be used, as intact and functioning neural pathways are required), though those receiving regular beneficial treatment seem to become relaxed while the needles are in place and often need no restraint. Following treatment, animals can be more or less active or show no particular change in activity levels. It is prudent to warn owners that behavioural changes might occur as they can become concerned if their animal does nothing but sleep for two days following treatment! The clinical condition can sometimes be aggravated (for example if needling too vigorously) but this should be temporary and the technique and point selection can be modified for subsequent visits. Benefits are often seen to be cumulative following subsequent treatments.

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