

Pearls from TCVM Practice

Scalp Acupuncture in Dogs and Cats

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ABSTRACT

Scalp acupuncture is a contemporary acupuncture technique that integrates traditional Chinese needling methods with Western medical knowledge of representative areas of the cerebral cortex. It is effective for treating both acute and chronic central nervous system (CNS) disorders with just a few needles resulting in marked improvements. This relatively new technique is considered one of the most significant developments in Chinese acupuncture in the past 60 years. There are several characteristics that separate modern scalp acupuncture from needle placement based on traditional Chinese medicine (TCM). First, the location of treatment areas are based on the reflex somatotopic system organized on the surface of the scalp; they do not correlate with TCM channels/meridians. The scalp somatotopic system acts as a small window with access to the CNS and endocrine systems. Stimulating these areas has a direct effect on the cerebrum, cerebellum, thalamo-cortical circuits, thalamus, hypothalamus and pineal body. Next, scalp acupuncture needles are subcutaneously inserted into whole sections of various zones rather than at specific acupoints. These zones correspond to cortical areas that are responsible for central nervous system functions such as motor activity, sensory input, vision, speech, hearing and balance. Finally, scalp acupuncture is similar to conventional medicine in that patients with the same clinical diagnosis all receive the same or similar treatment versus individualized TCM diagnoses. Common indications for its use in clinical practice are paralysis/motor dysfunction and spinal/limb pain.

Key words: acupuncture, scalp acupuncture, canine, feline, central nervous system, pain

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ABBREVIATIONS

AP	Anterior-posterior line
BA	Balance area
CNS	Central nervous system disorders
FMSA	Foot motor sensory area
MA	Motor area
PNS	Peripheral nervous system
SA	Sensory area
TCM	Traditional Chinese medicine

Scalp acupuncture is a contemporary acupuncture technique that integrates traditional Chinese needling methods with Western medical knowledge of representative areas of the cerebral cortex.^{1,2} It is effective for treating both acute and chronic central nervous system (CNS) disorders with just a few needles resulting in improvements.¹ In humans, it promotes healthy reintegration of lost function in the brain and is most commonly used for stroke but has shown clinical benefit in treating a variety of disorders which include Parkinson's Disease, paralysis, traumatic

brain injury, motor neuron disease, complex regional pain, Alzheimer's Disease, phantom limb syndrome, multiple sclerosis, attention deficit disorder, autism and post-traumatic stress disorder.²⁻⁶

This relatively new technique is considered one of the most significant developments in Chinese acupuncture in the past 60 years.² Although years of modern clinical experience have gone into its development, needling the scalp can be traced back to 100 BC in the first Chinese acupuncture text (*Huang Di Nei Jing Su Wen*, The Yellow Emperor's Classic of Internal Medicine).² It described a relationship between the brain and body in physiology, pathology and treatment as it was understood at the time.² The modern system of scalp acupuncture in China was started in the 1950's but it was 20 years before a central theory that incorporated brain functions into Chinese medicine principles was accepted. At this time, Dr. Jiao Shun-Fa, a neurosurgeon, combined modern understanding of neuroanatomy and neurophysiology with traditional techniques. Dr. Shun-fa's work (Jiao's scalp acupuncture) was investigated, acknowledged and finally formally recognized by the profession in 1977 and he is now recognized as the founder of Chinese scalp acupuncture.² At that time, the technique was primarily used to treat stroke patients with paralysis and speech

From: Dancing Paws Animal Wellness Center, Richfield, Ohio (Sivula)

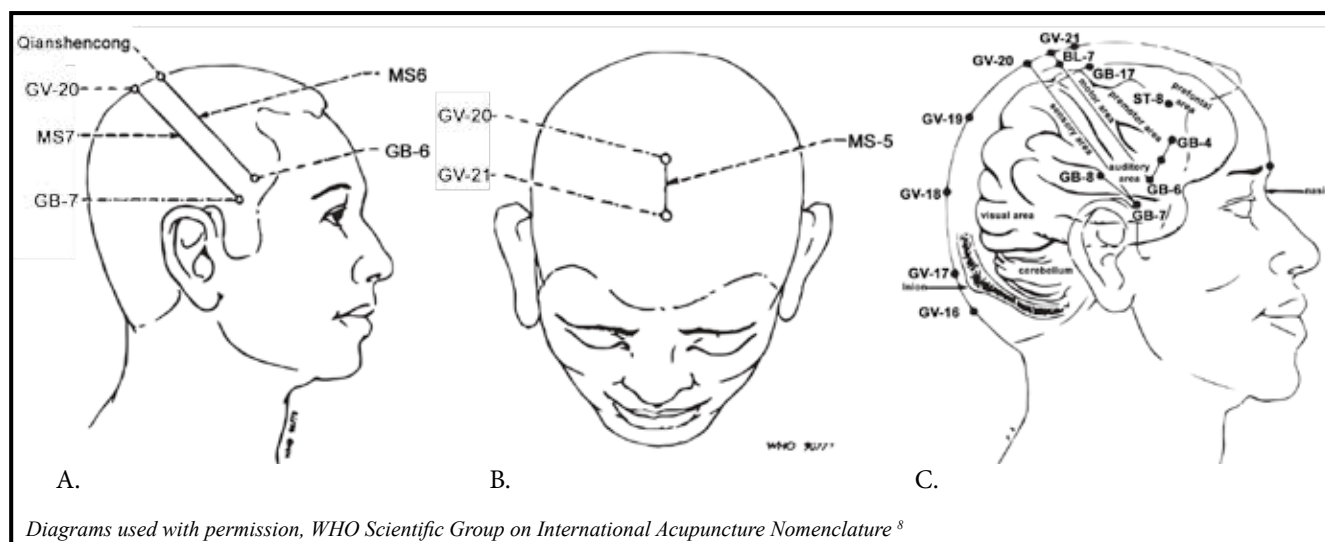


Figure 1: Diagram of scalp acupuncture lines for A) MS 6 & 7 B) MS 5 and C) MS 12, MS 13, MS 14 superimposed on functional areas of brain

Table 1: World Health Organization (WHO) standardized nomenclature (ms=microsystem/scalp point) which is based on surface anatomy to facilitate localization of lines but relationship to underlying functional structures is preserved⁸

MS 1	Middle line of forehead 1 cun from GV-24 straight down along the meridian
MS 2	Lateral line 1 of forehead 1 cun from BL-3 straight down along the meridian
MS 3	Lateral line 2 of forehead 1 cun from GB-15 straight down along the meridian
MS 4	Lateral line 3 of forehead 1 cun from the point 0.75 cun medial to ST-8 straight down
MS 5	Middle line of vertex from GV-20 to GV-21 along the midline of head
MS 6	Anterior oblique line of vertex-temporal: 1 cun anterior to GV-20 obliquely to GB-6
MS 7	Posterior oblique line of vertex-temporal from GV-20 obliquely to GB-7
MS 8	Lateral line 1 of vertex 1.5 cun lateral to middle line of vertex, 1.5 cun from BL-6 backward along the meridian
MS 9	Lateral line 2 of vertex 2.25 cun lateral to middle line of vertex, 1.5 cun from GB-17 backward along the meridian
MS 10	Anterior temporal line from GB-4 to GB-6
MS 11	Posterior temporal line from GB-8 to GB-7
MS 12	Upper-middle line of occiput from GV-18 to GV-17
MS 13	Upper-lateral line of occiput 0.5 cun lateral and parallel to upper-middle line of occiput
MS 14	Lower-lateral line of occiput 2 cun from BL-9 straight down

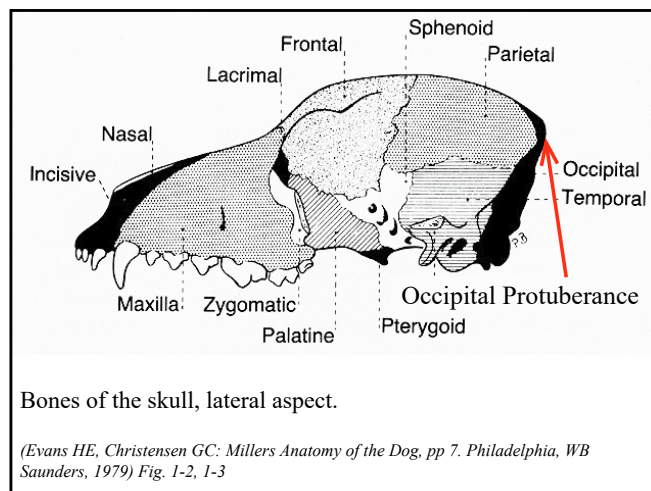
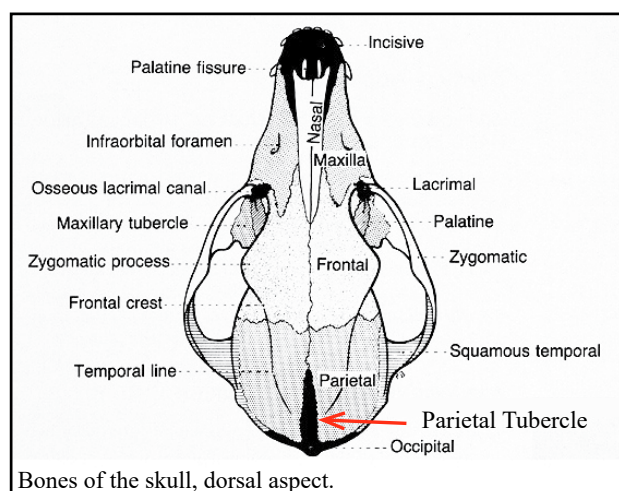


Figure 2: Cranial and facial bones of the domestic canine skull

impairment.

Since its first development by Jiao Shun-fa, other major contributors (Fang Yung-Peng, Tang Song-Yan) have added to the system. Jiao divided the scalp into motor and sensory areas while Fang added speech/writing and memory/reading centers.^{1,7} He mapped the scalp area as a homunculus with the head toward the forehead and the legs toward the occipital area; with a dividing line that connects the left ear to the vertex and to the right ear.¹ Tang Song-Yan proposed two homunculi on the scalp, one in prone position and another in supine position. Further contributors, Zhang Ming-Jiu's and Yu Zhi-Shun's scalp positions are formulated by penetrating regular head points and Zhu Ming-Qing created several special therapeutic bands (treatment zones) on the scalp.¹ As is evident from these multiple approaches, scalp acupuncture is not a single system and combines several schools of thought. In 1989, the World Health Organization produced a standardized nomenclature which most clinicians have used since that time (Table 1, Figure 1).⁸

CHARACTERISTICS OF SCALP ACUPUNCTURE

There are several characteristics that separate modern scalp acupuncture from traditional Chinese medicine (TCM).¹ First, the location of treatment areas are based on the reflex somatotopic system organized on the surface of the scalp; they do not correlate with TCM channels. The scalp somatotopic system acts as a small window with access to the CNS and endocrine systems. Stimulating these areas has a direct effect on the cerebrum, cerebellum, thalamo-cortical circuits, thalamus, hypothalamus and pineal body.^{1,2,6} Next, needles are subcutaneously inserted into whole sections of various zones rather than at specific

acupoints. These zones correlate to areas of the cortical cerebrum and cerebellum that are responsible for CNS functions such as motor activity, sensory input, speech, hearing, vision, and balance.⁶ Finally, scalp acupuncture is similar to conventional medicine in that patients with the same clinical diagnosis all receive the same or similar treatment versus individualized TCM diagnoses.²

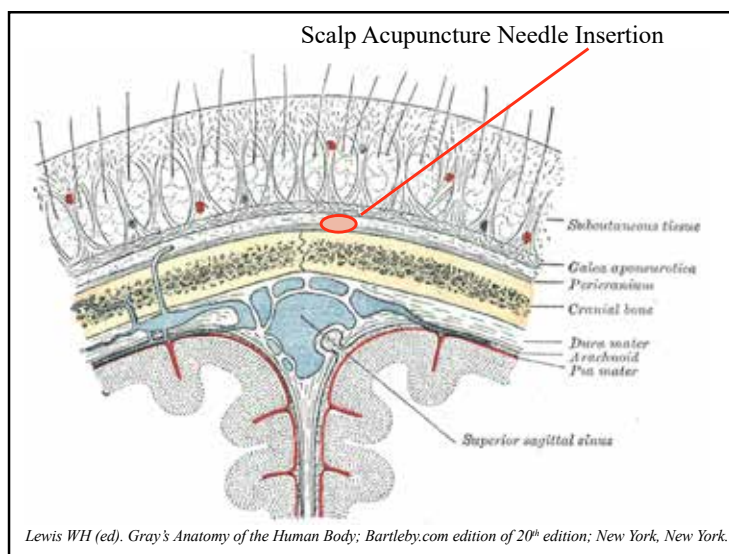
ANATOMY REVIEW

The skull in dogs contains eight cranial (1-frontal, sphenoid, occipital, ethmoid; 2-temporals, parietals) and fourteen facial bones (nasal, maxillae, mandible, zygomatic, lacrimal, etc) that are all joined by sutures.⁹ There are a few important landmarks that also need to be considered. The parietal bone contains an anatomic landmark (parietal tubercle) which is located at the highest part of the bone's convexity where the 2 sides join (slightly caudal to middle of the parietal bone). This site helps locate the AP line and GV-20 area. The occipital bone has a crest or bony protuberance (external occipital protuberance) visualized at the most caudal-dorsal point of the skull (in the middle of the occipital squama).⁹ It is a landmark for locating the "balance and vision area" (Figure 2).¹ The "glabella" corresponds to an area on the frontal bone between the eyebrow ridges just above the nose and is slightly elevated in some breeds of dogs (Figure 3). This anatomic site helps locate mid anterior posterior (AP) line.

The scalp in humans contains five layers: skin, connective tissue, epicranial aponeurosis, loose areolar tissue, and pericranium.¹ The top three layers are bound together and function as a single unit. The skin on the scalp is thick with abundant sweat/sebaceous glands, a generous



Figure 3: The glabella is a mid-line point between the eyebrows just dorsal to the eyes. It is represented by a star in this picture.



Lewis WH (ed). *Gray's Anatomy of the Human Body*; Bartleby.com edition of 20th edition; New York, New York.

Figure 4: Scalp needle insertion: The needle is placed in the loose areolar tissue beneath the epicranial aponeurosis and above the pericranium at a 15-25 degree angle. The entire length of the needle is in the loose areolar tissue.

blood supply and hair follicles. The connective tissue is a fibro-fatty layer that connects skin to the underlying aponeurosis of the occipito-frontalis muscle. It provides a gateway for the nerves and blood vessels. The epicranial aponeurosis is a tough layer of thick, fibrous tissue that runs from the frontalis muscle anteriorly to the occipital muscle posteriorly. The loose areolar tissue allows the three layers of the scalp to move superficially and is where the needle is inserted for scalp acupuncture (Figure 4).¹ Scalp anatomy of dogs has slight anatomic differences, but needle insertion is identical to that proposed for humans.

The nervous system consists of the central nervous system (CNS) and the peripheral nervous system (PNS). The brain and the spinal cord compose the CNS, while the PNS contains the sensory neurons, the ganglia (clusters of neurons), and the nerves that connect them to the CNS. The brain has three main sections; the forebrain, midbrain, and hindbrain. The forebrain is the largest section and is composed of the telencephalon and diencephalon. The telencephalon is comprised of the cerebral hemispheres, including cerebral cortex, white matter, and basal ganglia. The diencephalon contains the thalamus,

hypothalamus, and their associated structures. The midbrain connects the forebrain to the hindbrain. The hindbrain consists of the pons, cerebellum, and medulla oblongata. The brainstem consists of the midbrain, pons, and medulla together.⁹

The white matter are myelinated axons while the grey matter are the cell bodies of the neurons. Most synapses in the CNS occur in the grey matter. The cerebral cortex consists of an outer grey matter layer covering the cerebral hemispheres. Beneath it is the white matter that sends signals to and from the cortex. In addition, nuclei, which are regions/clusters of gray matter, are present deep within the cerebral hemispheres and brainstem (e.g. basal ganglia and thalamus).⁹

Examining the outer surface of the brain, it is noted there are crevices (inward fold) in the cerebral cortex known as sulci and ridges (outward fold) as gyri (Figure 5). There are two cerebral hemispheres that may be divided into four lobes which are named for the bone of the skull which overlies the area (frontal, parietal, occipital, temporal). The frontal lobe is that part of the cerebral hemisphere rostral to the cruciate sulcus (Figure 5). The

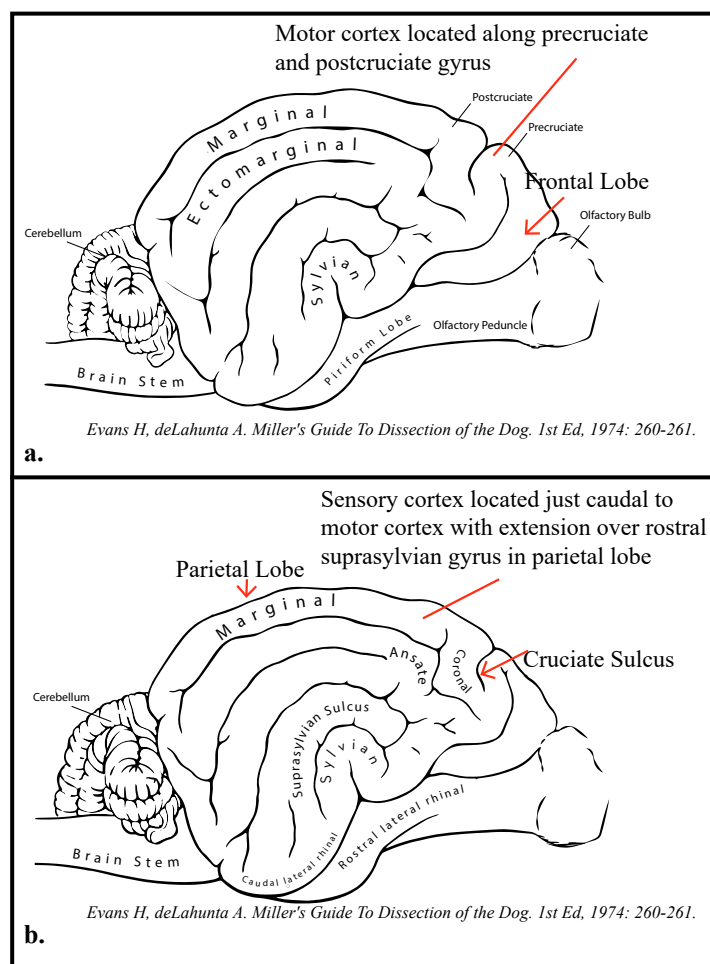


Figure 5: a) Gyri of canine brain, lateral view; b) Sulci of canine brain, lateral view

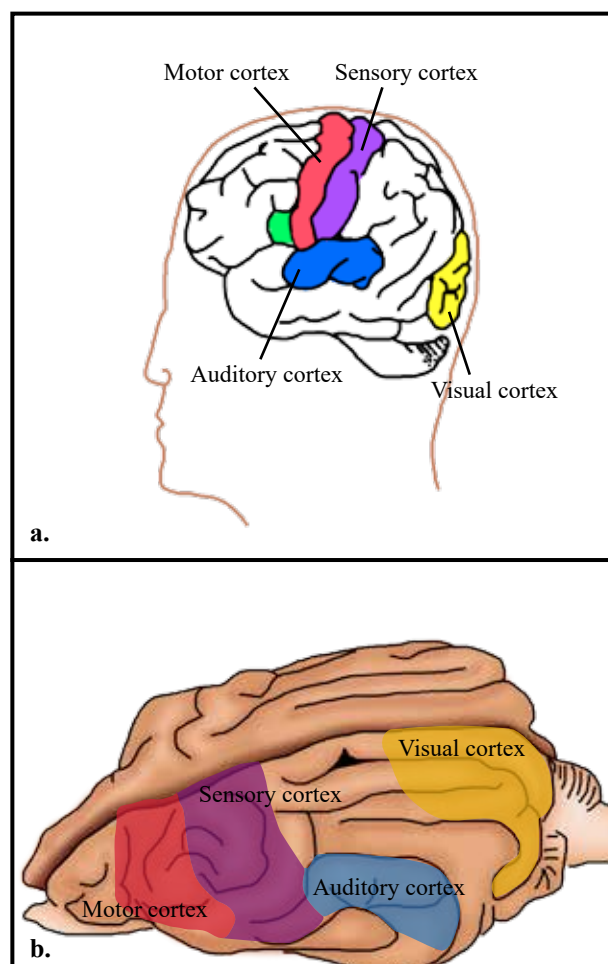


Figure 6: a) Motor and sensory areas, human; b) Motor and sensory areas, canine

frontal lobes are separated inferiorly and laterally from the temporal lobes. The parietal lobes are caudal to the cruciate sulcus and dorsal to the sylvian gyri. The parietal and occipital lobes are divided by the parieto-occipital sulcus which is well-defined in humans but indistinct for the canine brain. The corpus callosum is a large c-shaped band of white matter that connects the two hemispheres.⁹

The motor cortex is located along the precruciate sulcus of the frontal lobe and the posterocruciate gyrus of the parietal lobe (Figures 5 and 6). It controls movement on the opposite side of the body. Motor control involves multiple parallel pathways and recurrent feedback loops. The cerebellum and basal ganglia modulate the output of the descending motor systems.^{10,11}

Sensory cortex is located just caudal to the motor cortex in the parietal lobe (Figures 5 and 6). Motor and sensory pathways are organized topographically.¹⁰

¹¹ Adjoining areas on the motor surfaces are mapped to adjacent fibers in white motor pathways and adjacent regions of the cortex. The somatotopic maps on the cortex are sometimes called the motor or sensory homunculus.¹

TCM THEORY AND SCALP ACUPUNCTURE

Scalp acupuncture areas exist in close association with the channel/meridian system and acupuncture points on the head (Table 2). The classic text *Huang Di Nei Jing Su Wen* (Yellow Emperor's Classic of Internal Medicine) states "The head is the house of emotion and the mind".¹ Therapeutic areas in scalp acupuncture are related to the distribution of the channels and network vessels in the head. There are twelve channel divergences, twelve muscle regions, twelve cutaneous regions, and network

vessels.

Eight meridians flow directly into the head; The Governing Vessel, Foot *Tai-Yang* (BL), Hand *Shao-Yang* (TH), Foot *Shao-Yang* (GB), Foot *Jue-Yin* (LIV), Foot *Yang-Ming* (ST), *Yang-Wei*, and *Yang-Qiao*. The Stomach (ST) channel originates in the forehead and connects to frontal lobe. The TH, GB, *Yang-Wei* and *Yang-Qiao* are distributed on the side of the head and connect to the temporal and parietal lobes. The BL Channel originates on the forehead, vertex and occipital area and connects to the frontal, temporal, parietal and occipital lobes. The Governing Vessel runs to the face, forehead, vertex and occipital area and connects with the frontal lobe, temporal, parietal and occipital lobes as well as the cerebellum and brainstem. The Liver (LIV) Channel connects to the eye system in the occipital lobe and runs up to the vertex.

The GV, BL and GB channels/meridians enter the brain via the vertex. Most location areas for scalp acupuncture overlap with the distribution of the GV, BL and GB meridians. These three channels regulate functions of the CNS and endocrine system.¹

Chinese scalp acupuncture stimulates scalp areas to prevent and treat disorders according to the theory of the twelve cutaneous regions. These are the sites through which the *Qi* and Blood from the channels are transferred to the body surface. *Zang-Fu* Theory can be used in consideration of scalp acupuncture. The brain is one of the 6 extraordinary bowels in TCM. It functions like an organ, storing pure substance, but has the hollow form of a bowel.^{1,2}

The Theory of Four Seas (Sea of *Qi*, Sea of Blood, Sea of Stomach, Sea of Marrow) is vital to Chinese scalp acupuncture. The twelve channels are all described

Table 2: Acupuncture points on the head that exist in close association with scalp acupuncture therapeutic regions

Acupuncture Points (head Region)
Governing Vessel (GV) Meridian: 17,18,19,20,21,22,23,24
Triple Heater (TH) Meridian: 17,18,19,20,21,22,23
Small Intestine (SI) Meridian: 17,18,19
Bladder (BL) Meridian: 1,2,3,4,5,6,7,8,9
Gall Bladder (GB) Meridian: 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19

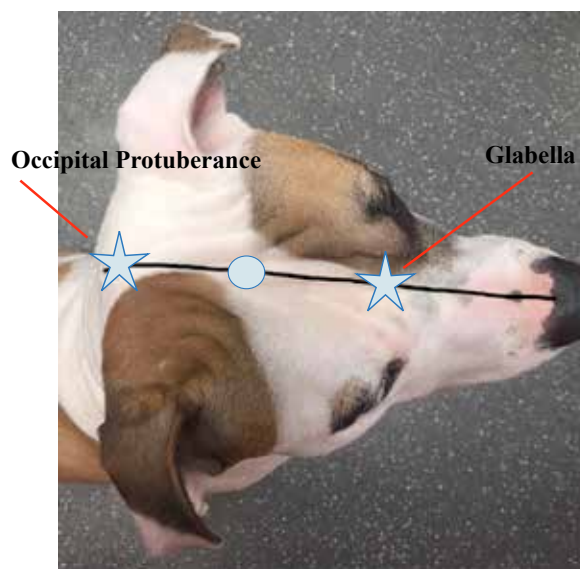


Figure 7: The anterior-posterior line runs along the centerline of the head. The midpoint of the line is halfway between the occipital protuberance and the glabella.

as water flowing into seas. Seas act as reservoirs and are distinguished by the substances that they store. For example, the brain is the Sea of Marrow (*Sui hai*). Sea of Marrow is needed for mental, physical and emotional functions. It increases strength and energy, physical activity and life span. When it is deficient, there will be vertigo, fainting and lethargy. Points to influence the Sea of Marrow are GV-20 and GV-16.^{1,2}

Theory of the Four Streets is another important concept in the treatment of disease via the scalp using TCM theory. The Four Streets are the pathways of *Qi*. The chest *Qi* has a pathway, the abdominal *Qi* has a pathway, and the lower leg *Qi* has a pathway. The fourth *Qi* pathway in the head terminates in the brain. In the theory of the

Four Streets, the brain connects with the internal organs, sense organs, and extremities through the *Qi* pathways and thus regulates those functions. Scalp acupuncture areas provide places to achieve homeostasis of the mind, emotions, and body because the brain is the place where the *Qi* of the head accumulates.^{1,2}

The theory of Root (pathogenic factor) and Branch (symptoms/signs) also has a place in scalp acupuncture. The Root and Branch refer to terms in channel and network vessel systems. The Root is the place where the channel *Qi* accumulates while the Branch is where the channel *Qi* distributes. Acupoints on the head, face and trunk are on the upper part of the body and are considered the Branch. On the four extremities, acupoints below the

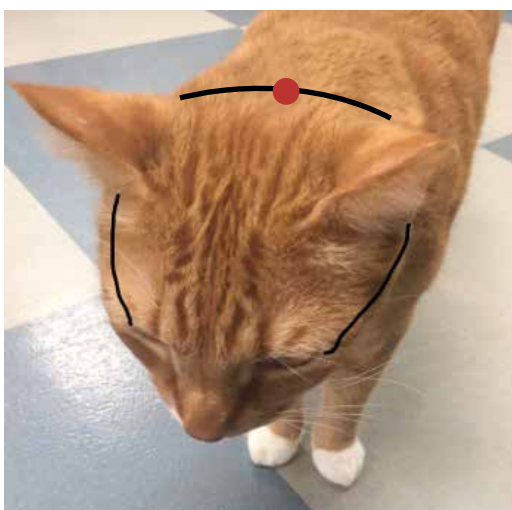


Figure 8: Line which marks most distal aspect of motor line; runs from the most caudal aspect of eyebrow (TH-23 area) horizontally to occipital protuberance (red dot).



Figure 9: The Motor Area is on the part of the scalp that corresponds to the precruciate gyrus of the frontal lobe in the cat with extension into the postcruciate gyrus of the parietal lobe in the dog.



Figure 10: Needle insertion along the upper 1/5 of the motor line. This treats contralateral lesions in the rear legs, trunk, spinal cord, and neck

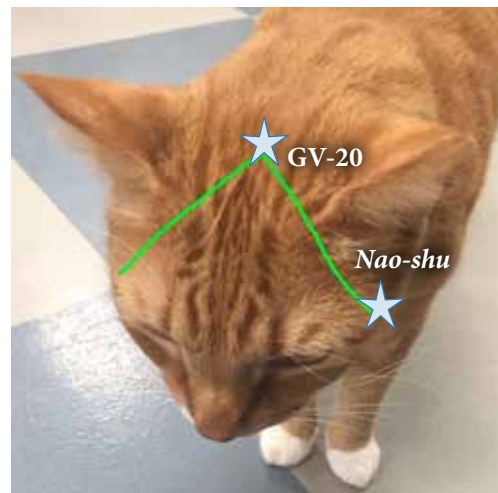


Figure 11: The Sensory Area is located over the post-cruciate gyrus just caudal to the Motor Area in the parietal lobe.

elbow or knee are located on the lower part of the body and are considered the Root. Acupuncture points on the head can treat disorders in the extremities according to the Four Seas theory. Based on Root and Branch theory, points on the extremities can treat disorders in the head.^{1,2}

There are eight locations of Branch distribution in the head. The BL Channel reaches the eye, the GB Channel in front of the ear, the ST is around the throat, the SI is above the medial canthus of the eye, the TH is above the lateral canthus of the eye, the Large Intestine (LI) is at the forehead, the Spleen (SP) is at the root of the tongue, and the Kidney (KID) is at the side of the tongue.¹

In the Yellow Emperors Classic of Internal Medicine-Spiritual axis it is said “When *Qi* in the upper part of the body is deficient, there may be lightheadedness, tinnitus, loss of balance, dizziness, and blurred vision.” Mental processes like memory, language, vision, hearing, and smell are controlled by the brain. Scalp acupuncture, therefore, can treat disorders of memory, speech, vision, smell, and taste.¹

LOCATION AND INDICATION FOR SCALP ACUPUNCTURE TREATMENT AREAS

Areas to stimulate in scalp acupuncture are projections of regions of the brain onto scalp locations. Scalp areas have the property of transporting energy to and from the brain, much like Back *Shu* points. By way of the central nervous system and endocrine systems, the structural, metabolic, hormonal, and energetic functions of the brain are accessible at specific areas of the scalp surface. The areas located directly on the scalp surface bearing the same name as those in the brain derive their function from their neurophysiologic functions rather than their channel affiliations.¹

Two lines need to be established, the AP line and the horizontal line. The AP line runs along the centerline of the head. The midpoint of the line is halfway between the occipital protuberance and the glabella (Figure 7). The horizontal line runs along the sides of the head from eyebrow area to the occipital protuberance. Where the line intersects the most lateral portion of the eyebrow (TH-23) defines the lower point of the motor area (Figure 8).

Motor Area

The motor area (MA) in humans is located on the scalp that corresponds to the precruciate gyrus of the frontal lobe (Figure 6a). It is located 0.5 cm posterior to the midpoint of the head (halfway between the glabella and occipital protuberance) along the AP line (approximately GV-21). It runs obliquely to the horizontal line and ends near TH-23.

In the dog, the motor area is within the pre- and post-cruciate gyri, with the majority in the postcruciate gyrus and the supplemental motor cortex in the precruciate gyrus (Figure 6b).¹⁰ In the cat the primary motor area is in the pre-cruciate gyrus and the supplementary zone is cranial

to that.¹¹ The motor zone for both species corresponds to the GV-21 area and extends obliquely to TH-23 area (Figure 9). Using acupuncture points for landmarks helps to accommodate for anatomical skull differences between species and breed types. The motor area controls and adjusts intersectional body movements. One side of the cortex controls the contralateral muscles below the neck. Most head and face muscles are controlled bilaterally, although in clinic, the author uses ipsilateral side for a unilateral head/face issue and both sides for a bilateral issue.

The motor gyrus is a reverse homunculus. The upper part of the gyrus controls the upper limbs, the lower parts control head and face movement. With this in mind, the motor area is divided into fifths.¹ For the purposes of scalp acupuncture, they are put into three groups; the Upper 1/5, Middle 2/5, and Lower 2/5. The “Upper 1/5” is used to treat contralateral dysfunctional movement of the hind legs, trunk, spinal cord, and neck (Figure 10). The “Middle 2/5” region is used to treat contralateral dysfunctional movement of the front legs and the “Lower 2/5” region is used to treat bilateral dysfunctional movement of the face and head. Needle placement is generally performed from the upper part of the area downward.

Indications for MA treatments are paralysis or weakness in the face, trunk or limbs by stroke, trauma, acute myelitis, progressive myelopathy, spinal cord injury and traumatic brain injury. For example, in a patient with paralysis of the right leg and foot, needles would be inserted into the left motor area.

Sensory Area

In humans, the sensory area (SA) is located over the post-central gyrus of the parietal lobe and lies parallel to and 1.5 cm posterior to the motor area (Figure 6a).¹ The dog’s sensory area is also located in the parietal lobe and lies parallel and caudal to the motor area and extends over the rostral suprasylvian gyrus (cat over post cruciate gyrus) of the parietal lobe (Figure 6b).^{9, 10, 11} This corresponds to a line from just posterior to the motor line (GV-20 area) to a point lateral to the eye and dorsal to the zygomatic arch (*Nao-shu* area) (Figure 11). This area controls and adjusts sensations on the opposite side of the body below the neck with sensations of the head and face bilateral and is represented as an upside-down homunculus. Indications for SA needling are abnormal sensations of the face, trunk, and limbs that are hypersensitive or hyposensitive. This would include pain, tingling, numbness, and loss of sensation on the contralateral side of the body.

The SA is divided into three regions with same proportions as the motor area. They affect the contralateral side of the body. The “Upper 1/5” is used for treatment of the hindlegs, back, chest and neck. The “Middle 2/5” is for treatment of the front legs and “Lower 2/5” is used for issues in the face and head.¹ Needle placement is similar to motor and is from the upper part of the area downward.

Balance Area

The balance area (BA) is located over the cerebellum. In humans, it starts on a horizontal line at the level of the occipital protuberance, 3.5 cm lateral to the occipital protuberance, and runs 4 cm inferiorly. It is needled bilaterally and from the top down. It is indicated for cerebellar strokes and ataxia due to traumatic brain injury. In animals, the BA begins approximately 2 cun below the occipital protuberance, 1.5 cun lateral to the anterior-posterior line (GB-20 area) and extends caudally approximately 2 cun (cervical vertebrae 3 area) (Figure 12).

Foot and Motor Sensory Area

The foot and motor sensory area (FMSA) is another commonly used area in scalp acupuncture. It has both motor and sensory effects. In humans, it runs 1 cm lateral to the AP line beginning at the AP midpoint and extending 4 cm posteriorly. It is located in the foot area of the homunculus. This area is used for a variety of symptoms. It is usually needled bilaterally either from the front part of the area toward the back or vice versa. The easiest direction is front to back. Indications for use are paralysis of the leg or foot and pain in the legs and feet (from peripheral neuropathy, plantar fasciitis, fibromyalgia, reflex sympathetic dystrophy, etc.). In animals the FMSA begins 0.5 cun lateral to GV 22 and extends posteriorly 1.5 cun over the pre-cruciate gyrus (BL-7/BL-8 area) (Figure 13).

Internal Organ Areas

These areas are located at the front of the head. This

area is not often used because traditional body acupuncture produces excellent results in animals.

SCALP ACUPUNCTURE TREATMENT TECHNIQUES

Local Palpation of the Head

When flow of Blood and *Qi* is stagnated, there can be tenderness palpated on the scalp. Stimulated areas on the scalp can be used for both diagnosis and treatment; therefore, palpating areas of unusual activity can lead to disturbances within the associated areas of the brain. Pain generally indicates an acute condition, while dull ache corresponds to a chronic one. Tender areas on the scalp can indicate structural or functional changes in the brain. Of the 46 points generally used in TCM for scalp acupuncture (Table 2), 26 have a close relationship with location, function, and indication for areas of scalp acupuncture.

Needle Description and Insertion Techniques

The most commonly used needle size in humans is #30-#36 gauge, 1 to 1.5 inches long. The practitioner assumes *Tai Ji* posture, standing with feet spread to a shoulder-width distance apart with relaxed shoulders and elbows. The body position is one with an open chest and contracted abdomen, which allows practitioners to have *Qi* flow freely. Needle insertion is with two hands. The needle is placed in the loose areolar tissue beneath the epicranial aponeurosis and above the pericranium at 15-25 degrees to the skin (Figure 4). The entire length of the needle is in the loose areolar tissue. Using an improper angle results in pain. It may be beneficial to use a needle in *Shen Men* for relaxation prior to the insertion of scalp needles.

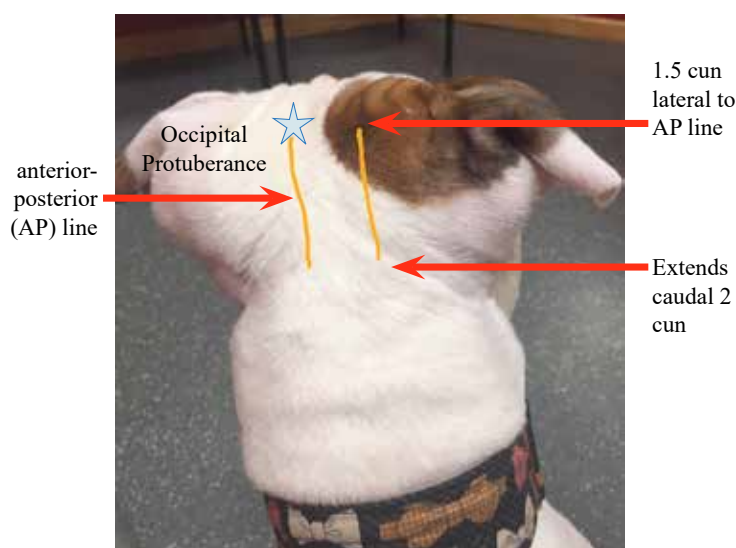


Figure 12: Location of the balance area (BA); In animals; it begins approximately 2 cun below the occipital protuberance, 1.5 cun lateral to the anterior-posterior line (AP) and extends caudally approximately 2 cun.



Figure 13: Foot and Motor Sensory (FMSA) area runs parallel to the AP line. It begins 0.5 cun lateral to GV-22 (star) and extends posteriorly 1.5 cun over the pre-cruciate gyrus (BL-7/BL-8 area).

Numerous needling methods have been described; Triple, Adjacent, Parallel, Opposing, Crossing, and Relay.¹ In the “Triple technique”, three needles are inserted to one point: one in the center and two on the sides. It is most used in the lower 2/5 of the motor area for hand paralysis. The “Adjacent technique” involves inserting one needle in the appropriate area first and the second inserted with its tip near the first needle. In the “Opposing technique”, one needle is inserted at the beginning of the stimulated area along the area line. The other is inserted at the opposite end of the area, towards the first. The tips of the needles do not touch. It is used in the Foot and Motor as well as the Sensory Area. In the “Parallel technique”, two or three needles are inserted parallel to each other. It is most often used in the BA, FMSA, MA and SA for patients with movement and sensation disorders. In the “Crossing technique” needles are crossed under the skin.

In the “Relay technique” the second and third needles are inserted after the first needle in a staggered fashion. It is used for paralytic conditions of the upper and lower limbs so the entire motor area can be stimulated quickly. The “Penetrating Technique” uses needles that tunnel under the area to be treated. It allows one needle to cover a very large area. “Contralateral technique” is when needles are placed on the right side of the body when the disorder is on the left side of the body, most often used for hemiplegia, pain and abnormal sensation due to stroke.

Manipulation of the needles can be done a few ways. They can be rotated and twirled between the index finger and the thumb in both directions. It should produce about 200 revolutions per minute. The needles can be rotated one or two turns in each direction every ten minutes for two to three minutes. Alternatively, the needles can be lifted and thrust 2-3 mm every ten minutes for two to three minutes.

Electrical stimulation is very beneficial when doing scalp acupuncture. Pairs of needles should be used in the same scalp area. Frequencies of 100-150 Hz should be used for the SA while other areas use 4-30 Hz (approximating 200-400 turns/minute). Stimulation should be done for 10-20 minutes.

When needles are placed *De Qi* is sought because it has been correlated with success of treatment. The needles are stimulated for 2-3 minutes and re-stimulated every ten minutes for an average treatment time of 30-45 minutes. Two or three treatments per week are done initially. Others have used ten sessions at intervals of five to seven days. Most patients respond to the initial treatment and show improvement in the first three treatments. There is a reported overall response rate in humans of 80%.¹ Risks of treatment include bleeding at the needle site (more so than when acupuncture points are used on the body), stuck needles, and hematomas.

Practical Clinical Applications of Scalp Acupuncture

Common indications for use of SA in clinical practice is for paralysis/motor dysfunction and spinal/

limb pain. Treating individuals for paralysis particularly when used in combination with body acupuncture can greatly improve clinical case results. When needling paralyzed animals, choose the opposite scalp motor area from the paralyzed limb. Use the Upper 1/5 area to treat contralateral dysfunction on the hindlegs, trunk, spinal cord, and neck. It is recommended to treat 2-3 times weekly until major improvements are seen, then once weekly, then every two weeks for a total of 10 treatments.

Patients treated for limb and spinal pain should be needled in the upper 1/5 of the Sensory area as well as the upper 1/5 of the foot motor and sensory area. Consideration should be given to using extra points for calming *Shen* as patients can have anxiety with chronic disease. Depending on the location of the discomfort, a patient should be needled bilaterally. Secondary zones or points could be chosen based on the TCM diagnosis. The needles should be rotated 200 times per minute for two minutes, repeated every ten minutes or electro-acupuncture stimulation used. Treatment times should be 10-20 minutes. Recommended treatment interval is two to three times weekly for two weeks, then weekly for a total of about ten treatments.

CLINICAL CASE EXAMPLES

Case 1

Signalment: 10-year-old Labrador mix with a 2-month history of intermittent left front limb lameness

Initially responsive to carprofen^a, tramadol^a, and gabapentin^a. Eventually the dog became unresponsive to those medications. Radiographs by the primary care veterinarian were normal. On presentation, pain was localized to the low left cervical spine. Neurologic localization was C6-T2.

Body acupuncture points were used in addition to the right scalp sensory zone, middle 2/5, with 3 needles^b in relay fashion (32 gauge x 1 inch). Needles were left in place for 15 minutes, with 100 Hz continuous frequency electrical stimulation. Due to travel limitations, treatments were performed weekly for 6 weeks, then every other week for 4 more treatments. The lameness initially improved, then worsened after 3 weeks of treatment. An MRI was performed after the third week of treatment which revealed a nerve sheath tumor on the spinal nerve of C7. Pain level of the dog was managed with scalp acupuncture every 2 weeks to provide quality of life for 6 more months until euthanasia due to tumor burden.

Case 2

Signalment: 8-year-old German Shepherd with 6-month history of gradual hind limb weakness/ataxia.

The dog had a history of gradual rear limb weakness and ataxia over a 6-month period which was unresponsive to both corticosteroids and non-steroidal medications.

Neurologic examination revealed weakness, loss of muscle mass, conscious proprioceptive deficits, and normal reflexes in the rear limbs. A localization of T3-L3 was made, with a presumptive diagnosis of chronic intervertebral disc disease or degenerative myelopathy. No further diagnostic testing was desired.

Body acupuncture points were used in addition to scalp acupuncture. Three needles^b (32 gauge x 1 inch) were placed in relay fashion in the upper 1/5 of each motor zone, a single needle was placed in the most cranial aspect of both balance areas as well as the most dorsal aspect of the foot and motor sensory areas. Needles were left in place for 15 minutes, with 10 Hz of alternating cycle stimulation applied to the Motor Area needles. Because of travel limitations, treatments were performed weekly for 6 weeks, then every 2 weeks for 4 more treatments followed by monthly sessions. The animal's mobility and quality of life was extended for an additional 19 months until euthanasia.

SUMMARY

Scalp acupuncture is a contemporary acupuncture technique that integrates traditional Chinese needling methods with Western medical knowledge of representative areas of the cerebral cortex. It is effective for treating both acute and chronic central nervous system (CNS) disorders with just a few needles resulting in marked improvements. Review of brain and scalp anatomy, as well as scalp point location is essential in properly performing optimal scalp acupuncture technique. When compared to conventional medical techniques, scalp acupuncture technique entails less risk, is more easily accessible, less expensive and can yield quicker responses with fewer side effects. It is a robust modality which can be used as a stand-alone treatment, as part of an integrative medicine protocol, or combined with TCM pattern diagnoses with accompanying traditional body acupuncture point prescriptions.

Declaration of Interest

The author declares that there is no conflict of interest that could be perceived as prejudicing the impartiality of this paper.

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FOOTNOTES

^a Carprofen, tramadol, gabapentin; generic medications, multiple distributors. USA

^b Dr. Xie's Jing Tang Herbal Inc, Reddick FL USA

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