

# The Treatment of Occipital Lobe Injury

## With Acupuncture and Traditional East Asian Medicine

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### The Occipital Lobes – Functional Overview

The occipital lobes are composed two basic subsections, the primary visual cortex and the visual association area. Simple and complex visual and central/foveal analysis is one of the main functions associated with the occipital lobe, however neurons also to a number of modalities including vestibular, acoustic, visual, visceral, and somesthetic input. These are subdivided into 4 visual cortices. The primary visual cortex, also called V1, is located predominantly within the medial walls of the cerebral hemispheres and is concerned with the elementary aspects of form perception transforming information from the retina and lateral geniculate nucleus into a basic code that enables visual information to be extracted by later stages of processing. It is particularly specialized in processing spatial information such as static and moving visual stimuli, colors, and pattern recognition, though the information coming into V1 from the retina is coded as an edge detection rather than discreet optical imagery. A spatial mapping of the subjective visual field and a given location in V1 is very precise, to where even blind spots are mapped into it. This is the oldest visual portion of the brain and is found in most mammals.

From the primary area information is then relayed to the association areas, brodmann's areas 18 and 19, where complex analysis including form recognition, position and analysis of depth take place. Within the visual association area are 3 subsections, the first of which is the prestriate cortex, or V2, which receives strong connections from V1 and like V1 neurons are tuned to simple properties such as orientation, spatial frequency, size and color. In addition to further processing these, V2 neurons also process more complex properties like orientation of illusionary contours, discrepancies between visual input from the two eyes, whether objects are part of the foreground or background and a small amount of attentional modulation. The deepest layer of this area has been found to play an important role in the storage of object recognition memory and the conversion of short-term object memories into long term memories.

The third visual complex, or V3, is located immediately in front of V2. There is some discrepancy in labels and some subdivide this area even further into dorsal, ventral, V3A, and V3B. The dorsal V3 region receives input from V1 and V2 and may play a role in global or coherent motion of large patterns. The ventral V3 region has weaker connections from V1 and is more connected with the inferior temporal cortex.

Visual area four, or V4, receives strong input from V2 and some input from V1 and seems to be the first brain region to show strong attentional modulation and selective attention. Similar to V1, V4 responds to orientation, spatial frequency and color, however it also processes more complex features such as geometric shapes. It does not however process highly complex objects such as faces, which is processed in the inferior temporal lobe. V4 is believed to be the main color center in the brain due to lesions resulting in lack of color vision.

Visual area 5, or V5, or MT, is located in the extrastriate cortex and is specialized for assessing movement of objects. 90% of cells in this region respond to only a single direction of movement and will not respond if movement is in the opposite direction. Damage to this area of the brain can cause an inability to gauge movement or speed and perception may seem like a series of pictures rather than a fluid experience.

Once visual information has been processed by the occipital lobe it is next relayed to area 7 in the parietal lobe and to the inferior temporal lobule, where higher order analysis and multimodal processing occurs. Damage to the parietal-occipital borders may result in abnormalities involving depth and form perception as well as visual neglect. Destruction of the temporal-occipital regions can give rise to visual agnosias and an inability to recognize complex objects and faces.

The occipital lobes also appear to be lateralized in regard to certain capabilities such as facial recognition. For example, destruction of the right occipital region is associated with prosopagnosia, and abnormal activity in this area is more likely to give rise to complex visual hallucinations.

## The Occipital Lobes – Pathology & Symptoms

Cortical Blindness	Prosopagnosia (Face Blindness)
<p>Occipital lesions, especially of the entire visual cortex</p> <p>Symptoms: -Ability to discriminate only between different fluxes in luminous energy, i.e. lightness and darkness</p> <p>If restricted to only one hemisphere, patients will lose patterned vision for the opposite half of the visual field (i.e. a hemianopsia). If only part of the visual cortex is damaged, vision loss is only in the corresponding quadrant of the visual field (scotoma). In cases of partial cortical blindness, patients are able to make compensatory eye movements and are not terribly troubled by their disability. Frequently patients have no awareness that they have lost a quadrant or even half of their visual field. Hence, this must be tested for.</p>	<p><b>Right temporal-occipital region:</b> -Severe disturbance in the ability to recognize the faces of friends, loved ones, or pets -Discriminate and <u>identify</u> even facial affect -May not recognize themselves in the mirror</p> <p><b>Inferior and middle temporal lobe:</b> - loss of the ability to recognize faces -Disturbances in visual discrimination learning and retention -Visual closure difficulty &amp; recognizing different shapes and patterns and objects which differ in regard to size or color</p> <p><b>Posterior right temporal gyrus:</b> -Disrupts visual-spatial memory for faces in general -Inability to correctly label emotion faces.</p>

Visual Agnosia	“Blind Sight”
<p><b>Apperceptive visual agnosia:</b> parietal occipital cortex or bilateral damage to the inferior-occipital cortex -disturbance in perceptual and visual-motor integration (difficulty copying or matching various objects, failing to draw the <u>complete</u> object). Trace but will not be able to recognize where they started. Cannot synthesize visual details into an integral whole, recognizing only isolated details. If unnecessary lines are drawn across the <u>picture</u>, the ability to recognize the object deteriorates even further.</p> <p><b>Associative visual agnosia:</b> left inferior &amp; middle temporal (area 37) occipital abnormalities; parietal occipital cortex. -deficit in naming, such that auditory equivalents cannot be matched to a visual perception (may also have <u>alexia</u> – inability to read)</p> <p><b>Simultanagnosia:</b> bilateral superior occipital lobe lesions; superior occipital-parietal region (area 7) - inability to see more than one thing, or all aspects of an item, at a time</p>	<p>Visual preservation following primary visual cortex (V1) lesions has been referred to as "blind sight". Although blind, these patients may avoid obstacles, and correctly retrieve desired objects, and thus appear to have some residual visual functions even though they verbally claim no conscious awareness of sight.</p> <p>This may be due to the preservation of intact subcortical nuclei involved in visual orientation, i.e. area V5.</p> <p>In cases of occipital lesions, complex visual input may still reach the temporal lobe, and may therefore be directed to the auditory areas via a secondary route so that associated "feelings" of seeing something can be communicated, and objects can be named, although the patient continues to deny visual perception.</p>

Impaired Color Recognition	Denial Of Blindness
<p>While sometimes able to correctly name objects ; they cannot correctly name, match, and <u>identify</u> or point to <u>colors</u>. Frequently also display prosopagnosia.</p> <p>-23% of those with right cerebral damaged and 12% of those with left sided destruction had trouble with color matching. -Some note impairments of color perception are frequently secondary to bilateral inferior occipital lobe damage. -Almost 50% of those with aphasia demonstrate deficient color naming and color identification.</p>	<p>People with cortical blindness seem initially quite confused, indifferent regarding their condition, and report a variety of hallucinatory experiences which may be complex or elementary in form. Frequently these patients will initially deny they are blind and confabulate (Anton's syndrome).</p> <p>It is possible they deny being blind because subcortically they are still able to see. Hence, although at a neocortical level there is no sight, subcortically there remains an unconscious awareness of the visual world.</p>

## Visual Hallucinations

When portions of the temporal lobe or occipital lobe are damaged, disconnected from sources of input, or compromised in some fashion, the ability to store information and to draw visual-verbal mnemonic imagery from memory is severely attenuated. When artificially or abnormally activated it sometimes occurs that visual-auditory imagery as well as a variety of involuntary emotional reactions. These may take the form of complex hallucinations, dream-like states, confusional episodes, or may involve the abnormal attribution of emotional significance to otherwise neutral thoughts and external experiences.

Hallucinations may occur secondary to tumors or seizures involving the occipital, parietal, frontal, and temporal lobe, or arise secondary to toxic exposure, high fevers, general infections, exhaustion, starvation, extreme thirst, and with partial or complete blindness such as due to glaucoma. Individuals suffering from cortical blindness, i.e. Anton's syndrome, frequently experience hallucinations.

In general, hallucinations secondary to loss of visual or auditory input appears to be secondary to the interpretation of neural noise. That is, with loss of input various brain regions begin to extract or assign meaningful significance to random neural events, or to whatever input may be received. Conversely, hallucinations can occur due to increased levels of neural noise as well. For example, those neurons that subservise facial recognition, and word recognition, and object recognition, may become simultaneously activated--as well as all associated memories--and in consequence, the brain attempts to interpret what it experiences. In the primary regions, neural noise is given a simple interpretation (simple hallucinations), whereas in the association and multi-associational areas, the individual begins to hallucination secondary to "feature detector" activation, such that they may see faces, chairs, trees, hear voices, music, and so on, all of which is experienced as a mosaic of something real.

With anterior and inferior temporal abnormalities, the hallucinations become increasingly complex consisting of both auditory and visual features, including faces, people, objects, animals, etc. and therefore, give rise to the most complex forms of imagery because cells in this area are specialized for the perception and recognition of specific forms. Moreover, structures such as the amygdala and hippocampus become activated and in consequence, memories and emotions may also be evoked, such that the experience may also become personally meaningful and include real individuals and real events that are produced from memory.

### Middle Temporal Lobe

Tumors or electrical stimulation: associated with the development of auditory and visual hallucinations, dreamy states, and alterations in emotional functioning--particularly as the lesion encroaches on the inferior regions.

### Occipital Lobe

#### Striate Cortex (V1, Brodmann's area 17)

simple visual hallucinations such as:

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| -Sparks  | -Blurred in terms of outline                       |
| -Tongues of flames   | -Stretched out in a single dimension               |
| -Colors and flashes of lights  | -Colors may become modified or even erased         |
| -Objects may seem to become exceedingly large (macropsia) or small (micropsia) | -Sometimes simple geometric forms may be reported. |

Laterality: can be either hemisphere. Usually the hallucination is restricted to the contralateral half of the visual field. (seizure in the right occipital lobe results in the hallucination appearing in the left visual field.)

#### Visual Association Areas (brodmann's Areas 18 & 19)

complex visual hallucinations such as:

- |   |  |
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| -Images of men or animals   | -Objects may seem to become telescoped/far away, or, when approached, objects may seem to loom and become exceedingly large. |
| -Various objects and geometric figures                            |  |
| -Liliputian-type individuals, including micropsias and macropsias |  |

Complex hallucinations are usually quite vivid and fully formed and the patient may think what he sees is a real. Although usually associated with tumors or abnormal activation of the visual association area, complex hallucinations have also been reported with parietal-occipital involvement, occipital-temporal, or inferior-temporal damage, or with lesions of the occipital pole and convexity.

Laterality: complex hallucinations are usually associated with right rather than left cerebral lesions.

## East Asian Medicine: A note on the “mystery” of the medicine

The foundations of East Asian medicine are quite different from those of Western biomedicine. While both are approaching the same physical body and the same occurrences therein, the lens through which disease is looked at varies significantly. Both The formation and development of East Asian medical theory was greatly influenced by ancient Chinese philosophy and much of the unique terminology that is still used is reliant on metaphor and what borders on poetic descriptions of systemic effects and functions rather than the compartmentalization of individual pieces and their actions. East Asian medicine is a functional, systems-based medical paradigm, which basically means it is looking at all parts of the body and how they are interacting, influencing each other and where normal function has gone awry. Due to the difference in phrasing and cultural perspectives there has developed an air of mystical components which may deter individuals from looking any farther into it despite a significant amount of literature supporting not only that it is effective, but also, how it is doing so.

Terms such as “Yin” and “Yang” which are still used in almost all texts were used from observation that objects or phenomena in nature, the human body included, as broad concepts consisted of two opposite yet interdependent relative properties. An example of this can be thought of in the body as the sympathetic (fight/flight response) and parasympathetic (rest/digest) nervous system which are opposite functions with which the dynamic of the two regulate the body. This sort of dynamic however is involved on multiple levels of scale from the cellular to organ systems and hormone secretions. Yin generally is referring to the more substantial or dense components of something, in the above example, the parasympathetic system, and Yang to the more motive and functional properties, the sympathetic nervous system. These phenomena being in a state of constant change between them based on external and internal stimuli.

East Asian medical practitioners held that the natural world was integrated into the human body and phenomena in the body reflected that which was found elsewhere in nature. Thus, diseases were viewed as and named after imbalances found elsewhere in nature - conditions were described as “dampness” or “heat” disorders. These can be brought into a modern Western context with a thorough understanding of the intended meaning, dampness loosely being correlated with things such as poor water metabolism and heat as febrile diseases and inflammation. The term “Qi” is one of the terms most shrouded in mystery within the medicine's lexicon and alone is likely the biggest hindrance to it's larger use and integration into the medical institutions. It is a sticky one, and multiple books have been dedicated to exploring this word alone. The foundational tenant that the body has an animating force which “flows” throughout and when it is obstructed one's health degrades is not built into biomedicine and yet there are still a number of functions within the body that sound much like the descriptions of “Qi” in traditional texts. I often use “intelligent metabolism” taken from Daniel Keown<sup>4</sup>, a western medical doctor and East Asian medicine practitioner, to try to keep it's broad meaning but use terms a little more palatable to the western lens. In it's essence it seems to correlate with most functional units of the body including ATP production (which is directly effected by acupuncture and cited later), action potential of the nerves, hormone secretions and means of intercellular communication among others.

The East Asian medical views of the body are in line with modern anatomy, however the terminology of the internal organs differ in meaning from conventional definition, conveying a generalization of the physiological functions. The channel or meridian doctrine is also heavily emphasized in East Asian medical theory and are essentially the pathways of information, energy, blood and fluid circulation which extend throughout the body, and have remarkable correlations to a component often given little emphasis in biomedicine – the fascia – which extends along trajectories from the tips of the fingers through the limbs and surrounding all internal organs much the way the meridian pathways are described. A thorough comparison between the fascia of the body and the meridian descriptions and organ system associations reveals a significant overlap and would likely change many minds the use of acupuncture.<sup>5</sup> Acupuncture is a means of stimulating and eliciting a bioelectrical and biochemical response along these trajectories to restore proper functioning throughout the body.

## Acupuncture Actions on the Brain Following Injury:

East Asian medicine practitioners differentiate and classify aspects of brain injury into different syndromes or patterns according to their clinical symptoms. Traumatic brain injury is said to risk rupture of the integrity of the body's natural protection system, permitting the invasion of external disease, leaking of essential intelligent metabolism, energy, blood and fluids and introducing blood extravasation. All of these will directly disturb normal intelligent metabolism, blood circulation and induce pain. It is not hard to extrapolate these descriptions into relating to the blood-brain barrier, inflammation, and tissue and nerve damage. Traditionally the brain performs thinking and memorization functions, however physicians attributed the heart as the organ which regulates the whole system, superseding the mental activity of the brain. This may simply metaphorically reflect the large emphasis that was placed on emotional states and health, however, modern research in the field of neurocardiology has shown some interesting developments that lend some credence to this idea. The brain also is considered to be the "cleanest" organ within the body. Should it become polluted by trauma, the rest of the body becomes more prone to disease. After severe head trauma, these factors may affect the organ systems, blocking the "aperture of the Heart" - our emotional well-being and clarity- and hurting the body's primary force for life activities.

More and more evidence is supporting acupuncture's ability to stimulate and regulate the central nervous system and the brain. The release of endorphins within the system and produce an analgesic effect has been well documented. Acupuncture can also create the release of other chemicals and hormones, which influence the body's self-regulating systems and promote natural healing abilities. A 2010 study demonstrated acupuncture to effectively trigger a local increase in the extracellular concentration of ATP, ADP, AMP and adenosine, a key component in energy exchange in metabolic processes. By increasing ATP the body is better able to create not only a well-recognized analgesic effect but also contribute more usable energy and innate healing potential within the body. A recent study also demonstrated acupuncture's ability to increase glucose metabolism and improve cerebral blood flow in the brain areas related to cognition and memory by increasing the expression of glucose transporter 1 (GLUT1) which is involved in cellular respiration, regulation of glucose levels and vitamin C uptake. The laboratory results indicated that upregulation of GLUT1 by acupuncture alleviates ischemia and anoxia related cognitive impairment.<sup>7</sup>

Specific brain regions have also been shown by using fMRI techniques to be influenced by acupuncture points. Points were either activating, deactivating or regulating of different brain regions and specific points having influence in specific areas of the brain.<sup>8-10</sup> In a meta-analysis of fMRI studies done mapping areas of the brain influenced by acupuncture it concluded "Two third (64%) of 25 studies showed that acupuncture treatments were associated with more activation, mainly in the somatosensory areas, motor areas, basal ganglia, cerebellum, limbic system and higher cognitive areas (e.g. prefrontal cortex). Three studies showed also more deactivations in the limbic system in response to acupuncture."<sup>11</sup> The limbic system is associated with most of the body's emotional processing and acupuncture's regulatory effect on this region is likely the reason it can be helpful in mental-emotional conditions or concerns following a brain injury. An example of these brain region activations being point dependent was shown in a study that found the point KI-3, located posterior to the medial malleolus was shown to enhance connectivity between the superior temporal gyrus and postcentral gyrus, while GB-40, located anterior to the lateral malleolus, enhanced connectivity between the superior temporal gyrus and anterior insula.<sup>12</sup> These studies are limited however, and further research seems essential to create a thorough map of these influences.

A number of points have demonstrated by fMRI studies a correlation to brain activity in the occipital lobes<sup>10</sup>

Occipital Cortex:	GB-34 + GB-39
Occipital Lobe:	LR-3 left side
Occipital Gyrus:	ST-36 (ipsilateral effect), LI-4 right side
Middle Occipital Gyrus:	GB-37

Of interesting note, GB-37 is a point that has been specifically indicated for centuries to help with vision disorders and it has now been verified through fMRI to activate the middle occipital gyrus which directly processes visual information.

George Soulie De Morant,<sup>13</sup> notes indications for brain regions according to his extensive studies of the medicine in China prior to the communist revolution when much of the information was either politically streamlined or lost. According to his studies points that influence the occipital regions are as follows:

**Superior Occipital Lobe (affecting the instincts):** ST-37T-3, PC-6, LI-9, GV-22

**Inferior Occipital Lobes (affecting vision):** GB-12, GB-1, BL-1, BL-2

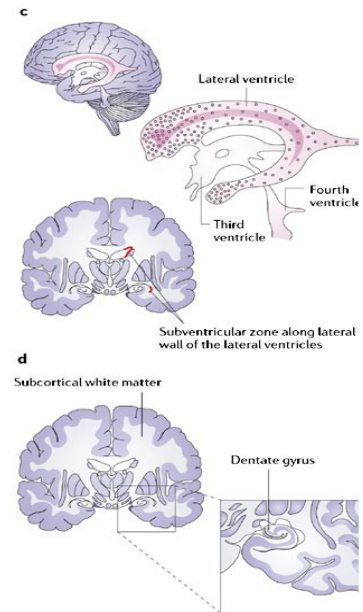
**Inferior Occipital Lobe and parietal, temporal and central lobes:** PC-6

**Temporal, Parietal, and Occipital Lobes:** PC-5

## Role of Acupuncture in Neuroplasticity and Neurogenesis:

Acupuncture has been shown to have a direct influence on neuroplasticity and neurogenesis within the brain. This is the ability to create new neural connections and even generate new nerve cells. Until recently it was thought that any neuron loss due to injury or aging in adults was permanent. It is now known that neural stem cells are still active in certain parts of the adult brain, the dentate gyrus of the hippocampus and the subventricular zones. In neurogenesis stem cells are capable of developing into all major types of neural cells: Neurons, astrocytes, and oligodendrocytes. While we now know this ability exists in adults it is at a significantly slower rate than in children.

A recent study showed that acupuncture induces cell and neuroblast differentiation in the hippocampus, providing evidence that it may be useful as a neurogenesis-stimulating therapy. There has also been a demonstrated effect on cAMP signaling, a transcription factor important in proliferation, differentiation, and survival of neural precursor cells, as well as regulating neurotrophic factor that supports the growth, differentiation and survival of neurons. The following acupuncture points have been shown to influence neuronal proliferation:



-ST36	-CV12	-GV8
-GV20	-CV6	-LI11
-PC6	-SP10	-SJ5
-HT7	-GV16	-GB30
-CV17		

One of the most studied and clinically used points among these is ST36, located on the superior tibialis anterior muscle. Simulation of ST36 is used for a wide range of conditions affecting digestive system, cardiovascular system, the immune system, the nervous system, and has been widely used for brain disorders. In addition to the above listed actions, ST36 upregulated the expression of neuropeptide Y, which promotes the proliferation of neuronal precursor cells and appeared to lessen the neuropathologic effects of stress in rats.<sup>14</sup>

A recent study examined the role of acupuncture on brain tissue after cerebral ischemia (loss of blood supply to an area of the brain). This study showed a greater proliferation and differentiation of neural stem cells in the brain and an ability to increase blood flow and decrease cell death. Two points on the head, GV-20 and GV-26, regulate cells which “increase the release of nerve growth factors (NGFs) to make nerve cells survive and axons grow, synthesize neurotransmitters, (and) metabolize toxic substances.” While the use of GV-20 and GV-14 increased neural repair after ischemic damage. These points also activate bodily self-protection and reduction of nerve cell death in and near the site of injury. Needling points along the midline of the torso, often referred to as the conception vessel, also showed to increase growth factors [basic fibroblast growth factor, epidermal growth factor and NGF messenger RNA] in the subventricular zones and dentate gyrus.<sup>15</sup>

## Pattern Differentiation: One Disease With Many Patterns and Treatments

In East Asian medicine theory a single disease can have multiple means by which it came to be or ways in which it occurs. In order to effectively treat, a thorough history of the person to determine exactly what symptoms are present and their inter-relation as well as verification of these by diagnostic tools should be done and treatment based on the findings. Each pattern has a different set of acupuncture points and/or herbal medicinals used. These may be complimented by points that have an effect on the effected area of trauma. You may also note that the same “pattern” can relate to multiple “diseases”. In this case the pattern treatment points would be similar but symptomatic points would vary. Here examples are given of common “patterns” found for the condition of dizziness or vertigo (traditionally “Xuan Yun”) as it provides relevant examples that can may correlate to symptoms or broader elements of occipital lobe lobe injury and resultant vision problems.

### Dizziness (Xuan Yun)

#### Liver Yang Rising Pattern

-Dizziness often with pounding or distending headache -Symptoms worse with emotional stress/anger -Irritability -Tinnitus -Blurred vision	-Dream-disturbed sleep -Insomnia -Flushed face -Red eyes -Bitter taste in the mouth
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One would typically find the person's tongue to be red with a scanty yellow coating. Their pulse may be wiry and rapid. The treatment approach would be to Settle the Liver, subdue Yang, nourish and supplement the Liver and Kidney, relieve dizziness and vertigo. Using this pattern as an example, common points used for this pattern would be LR-2/LR-3, BL-18, BL-23, KI-3, SP-6, GB-20 with a base herbal formula of Tian Ma Gou Teng Yin.

#### Phlegm Damp in the Middle Jiao

-Dizziness and vertigo -Heaviness of the head -Cloudy thinking -Poor concentration	-Nausea -Poor appetite -Sleepiness -Oppressive feeling in the chest -Obesity
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The person's tongue to would likely be white with a greasy coat. Their pulse may be soggy, slippery, and soft. The treatment approach would be to Strengthen the Spleen, harmonize the Stomach, dry dampness, resolve phlegm, relieve dizziness

#### Vacuity of Qi and Blood

-Positional dizziness and vertigo in mild cases. -In severe cases fainting is possible -Pale complexion, nails and lips -Fatigue -Shortness of breath -Disinclination to speak	-Palpitations -Poor memory -Insomnia -Loss of appetite -Often occurs during recovery from severe illness or severe blood loss
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The tongue would likely be pale. Their pulse may be weak and thready. The treatment principles would be to Strengthen Spleen and Stomach, supplement qi and blood, relieve dizziness and vertigo

#### Vacuity of Kidney Essence and Yin Pattern

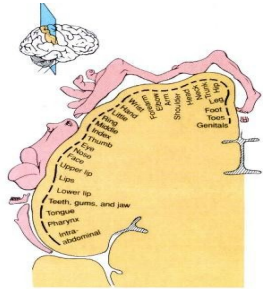
-Dizziness and vertigo that does not abate -Listlessness -Insomnia and/or dream-disturbed sleep -Poor memory	-Achy and weak low back and knees -Tinnitus -Heat in the palms and soles of the feet -Night sweating
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The tongue would likely be red with a scanty coat. Their pulse may be thin, rapid or wiry. The treatment principles would be to Supplement the Kidney, nourish Yin, relieve dizziness and vertigo.

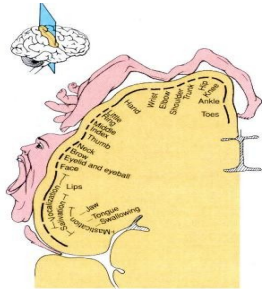
#### Vacuity of Kidney Essence and Yang Pattern

-Dizziness and vertigo that does not abate -Cold body and extremities -Listlessness -Poor memory	-Weak and aching low back and knees -Impotence -Tinnitus -Insomnia
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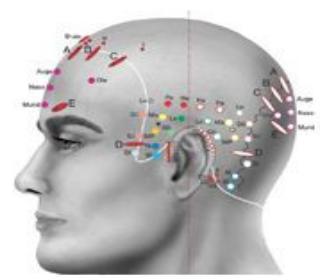
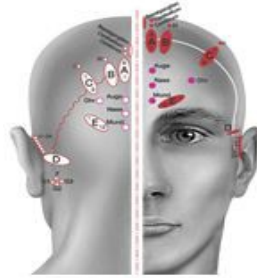
The tongue would likely be pale with a scanty white coat. Their pulse may be deep and weak. The treatment principles would be to Supplement the Kidneys, tonify Kidney Yang, relieve dizziness and vertigo



(a) Somatosensory cortex in right cerebral hemisphere



(b) Motor cortex in right cerebral hemisphere





## Scalp Acupuncture

Most acupuncture points are located on the trunk and limbs. However, the points over the head play an important place in brain injury management with acupuncture. Specific scalp acupuncture systems and protocols are a relatively newly development yet promising method to treat brain injury and its related symptoms<sup>17-19</sup>. Several scalp “systems” exist, including needling over the sensory-motor homunculi along the parietal and frontal lobes to increase both movement and sensory feedback. Often some immediate benefit can be found from this method. A system known as “Yamamoto New Scalp Acupuncture” has a system of reflex points located over the temporal region that have influence on the functional integrity of the internal organ systems.<sup>23</sup> Future research may be aimed at scalp acupuncture and its effects on the release of neurotransmitters and neurohormones.

### **Acupuncture Points located over the occipital lobes:**

Points physically located over the occipital lobes have a range of indications. Many are beneficial for disorders of the eyes, as well as other indications. Explanations of these uses can be found in the source texts.<sup>13, 20</sup>

**BL-9:** Occipital headache, pain from head wind that is difficult to endure, dizziness, pain of the neck with inability to turn head, heaviness of the head and neck, cold sensation in half of the head, cold head with copious sweating, red face, pain of the cheek, bursting eye pain, short-sightedness, nasal congestion, loss of sense of smell, chills and fever, bone pain with chills and fever, vomiting, madness, mad walking, epilepsy, collapse on sudden standing

**BL-10:** Dizziness, inability of the legs to support the body, sudden muscular contractions, pain of the body, pain and heaviness of the head, headache, head wind, stiffness of the neck with inability to turn head, pain of the shoulder and back, bursting eye pain, redness of the eyes, blurred vision, lacrimation, swelling of the throat with difficulty in speaking, nasal congestion, loss of sense of smell, febrile disease without sweating, mania, incessant talking, seeing ghosts, epilepsy, childhood epilepsy, upward staring eyes

**GB-19:** Headache, head wind, brain wind, one-sided headache and heaviness of the head, stiffness and pain of the neck with inability to turn the head, dizziness, redness, swelling and pain of the eyes, deafness and tinnitus, pain of the nose, nasal congestion, nosebleed, fright palpitations, mania-depression disorder, taxation disorders with emaciation, heat in the body

**GB-20:** Headache, head wind, one-sided and generalized headache, dizziness, visual dizziness, hypertension, hemiplegia, deviation of the mouth and eye, goitre, lockjaw, insomnia, loss of memory, epilepsy, loss of speech following windstroke, injury by cold without sweating, chills and fever, warm febrile disease with absence of sweating, malaria, throat painful obstruction, swelling of the face, urticaria, redness and pain of the eyes and inner canthus, blurred vision, lacrimation (esp. with exposure to wind), night blindness, dimness of vision, nosebleed, rhinitis, nasal congestion and discharge, deafness, tinnitus, blocked ears, stiffness and pain in the neck with inability to turn the head, pain of the shoulder and upper back, pain in the lumbar spine, crooked lumbar spine leading to flaccidity and lack of strength in the sinews of the neck

**GV-16:** Heaviness of the body with aversion to cold, cold shivering with sweating, swelling and pain of the throat, wind painful obstruction, all types of wind disease, headache, head wind, the hundred diseases of the head, visual dizziness, dizziness, blurred vision, nosebleed, upward staring eyes, sudden loss of voice, sudden inability to speak following windstroke, flaccid tongue with inability to speak, windstroke, numbness of the legs, hemiplegia, hypertension, mania, incessant talking, mad walking and desire to commit suicide, sadness and fear with fright palpitations, difficulty in breathing, heat in the chest, ceaseless vomiting, jaundice, pain of the neck with inability to turn the head, stiff neck

**GV-17:** Heaviness of the head, head wind, aversion to wind in the head, wind dizziness, swelling and pain of the head, pain of the face, red face, stiffness and pain of the neck, dimness of vision, short sightedness, eye pain, excessive lacrimation, yellow eyes, jaundice, mania, epilepsy, clonic spasm, lockjaw, loss of voice, bleeding from the root of the tongue, goitre, chills and fever, sweating, pain in the bones

**GV-18:** Headache, dizziness with agitation, nausea and vomiting of foamy (watery) saliva, stiffness of the neck with inability to turn head, epilepsy, shaking of the head, mad walking, insomnia, mania-depression, clonic spasm

**GV-19:** Stiffness and pain in the head and neck, one-sided headache, pain of the vertex, wind dizziness, aversion to wind and cold, painful obstruction with sweating, mad walking, insomnia, epileptic convulsions

## Discussion

The treatment of frontal lobe injury with acupuncture and East Asian medicine is as individualized as the person who sustained the injury. Many factors are taken into account beyond site of injury, also taken into account are the primary symptoms and underlying states of the person's body and mind. All of these are considered and then prioritized and formed into a treatment plan that is always evolving based on any progress made. In this way acupuncture and East Asian medicine has much to offer in the treatment of frontal lobe injury and more broadly, traumatic brain injury. While there are points that have been indicated for, or demonstrated to influence the frontal lobes specifically and fMRI imaging is allowing these to be known with more specificity and precision, a significant amount of research still remains to be done in this capacity to realize the extent to which this approach can be used.

Only a small number of points have been tested and they should additionally be tested in both healthy individuals and those with a known brain injury to determine if there is significant differences as a recent study showed the effect on points for insomnia activated brain regions that were wider, larger and with greater intensity in those who were sleep-deprived versus those well rested.<sup>22</sup> Additionally studies should be done over time to determine the extended effects on injured regions using these points. Until such time much of the treatment must be based off of physical and cognitive symptoms which is how East Asian has been used for thousands of years and thus able to work quite well under these circumstances.

The development of East Asian Medicine is based on the empirical experience on clinical applications of natural products and acupuncture. Acupuncture has been used effectively for at least 3,000 years and has accumulated rich clinical application experience. Although there are increasing number of patients and physicians in the United States and other Western countries accepting acupuncture as a complementary form of medical treatment, there have been no large-scale, well-controlled studies done evaluating acupuncture's management of brain injury.

Acupuncture is a safe treatment modality which seems to have no obvious side effects; however, there are no large-scale controlled studies done yet on acupuncture management of brain injury related problems. It is additionally a very cost-effective treatment strategy that can easily be implemented into rehabilitative programs. Clearly, this is an area of research that can meld East Asian medicine and Western medicine in an attempt to best optimize patient outcome following a brain injury.

How ultimately East Asian medicine will be integrated into the rehabilitative management of persons with brain injury is yet to be seen. Though patients could undoubtedly benefit from such an integration. Practitioners should remain open to treatment strategies such as acupuncture and natural medicinals that potentially assist their patients' recovery and/or function and commensurately advocate for these areas of intervention to be more critically assessed through high quality controlled research studies.<sup>21</sup>

For More Research, Articles and Information or to Contact The Author Visit

[www.healingbraininjurynaturally.com](http://www.healingbraininjurynaturally.com)

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