

The Acupuncture Approach to the Hypothalamus-Pituitary-Adrenal Axis

and Its Interaction With the Sympathetic and Parasympathetic Systems

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In contemplating this article, I was struck by the opportunity to connect and integrate an approach to a Western anatomical/physiological concept while reflecting on the use of Chinese medicine and homotoxicology. The sympathetic/parasympathetic system, or autonomic nervous system (ANS), can be translated into paradigms of activity and interaction using the Oriental construct of acupuncture tsubos, or holes, and using homeopathic combinations as therapeutic interventions. This combined usage is called *homeosiniatry**.

In the US perception of acupuncture, points reflect an anatomical location where a needle is inserted. Changing the rotation of the needle infers a method of enhancing or diminishing its effect (i.e., clockwise is tonification and counterclockwise is sedation).

The Japanese approach to needling technique views acupuncture locations as specific holes. The needle is inserted along a vector, with a direction and depth. This requires palpatory acumen that translates into a precise connection into the path of flow desired.

The extracellular matrix (ECM) is the common conduit for therapy, be it physiological stimulation of the nervous system, the Yin and Yang energies of Asian medicine, or the

electrical signature of natural molecules, as is seen in homeopathy.¹

Within the ECM lie the biological features that allow nerve impulses to signal and transmit information for homeostasis. Layered on that, the similar concepts of Yin and Yang theory are reflected within the same ECM, with cylindrical spirals of acupuncture holes acting as a transit system, via the meridian system, for similar information transmission concerning the body's balance.²

Within the Oriental system, the ECM represents an equivalent concept, expressed as the Triple Heater. It is said to convey the Qi that is essential in energy transformation and metabolism. It is considered to be the fluid interface surrounding cells;

in modern interpretation, it is considered to be the extracellular environment of the cell.

The importance of these statements is to act as the starting point to treating patients with problems of the sympathetic/parasympathetic system, by being able to act in creative ways based on the practitioner's assessment of the patient. It is often the situation that a single paradigm of therapy is inadequate to treat the complexity of issues generated within the body. This certainly is true regarding the sympathetic/parasympathetic system influences within us. To integrate these unique therapies requires a brief review of the connections that make them compatible for the treatment of sympathetic/parasympathetic, or ANS, imbalance.

Autonomic nervous system

The aspect of the nervous system that is involved in our discussion is the ANS. Originating in the hypothalamus, fiber tracts from the various nuclei (e.g., medial, lateral, anterior) travel from the hypothalamus into the intermediate brain and through the lower brain, making connections with multiple other nuclei there before descending into the spinal cord. These other nuclei also contribute essential information for ANS regulation. These pathways are called the hypothalamospinal tract

* "Homeo" from homeopathy, "sin" from sinology = study of Chinese culture, and "-iatry" from Greek iatros = healer (figuratively: medicine)

Acupuncture needles are inserted into specific points on the body in order to relieve pain and/or restore health and well-being.



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(HST) and carry information that activates, stimulates, inhibits, or balances sympathetic and parasympathetic signals. The sympathetic system dominates during activity in the body and is energy consuming. The parasympathetic system dominates when the organism is in resting phases, including digestion and sleep cycles.

The sympathetic nervous system is under the direct control of corticotrophin-releasing hormone (CRH) in the hypothalamus. Its stimulation creates an excitatory response in the sympathetic system while turning off parasympathetic responses, in preparation for the fight, fright, or flight response. Some of the direct effects seen via increased norepinephrine (adrenaline) are stimulation of cardiac muscle, an increase in heart rate and breathing, an increase in blood glucose, sweating, and vasoconstriction. At the same time, blood volume is expanded via the CRH activation of the renin-angiotensin-aldosterone system. When situations of perceived threat occur, anticipatory readiness is also reflected in increased muscle activity and visual acoustic startle, reduced appetite, and an inherent protective anxiety to “get out of town” or leave the scene quickly. To assist these preparations, the visceral tissues become quiescent, until the danger has passed.

The spinal parasympathetic system is composed of the cranial division

(cranial nerves III, VII, IX, and X) and the sacral division (S2-S4). These cranial nerves interconnect with the HST fibers via their nuclei, located in the midbrain, pons, and brainstem. The principal HST parasympathetic functions include pupillary and lens adjustments, salivation, heart rate, movement and secretions in the gastrointestinal tract, urination, defecation, and erection. Specifically, cranial nerve IX influences the carotid body and sinus and the pharyngeal mucosa. Cranial nerve X is related to the larynx and trachea and the thoracoabdominal viscera to the level of the splenic flexure. The sacral plexus involves the colon distal to the splenic flexure, the rectum, and the bladder. The HST of the sympathetic system extends from T1 to L2/3. The fibers exit the spinal cord as preganglionic fibers that release acetylcholine, which innervates their nearby preaortic and paravertebral postganglionic receptors, which then release norepinephrine. These chemical transmitters then affect the pupils, sweat glands, blood vessels, lungs, abdominal viscera, and gastrointestinal tract. The ANS helps coordinate and regulate stimuli coming from the external and internal environment.

Asian medicine

The seemingly opposite parts of the ANS imply energies of mutual dependence when considered within

the paradigm of Asian medicine. It is the Yin and Yang that are considered as the framework of movement and stillness, night and day, light and dark, with each aspect requiring a comparison to its counterpart to make sense. Although the final step for our consideration of homeosiniatry is specific injection of tsubos, or holes, there are essential constructs in Asian practice that themselves can act to create an enhancement of energy or the opposite effect of reducing or dampening energetic effects. The movement of energy, or Qi, is considered to travel unidirectional under normal circumstances, along each specific meridian pathway. Needling a tsubo along this direction of flow is considered tonifying or sympathetically stimulating. Needling techniques that are in the direction opposite or counter to established meridian flow will slow or reduce the energy flow, are considered sedating or quieting to the system, and would be considered parasympathetic.

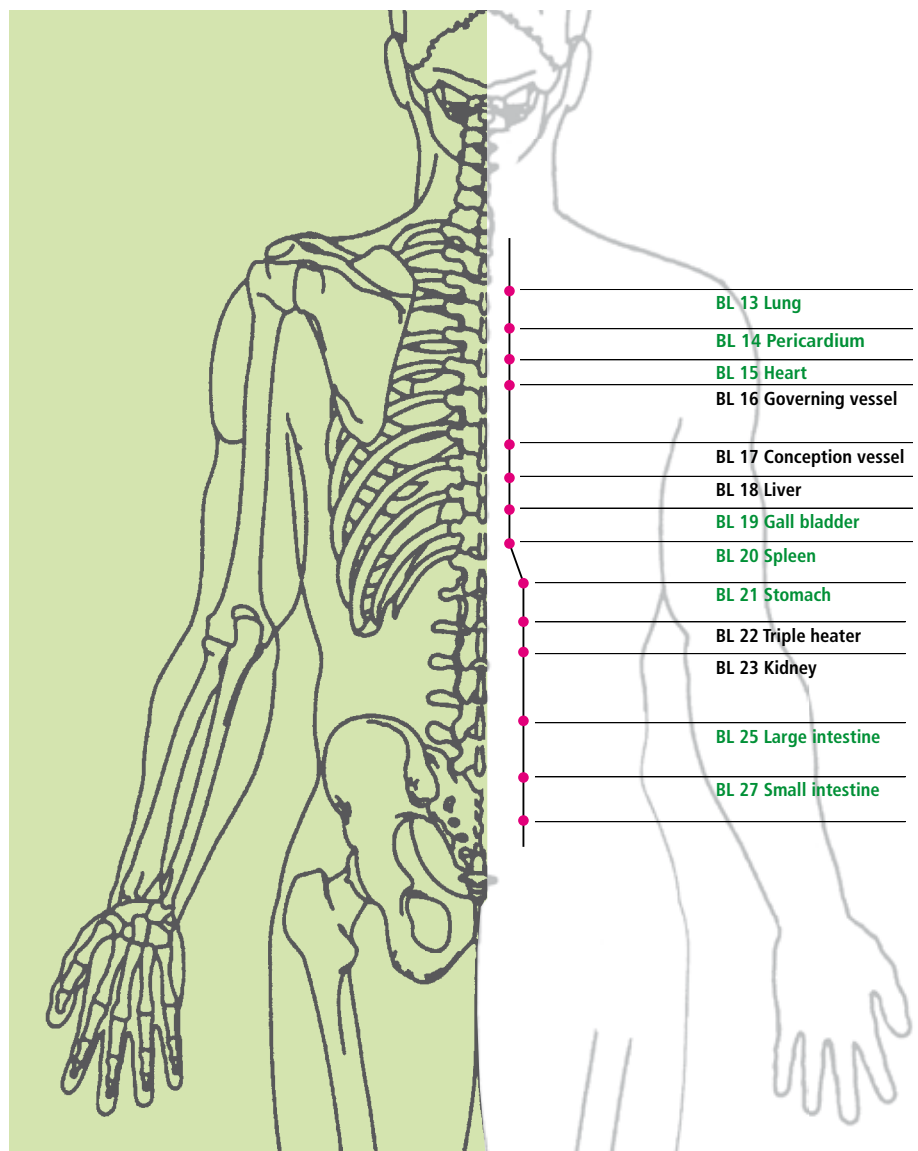
In protocols using electrical stimulation, a sympathetic or parasympathetic effect can be created via the circuits used. Electrical charge travels from negative (silver needle or black grip) to positive (gold needle or red grip), and electrical flows can be used to augment or diminish energy solely by adjusting the direction of flow of the electricity. Practitioners can also influence the activation of sympathetic activity by

low-frequency electrical stimulation in the range of 2 to 10 Hz. These frequencies are used, for example, in facial nerve palsies and for historic treatments that were designed to up-regulate, so to speak, weak energy systems within the body. To create a parasympathetic flow, high-frequency electrical stimulation can be used, ranging from 100 to 200 Hz for local myofascial injury to 1500 Hz for sedation of the central nervous system, thereby affecting higher brain centers for pain regulation (and a down-regulation of pain).

Injection sites

The classic choices for acupuncture holes that may be integrated to synergistically relate to homeosiniatry might include the 8 extra vessels, back Shu points (Figure 1), and source and auricular points. The extra vessel meridians of Yin/Yang Wei (Pericardium 6 and Triple Heater 5) connect and distribute all the Yin and Yang, respectively. The Yin/Yang Qiao vessels (Kidney 6 and Urinary Bladder 62) balance all the Yin and Yang for muscle coordination in the body. Also, the Du Mai channel, the source of all Yang Qi, or sympathetic energy, can be augmented by needling from the lower spine up and can be quieted or sedated by needling from the scalp down. For the sympathetic concept, this would mean increasing the movement in the Yang organs; for the parasympathetic concept, the Qi

Figure 1: Back Shu points used in treating disorders of the hypothalamus-pituitary-adrenal-sympathetic/parasympathetic system.



energy would be augmented in the Yin organs.

The use of auricular points adds an essential synergism for balance within the brain and ANS. Using a point locator allows exact locations for treatment. Traditional interpretations used to imply that when one

aspect of the ANS was on, the other was off, and vice versa. Our society today creates levels of continuing stressors, and often the continued pressure on both aspects of the ANS results in imbalances that do not fit conventional rules. Using such a testing device, areas such as the pi-



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In homeosiniatry, bioregulatory medications are injected into acupuncture points.

tuitary, hypothalamus, preganglionic and postganglionic nerves, vagus, parasympathetic nerves, and amygdala can be accessed and therapeutically used.

The back Shu points represent a level of interaction that would be used to affect the individual organs that are influenced by the hypothalamus-pituitary-adrenal-sympathetic/parasympathetic system. The first line relates to organ dysfunction, whereas the second line has great benefits in emotional issues that affect its adjacent organ.

Practical application

Some practical examples of homeosiniatry that have application in the clinic would include the following. Starting at the hypothalamus, it would be ideal to directly affect its function! *Tonsilla compositum* contains hypothalamus and can act toward directly targeting at the hypothalamic level. Its effect would, therefore, generalize to the entire system. Points of injection should be ones that have general regulatory ability, such as Stomach 36 or Spleen 6. More often, therapy must be designed to indirectly affect the system, at the feedback loop to the hypothalamus or at the organ itself.

Because hypothalamic CRH controls the production of cortisol, the negative feedback loop to CRH is activated when the hypothalamus senses increased cortisol. Therefore, using medications that contain

cortisol will reduce the production of CRH and slow or regulate the fight or flight response (i.e., sympathetic outflow). *Tonsilla compositum* (for overall immune stimulation), *Thyreoida compositum* (for connective tissue metabolism), and *Pulsatilla compositum* (for support during chronic inflammation) all contain cortisone in dilution and can be used to reduce the output of CRH and with it sympathetic activity.

Major organs that are activated by sympathetic stimulation are the heart, lungs, and the associated circulatory system. To affect these organs, especially in chronic conditions, the back Shu points can be injected. Because fight or flight is an excess condition, the points chosen on the Urinary Bladder line (Urinary Bladder 14, Pericardium; and Urinary Bladder 15, Heart) are tight and tense, indicating overactivity. Chronic myocardial weakness or coronary circulatory problems can be treated with *Cactus compositum*. *Cor compositum* can be used for palpitations, and *Cralonin* can be used for chest pains. The lung area, Urinary Bladder 13, can receive treatment for bronchospasm, using *Mucosa compositum* for wheezing and cough, *Traumeel* for inflammation, or *Engystol* for immune stimulation.

In contrast, when sympathetic activation is quieted down, ideally the parasympathetic system is activated.

Their innervations primarily involve smooth muscle contraction and movement within many hollow organs. The Master Point of the Yin Qiao, Kidney 6, is considered regulatory of the Vagus, and *Atropinum compositum* is very useful for cramping and imbalanced peristalsis. Point choices might also include the source points or back Shu points for the large and small intestines, the spleen and stomach, and the urinary bladder and gallbladder. *Spascupreel* is effective for intestinal cramps and bladder spasm and irritability.

In conclusion, any discussion regarding the hypothalamus-pituitary-adrenal-ANS really requires chapters to credibly explain each of the topics mentioned in this brief discussion. What I have attempted to relate is that the complexity of disease and our rapidly expanding technology have created a need to look beyond individual areas of focus and embrace a new holism of care. It is necessary to integrate multiple disciplines, concepts, and images to achieve results that succeed. ■

References

1. Oschman J. *Energy Medicine*. Dover, NH: Churchill Livingstone; 2008:141.
2. Pischinger A. *The Extracellular Matrix and Ground Regulation*. Berkeley, CA: North Atlantic Books; 2007:106.