

Brain Circulation

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Introduction

The study of the acupuncture networks and the in-depth knowledge of their connections highlight a gap in the circulation of energy in the head, while the description of the circulation in the trunk and limbs is specific.

The networks and circuitry mandate continuity and logic: Energy cannot propagate in a circuit in which a sector is suppressed. In the 1970s, Dr. Maurice Mussat approached the problem during his research on the energetics of living systems and their application in acupuncture. The following is a brief description of the theoretical and experimental results, with a brief clinic study provided as an example. The solution provided by Dr. Mussat is part of an emerging understanding of acupuncture using systems approaches. This specific chapter is of fundamental interest on understanding movements of energies and clinical inferences, as well as fundamental research using functional MRI (fMRI).

Concepts

The meridians are organized in energetic units; i.e., the *yang ming* unit consists of the Large Intestine and Stomach meridians. In this couple, the Large Intestine is positive and goes upward, while the Stomach is negative and goes downward. This organization is valid for all 12 meridians.

The pathways of the positive meridians have specific connections and relays. However, the pathways of the negative meridians are imprecise and shadowy at the level of the terminal connections of the trunk or head. Additionally, the description of the divergent meridians is precise for the positive trajectories and facial connections of the positive meridians, but not the negative ones. Finally, the description of the facial connection for the negative arm meridians is lacking.

Inference From the Classics

The deep pathway of *tai yin* Spleen is described. It starts at Spleen 20, an anterior thoracic point, goes "to the neck" and ends at the root of the tongue. In terms of dynamics, it is known that there is a facial Spleen afference; a facial energetic connection with Stomach; a hand connection between Lung and Large Intestine, and a closing of the circuit by Large Intestine on the face. However, there is a gap regarding the cephalic Spleen-Lung synergy.

The *jue yin* Liver ends in its accessible portion at the thoracic point LR 14. From this point, a deep pathway traverses up the head, where it passes "to the eyes" and ends at the top of the skull (DU 20). This meridian is energetically coupled on the foot Gall Bladder, in the Gall Bladder-Liver direction. It would seem logical to establish the same inverse connection on the head in the Liver-Gall Bladder direction; even more so since the Gall Bladder meridian begins at the external angle of the eye. However, the Liver is synergistic to the Pericardium, and their synergistic junction is given at the thorax, between the last point of the Liver (LR 14) and the first point of the Pericardium - but no cephalic pathway is given for this last junction. Therefore, and here too, there is a cephalic gap regarding the synergy of the Liver and Pericardium meridians.

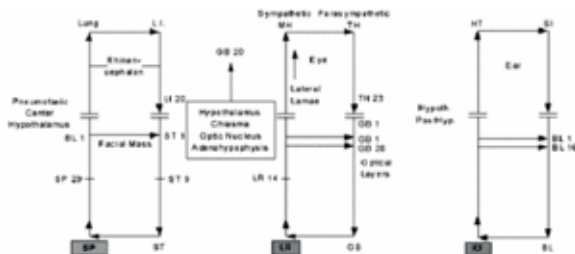
In addition, the study of the energetic circuits of these two meridians clearly shows the cephalic zone of shadow. If the Liver arrives at the eyes, the energetic coupling of Liver to Gall Bladder appears logical. The Gall Bladder is synergistic to the Triple Heater, and the Triple Heater begins at the hand and ends above the external angle of the eye, insuring the synergistic connection. But the Triple Heater is energetically coupled on the hand with Pericardium, centrifugally. Thus, the continuity is certain between the Liver, Pericardium (thoracic junction), Triple Heater and Gall Bladder. There is thus a cephalic gap since the Liver meridian "arrives at the eye."

The third negative circuit, of *shao yin* Kidney, ends in its accessible part at the sub-clavicular point KI 27. From there, a deep branch continues upward to the neck and ends "at the ear" and at the eye. *Shao yin* includes the Kidney and Heart meridians, and their junction occurs in the thorax. The Kidney and Bladder meridians are coupled, from the Bladder to the Kidney at the feet. It would thus seem logical to establish the inverse continuity at the head, in the Kidney-Bladder direction, and Bladder begins at the internal angle of the eye, but the cephalic pathway of the Heart is not given, highlighting the cerebral gap of the synergistic Kidney-Heart connection.

Anatomical and Physiological Study

Using systems approach, and relying on contemporary information to complete and extend the classics, Dr. Mussat arrived at the following conclusions. These conclusions are supported by his clinical verifications and by his experimental studies on propagation of charges along pathways.

The Kidney circulation is afferent by the Kidney meridian. Its point of departure (or action) is the first point of the "accessible" pathway of this meridian, the thoracic point KI27. The target territory is the neurohypophysis organization: the posterior hypothalamus linked to the posterior pituitary through the Popa and Fielding portal system. The external efferent energetic coupling with the Bladder meridian is established according to two options, with the internal ocular point BL 1 on the front and the occipital point BL10 backward. The "internal" efferent synergy is established with the Heart meridian, at the level of the crossway of the internal ear and the central gray nuclei. This same synergy - this same efferent "internal" circulation - is energetically coupled on the hand with the Small Intestine meridian, which itself is synergistically connected on the face with the Bladder meridian. Thus the homogeneity of the circuit. The selective territory of action is posterior hypophysial and involves mainly the hormones ADH, oxytocin and galactogene. There is an annex action on the deep ear through the intermediary of the auditory and cochlear nerves.



The Liver circulation consists of the "internal" afferent pathway. Its point of departure is the last point of the accessible pathway, the thoracic point LR 14. The target-territory is the crossway of the anterior hypothalamus (supraoptic nuclei), the lateral bands (sympathetic dominant) and the adenohypophysis. This same crossway is linked intimately to the optic organization (chiasm/retina/striatum/occipital layers). The action on the eye is thus also an "inevitable escape." The "external" efferent energetic coupling with the Gall Bladder occurs according to two options. The first option, anterior, is at the external ocular point GB 1. The second option, posterior, is the occipital point GB 20. The "internal" efferent synergy with the Pericardium occurs at the level of the anterior hypothalamus and the lateral bands. This same "internal" efferent synergy has its linear translation on the arm (sympathetic Pericardium), where the energetic coupling with Triple Heater occurs. This last one is

synergistically connected at the eye with Gall Bladder, leading to homogeneity of the circuit. The selective territory of action is therefore essentially hormonal, anterior pituitary. The action on the eye is an inevitable escape.

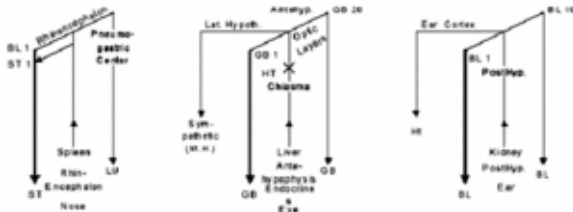


Figure 1 Lastly, the Spleen circulation consists of the

"internal" afferent pathway. Its point of departure is the point before the last point of the accessible pathway of this meridian, the thoracic point SP 20. The target-territory is the rhinencephalon, and most specifically the olfactory bulb. The "external" efferent circulation is performed by the energetic coupled connection with the Stomach at the facial point ST 1, as well as the internal ocular focal point BL 1. A second external connection, evoking an inevitable gustative escape, is made at the level of the jugular point ST 9. The afferent circulation, still by Spleen, is connected synergistically, through the intermediary of the pneumotaxic center, according to the synergistic Spleen-Lung coding, insuring the "internal" efferent circulation. The brachial linear translation of this efference, the Lung meridian, is energetically coupled at the hand with the Large Intestine synergy of the Stomach. There is homogeneity of the circuit. In addition, there is an inevitable escape on the gustative territory that probably occurs through the interaction at the level of the crossway formed by the posterior part of the rhinencephalon, at the foot of the olfactory bulb and of the solitary nucleus. It is even possible to suggest the *yang ming* therapeutic action on some acouphenes or deafness by intervention of a truly decongestant action on the Eustachian tube, and an electrotopic influence on the tympanic cord.

Clinical and Fundamental Verifications

Verifications of the conclusions were clinical and direct. Direct verification was based on sending a signal by the intermediary of the three internal meridians involved (Spleen, Liver and Kidney) and observing where it could exit. It was a direct verification of the "pathway" aspect of the cerebral circulation. Of course, this experimental mode only gave entry and exit indications, without precise indication of the internal cerebral pathways, but this chapter could be determined by deduction, by the synthesis of the clinical observations and of the direct experimental act.

The principle of sending a signal is to imply direct manual or electrical tonification of the needles as suggested through the examples below. The signal is then read through meters of various sensitivity (milliamps to nanoamps). Present fMRI technology would further allow mapping of brain areas and thus eliminate the "black box" effect.¹

Several clinical approaches are given below to give some foundations on the techniques involved.

Hyperthyroidism

Cases of moderate hyperthyroidism can be approached through the combined therapeutic effects of decreasing thyroid secretion and decreasing pituitary TSH functions. The thyroid modulation is part of the innovative systems acupuncture technique, and the pituitary modulation relies on the putative brain Liver circuitry. The electrical stimulation of the pituitary gland is equal to triggering a hyperactive response if an "exit" is insured. In terms of systems energetics, this is equal to establishing "circulation." Preventing this exit would trigger a "tonification," and not a stimulation: The stimulated organ is closed, and energy "accumulates" there. The corollary is a diffuse headache.

The patient was a 40-year-old woman with a confirmed hyperthyroid. Her metabolism was increased; symptoms included heat, insomnia, nervousness, redness, tachycardia and agitation. Her metabolism was up, and her reflexes and cholesterol level were increased.

Chong mai, the basic endocrine axis, was activated for its role in thyroid modulation. In addition to the basic points, RN 22 and RN 23 were added to affectuate the focal action. The arrival of energy was insured by connecting the Bladder and Kidney through the Bladder *luo* anastomotic point and the KI *shu* absorption (BL 58 and KI 3). KI 3 was used in electrical tonification. This arrival of energy was accentuated by the puncture of a distal Spleen point: SP 4 (lower polar point of *chong mai*). At the level of the thyroid, the framing points, ST 9 and ST 10, were directly stimulated. Finally, the movement was further reinforced by using the Stomach acceleration point (ST 44, the "cold" point of ST) as well as SP 1 to close the circuit.

With this last network set into place, the modulation of the adenohypophysis occurred through the coupled tonification of LR 14 and GB 20. The tonification of GB 20 blocked the cerebral pathway (LR14 - pituitary - GB20) by preventing the "exit." If GB 20 was not used, the effect would be one of dispersion.

The results were quick and included a diminution of the "heat" sensation, calmness, regain in sleep, and suppression of the agitation. The metabolism decreased to paranormal numbers with a mean slightly above normal. Lowered cholesterol levels followed only clearly much later. In parallel, her emotional signs improved as well. The results were maintained only if the treatment was performed once a week. They then stabilized, with more or less marked worsening at the time of the period. A counter-experiment was established by inverting the treatment. The result was catastrophic within only one session, and we had to put everything back in order three days later.

Myopia

The principle of the treatment relies on promoting the Liver cerebral circulation and allowing it to exit through GB 1 instead of GB 20. This insures the putative action on the ocular apparatus.

The treatment was provided for a perfectly healthy 14-year-old girl, who presented an intermittent myopia, with temporary improvement, but which was aggravated by steps.

The movement was induced from Gall Bladder to the Liver by connection of the GB *luo* and LR *shu* points,² then by electrical tonification of LR 14 and insuring the exit by GB 1, at the external angle of the eye. In this way, the chiasmatic circulation was derived toward the eye, without much interference on the pituitary, thus the non-puncture of GB 20. The closing of the circuit was thus insured by the GB *luo* anastomotic point.

The results were spectacular, over several sessions - even more so, since the emotional signs linked to the disturbances of *jue yin* Liver (anxiety and anger) disappeared. We treated her two or three times at spaced intervals for the purpose of strengthening.

Antidiuretic Hormone

The purpose is to verify if the technique involving Kidney cerebral circulation could increase diuresis by blocking or slowing down the neurohypophysis antidiuretic hormone (ADH or vasopressin). The action of the two other hormones of the neurohypophysis (oxytocin and galactogene) is without danger at first thought, pregnancy being eliminated.

The patient was a 50-year-old woman who wanted to lose weight. The medical evaluation was negative except for some water retention and mild oliguria, but no kidney disease. She used to take diuretics to lose

weight, but it made her tired and she wanted to try something else. Although acupuncture is inconsistent in weight disorders, the patient had normal kidney functions and a treatment was designed to verify the putative action of the *shao yin* Kidney on the posterior pituitary.

The Kidney acceleration points (KI 2 and KI 3) were activated to prepare the electrical stimulation from the last point of the accessible pathway, KI 27. The putative Kidney cerebral pathway was activated by electrical stimulation from KI 25. No cephalic points were used. In addition, two systems of security were set into place by precaution: the *chong mai* (SP 4, P 6, RN 2 and RN 22)³ and the *yang wei*. This created two exits to absorb an eventual disturbance; one exit in the negative zone (*chong mai*) and one in the positive zone (*yang wei*).

From the end of the session (about 30 minutes), the patient mentioned a slight diffuse headache, but with no signs at the level of the ear. One week later, she mentioned having clearly urinated more and having lost a little bit more than one kilogram (about 2.2 pounds), but she also mentioned moderated regular headaches, happening at around 9 p.m. and lasting about one to two hours.

The same technique was provided for three sessions, at eight day intervals, with the same results. The weight lost was very slow, but the headaches occurred daily and started bothering the patient.

At the fourth session, the experience was sufficient and the stimulation of the cerebral pathway was stopped. An exit was opened through BL 10 and through downward polarization of the Bladder by BL 60. The headaches stopped immediately.

A second treatment was then designed. The program was exactly the same, except that an opening was created by activating BL 10 and reinforcing the lower polarization with BL 60, BL 65 and BL 66.

Two sessions later, we observed inversed phenomena. There was weight gain parallel to a diminution of the diuresis. The situation was rectified and the patient was reminded that, as foreseen, the best method to lose weight is through diet control.

In conclusion, the first program tonified the posterior pituitary, thus decreasing its secretion. The second program established a circulation, triggering an excitation.

Breast Pain

The following consists of the treatment of a 32-year-old young woman diagnosed with an endocrine dysfunction of posterior pituitary origin. Symptoms included bilateral breast pain with significant and discomforting increase of the mammary glands, and clear accentuation of the thoracic venous circulation. This was always aggravated during the week preceding the menstrual period.

Phase 1: local *yang ming* dispersion

Since the *yang ming* Stomach goes exactly through the mammary territory and most specifically through the nipple, the *chong mai* activation (SP 4, P 6, RN 2, RN 22) was established with downward derivation through ST 12 and ST 30. This last point was strongly polarized downward by ST 36, ST 40 and ST 45.

The goal was to establish a local treatment without interference on the hormonal pituitary territory. The pelvic connection at ST30 probably regulated the ovarian zone as well, while permitting the downward circulation.

After eight sessions, the results were good but transitory and nonconsistent, always with an upsurge slightly before the menstrual period.

Phase 2: posterior pituitary modulation

Chong mai was activated as before, with the downward exit consisting of ST 36, ST 44 and ST 45. *Shao yin* Kidney was activated through KI 2 and KI 3 and its last point (KI 27) was finally set into place, allowing the putative posterior pituitary action.

Similar to the preceding experiment, the electrical intensity was progressively increased until the apparition of subjacent rhythmic muscular contractions, then decreased until their disappearance. Each session lasted about 25 to 30 minutes.

As before, the patient mentioned a moderated diffuse headache, but after the first session the results were positive and at the third session they were complete. There was a return to normal mammary volume and disappearance of the collateral venous circulation.

Here, too, the counterexperiment was established by "opening" the exit cerebral circulation through the puncture of BL 10, BL 60 and BL 66. The mammary troubles reappeared very quickly, but conditions returned to normal as soon as the real treatment was given. This patient was followed with one session every

two to three cycles for more than a year. The sessions took place around the tenth day before periods. Treatment consisted of a circulation of *chong mai* (SP 4 - P 5 - RN 2 - RN 22 - ST 30).

Synthesis

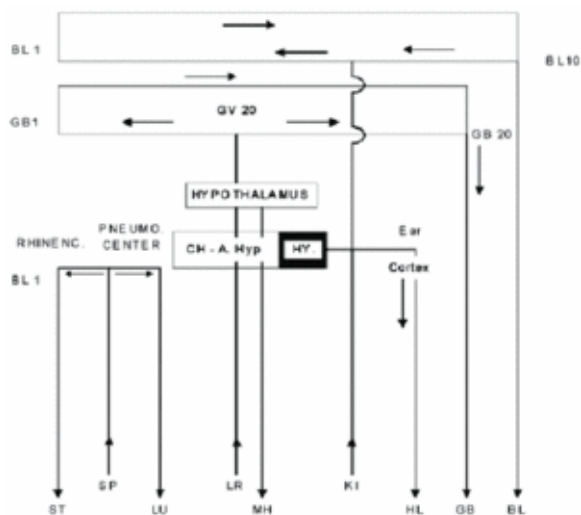


Figure 2 It is suitable to summarize, or synthesize, the cerebral networks and their putative territories of action.

The understanding of brain circulation established by the pioneering works of Dr. Mussat opens doors to new physiological applications through systems acupuncture. Such approaches, combined with systems endocrine acupuncture, have a promising future in both clinical and fundamental research. One can envisage the approaches of functional or mild neuroendocrine disorders including, but not limited to, anterior and posterior pituitary disorders involving mainly ADH, oxytocin, galactogene and TSH. The action further includes auditory, cochlear and visual fields. Finally, the modulation extends through specific systems modulation of thyroid, adrenal and gonadal functions.

In short, systems acupuncture brings forth new understanding of classical concepts and opens a bridge of communication with modern medical developments.

References

1. See the pioneer works of Cho and Hui on fMRI and acupuncture.
2. The result is identical if the distal Gall Bladder point and two Liver acceleration points are used.
3. Later on, the activation of *chong mai* was perfected by adding RN 4/5 and ST 30.

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[IMAGE]

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