

A Comparison of Chinese and Nogier Auricular Acupuncture Points

Terrence D. Oleson, Ph.D., and Richard J. Kroening, M.D., Ph.D.
Department of Anesthesiology, UCLA School of Medicine
Los Angeles, California 90024

Abstract: The history of ear acupuncture in China is examined with respect to the discovery of the inverted fetus pattern of the auricle developed by Dr. Paul Nogier, of Lyon, France. A variety of Chinese and European texts on auriculotherapy were utilized to delineate the Chinese and Nogier ear acupuncture charts. These two systems were systematically compared for similarities and differences with regard to auricular points representing musculoskeletal and sensory systems, internal organs and endocrine glands, peripheral and central nervous systems, and functional problems. While basically the same, the Chinese and Nogier ear charts do vary in the somatotopic localization of the lower back, leg, heart, kidney, spleen, adrenal gland, and certain parts of the nervous system.

AURICULAR acupuncture has proved effective for the treatment of chronic pain,^{1, 2} narcotic withdrawal,^{3, 4} smoking,⁵ weight control,⁶ and hearing loss.⁷ Detection of clinical problems by auricular diagnosis has been reported for musculoskeletal pain⁸ and coronary disorders.⁹ A theoretical basis for these clinical findings has been provided by recent physiological investigations demonstrating that auricular electroacupuncture leads to the release of endorphins^{10, 11} and ACTH.¹² What remains controversial in the assessment of auriculotherapy is its historical origins and the differences which exist between the somatotopic ear maps formulated in the Far East and those developed in Europe.

Many Chinese texts¹³⁻¹⁵ attribute the dis-

covery of ear acupuncture to the same historical sources which led to the development of body acupuncture. Specific acupuncture points on the external ear were used for the relief of various medical disorders of the body over 4,000 years ago. The *Nei Ching*, The Yellow Emperor's Classic of Internal Medicine,¹⁶ described in 2697 B.C. how certain meridian systems converged upon the ear. This ancient Chinese document was very specific about the needling of particular ear points for the balancing of functional disorders related to a particular meridian system. However, it was not until after the Chinese Cultural Revolution in the late 1950's that there was any Oriental publication of the somatotopic map of the ear which is presently used in China. European practitioners of auriculotherapy attribute the current Chinese charts to a discovery which originated in France with the work of Dr. Paul Nogier.

In his *Treatise of Auriculotherapy*,¹⁷ Nogier states that he discovered the somatotopic relationship of the ear and the body quite accidentally. After observing several patients who had been successfully treated for sciatica pain by cauterization of one spot on the external ear, he conducted his own clinical investigation into this practice. Following several successful clinical trials with sciatica, and after consulting with colleagues who at-

tributed sciatica to a problem of the lumbo-sacral hinge, Nogier came up with his own theory. He postulated that if the spot on the ear which related to sciatica also represented the lumbo-sacral hinge, then the rest of the anti-helix represented the vertebral column, only in an inverted position. Confirming that hypothesis with several clinical studies, the logical extension was made that other parts of the ear corresponded to other parts of the body, still oriented in an upside down pattern. Nogier came to view the auricle as a homunculus of the body very similar to an inverted fetus, with the head towards the lower lobule, the feet towards the upper rim of the ear, and the body in between.

It is important to note in this story that Nogier had previously been trained in the techniques of Oriental acupuncture. Some clinicians attribute Nogier's discovery to his reading of some ancient Chinese texts which described the somatotopic pattern of the auricle, or to the work of other European investigators, but there is no published evidence that these other articles ever existed.

Nogier first presented his findings on auriculotherapy in the 1950's, to a French acupuncture society. From that meeting, Nogier's work was translated into German for publication in an international acupuncture journal. It is believed that it was through this German publication that Nogier's inverted fetus map of the ear was ultimately translated into Chinese. However, once presented with this concept, the Chinese conducted very thorough and very systematic investigations of their own. Both the diagnostic accuracy and the therapeutic value of the inverted fetus ear maps were examined in over 2,000 clinical cases by the Nanking Army Ear Acupuncture Research Team.¹³ They provided significant verification of the somatotopic conceptualization of the ear and discovered some additional points not noted in Nogier's auricular charts.

The determination of who gets first credit for discovering the somatotopic reflex system of the ear is of more than academic interest. While basically similar, there are important differences between the ear maps developed by Nogier and those formulated in China.

Clinicians using auriculotherapy are often left in confusion regarding which system to use. It is possible that some of the discrepancies between the Nogier and Chinese charts are due to mistranslations from one language to another, to inaccurate transcriptions of the drawings of the ear, or to the independent discovery of different aspects of the same system. The purpose of this paper is to specify the similarities and the differences between the Nogier and Chinese charts and to provide some possible explanations to account for the discrepancies.

Methods

The primary approach taken in this paper has been to closely examine previously published ear charts formulated both in China and by Nogier and his colleagues. We also consulted with many practitioners of both the Chinese and French schools of auriculotherapy, and had the great privilege of personally discussing the charts composed for the present paper with Dr. Nogier himself. The maps of the ear drawn and described in the ensuing pages represent a compilation of all this material.

The original work of the Nanking Army Ear Acupuncture Research Team was translated into English by Huang and Warren,¹³ and it remains the most definite description of the location of the Chinese ear points. Besides this classic text, other books used to identify the Chinese system of auricular acupuncture included works by Wexu,¹⁴ Nehemkis and Smith,¹⁵ Lu,¹⁸ Lowenschuss,¹⁹ and Chan.²⁰ An excellent wall chart on ear acupuncture loci, entitled *Ear Points*, was developed in 1974 by the Zoological Research Institute of the Chinese Academy of Sciences.

Following the publication of the *Treatise of Auriculotherapy*,¹⁷ Nogier has revised some of his early maps because of his more recent research into auriculotherapy. These changes have been incorporated into his latest publication, *De L'Auriculotherapie a L'Auriculo-medecine*, and in a wall chart he developed with Dr. R. J. Bourdiol and Dr. F. Bahr, entitled *Loci Auriculo-Medicinae*. Additional

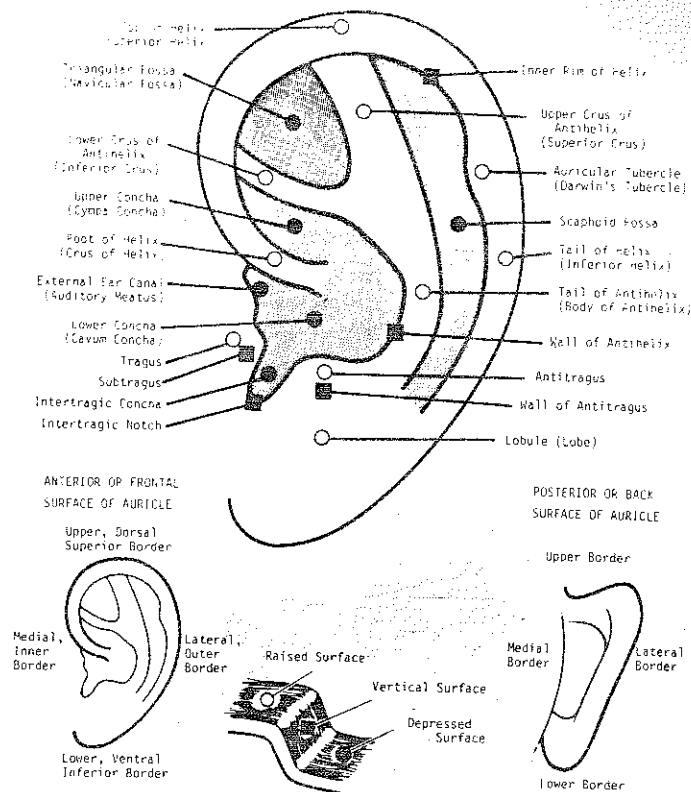


Fig. 1.

Description of different structural surfaces delineating the anatomy of the external ear. Open circles indicate raised surface areas, filled circles indicate depressed surface areas, and solid squares indicate vertical or hidden surfaces.

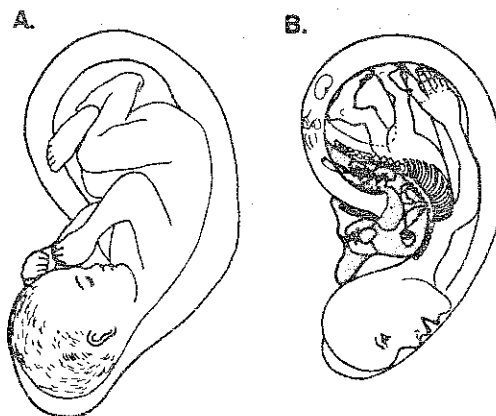


Fig. 2.

Figurative drawing of the somatotopic representation of the body viewed as an inverted fetus (2A) according to Nogier and Chinese ear acupuncture charts. The inverted homunculus shown in 2B represents a more detailed pictorial description of the auricular somatotopic pattern which is more accurate according to the present authors.

CHINESE EAR ACUPUNCTURE POINTS
 MUSCULOSKELETAL AND SENSORY SYSTEMS

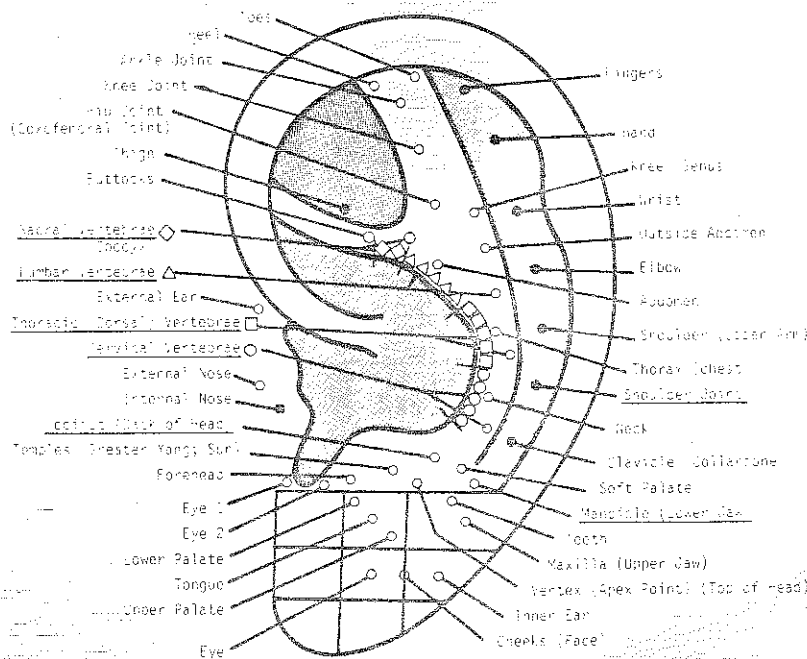
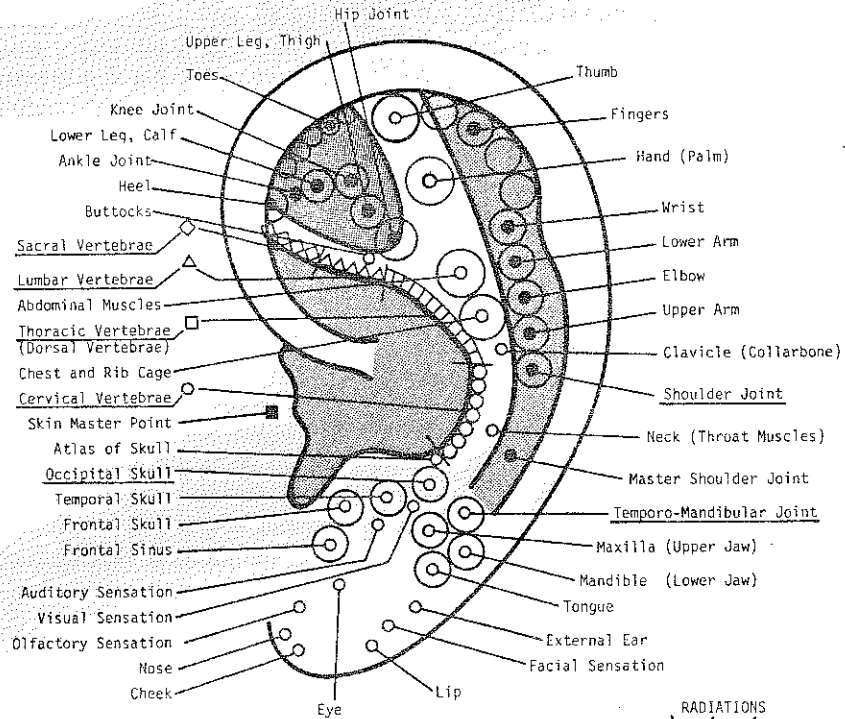


Fig. 3.

Chinese ear acupuncture points representing the musculoskeletal and sensory systems (CI).

N I. NOGIER AURICULOTHERAPY POINTS

MUSCULOSKELETAL AND SENSORY SYSTEMS



STRUCTURAL CHARACTERISTICS OF VERTEBRAL AREAS OF AURICLE

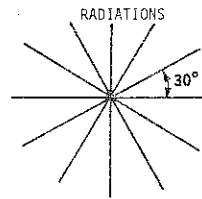
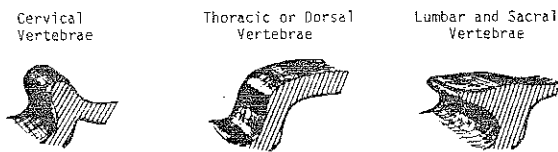


Fig. 4.

Nogier auriculotherapy points representing the musculoskeletal and sensory system (NI).

texts which delineate the revised Nogier ear charts include books by Bahr,^{22, 23} Graf,²⁴ and Kropej.²⁵ Lecture notes from Nolan Cordon, who is affiliated with the American Academy of Auricular Medicine, were also utilized to develop the charts depicted in this paper.

Both the somatotopic maps formulated by Nogier, and those developed in China, were based upon experiential findings, not just theory. Previous research conducted at UCLA⁸ provided controlled, scientific support for the techniques used in auricular diagnosis. These methods are based upon the observation that when there is dysfunction or discomfort in a certain part of the body, there is an increase in the tenderness to applied palpation and a decrease in the electrodermal skin resistance of the corresponding ear point. Sometimes there are even observable structural changes of the skin surface at these points, such as shiny redness or white flakiness. When such auricular loci are treated with acupressure massage, acupuncture needling, or electrical stimulation, there is often an immediate relief of discomfort or some somatic sensation in the corresponding part of the body.

The more recent changes in the Nogier ear charts have followed his additional discovery of a reflex response of the cardiac pulse, a response that serves as a sensitive indicator of pathology. First called the auriculo-cardiac reflex (ACR), and later renamed the vascular autonomic signal (VAS),²¹ this arterial reflex exhibits changes in the amplitude of the pulse when different parts of the body are stimulated. Use of the VAS has enabled Nogier to determine the localization of certain ear points when no verbal report from the patient or no medical diagnostic test is available to correlate with that part of the body.

A standardized drawing of the ear was developed for this paper to have one uniform picture of the ear to compare the Chinese and Nogier auricular maps. For both somatotopic systems, four charts were developed, one showing musculoskeletal ear points, one depicting the internal organs, one demonstrating the location of the nervous system, and one representing general functional points and loci used to treat certain illnesses.

Results

Auricular Anatomy

Because the auricle of the ear is a complex structure, consisting of circular ridges surrounding deep crevices, a specific chart was created to represent the anatomical divisions of the ear. Shown in Fig. 1 are the different structural landmarks which can be identified on the human ear. Three symbols at the bottom of this figure indicate whether that designated area of the ear is a raised surface (open circle), higher than surrounding areas, or is a depressed surface (filled circle), deeper than surrounding areas, or is a vertical surface (solid square), an area which connects the former two and is hidden from horizontal view.

To the left and right of these three symbols (Fig. 1) are shown depictions of the front of the ear, referred to as the anterior surface, and the back of the ear, referred to as the posterior surface. For both anterior and posterior views are indicated the medial (inner) and lateral (outer) dimensions of the auricle as well as the dorsal (upper) and ventral (lower) boundaries. All subsequent charts will be primarily concerned with somatotopic descriptions of the anterior auricular surface.

The different structural surfaces of the auricle are classically categorized by the following divisions. The outer rim of the ear is called the Helix, consisting of the Root or Crus of the Helix, beginning from the center of the ear and curving medially toward the face upwards to the Top of the Helix, then descending laterally to the Tail of the Helix. Opposite the outer Helix is another raised surface, the Antihelix. Shaped somewhat like a "Y," the Antihelix consists of three divisions, an Upper Crus, a Lower Crus, and the Tail of the Antihelix opposite to the Tail of the Helix. Separating these two ridges is a depressed area, the Scaphoid Fossa. Another depressed area, the Triangular Fossa, separates the Upper and Lower Crus of the Antihelix. The central, deepest portion of the ear, the Concha, is divided into two parts, the Upper or Cymba Concha and the Lower or Cavum Concha. Above the latter, joining the ear to the face, is another raised surface, the Tragus. Opposite

to the Tragus is the Antitragus, which is above the Lobule. Hidden areas include the Subtragus, the inner Wall of the Antitragus, and the vertical Wall of the Antihelix, which runs along the outer perimeter of the Concha.

Somatotopic View of the Ear

Although both Nogier and the Chinese refer to their somatotopic representations of the ear as an inverted fetus (Fig. 2A), their actual drawings more closely approximate a slightly different orientation of the body (Fig. 2B). Instead of being curled in a tucked, fetal position, the auricular homunculus can be viewed as a person standing on his head, arched backwards, with his back to his internal organs. Like the somatotopic maps of the body which have been demonstrated in the brain,^{26, 27} more auricular surface area is utilized to represent the head and the hands than their proportional representation on the body. Both the Chinese and Nogier ear charts have this fundamental orientation, even though they do differ with regard to the specific location of certain parts of the body.

Musculoskeletal and Sensory Systems

The representation of the skeletal structure and the adjoining musculature is depicted on the auricle as an upside down person in both the Chinese (Fig. 3) and Nogier (Fig. 4) ear charts. The face is found on the Lobule, the skull on the Antitragus, the vertebral column and body on the Antihelix, the shoulder, arm, and hand in the Scaphoid Fossa, and the feet towards the Top of the Helix. There are, however, specific differences between the two systems within this overall congruent pattern.

The vertebral column in both systems begins with the Cervical Vertebrae on the lower part of the Tail of the Antihelix. In the Chinese systems, the Thoracic Vertebrae are found a third of the way up the Antihelix, and the Lumbar Vertebrae another third further. The Nogier charts extend the Cervical Vertebrae half way up the Tail of the Antihelix, the Thoracic Vertebrae the other half way to the Lower Crus of the Antihelix, and the Lumbar and Sacral Vertebrae equally divide the Lower Crus upon which they are situated. The cross

sections of the ear depicted at the bottom of the Nogier ear chart (Fig. 4) denote actual alterations in the shape of the auricle with respect to differences in vertebral level. The Antihelix is shaped like a steep mound where the Cervical Vertebrae are represented, like a gradual sloping mound at the level of the Thoracic Vertebrae, and like a ledge along the Lower Crus, where the Lumbar and Sacral Vertebrae are found.

A perplexing problem with the Chinese Musculoskeletal ear acupuncture system is that in some texts,¹³⁻¹⁵ the vertebral column is represented along the outer border of the Antihelix, near the Scaphoid Fossa, whereas in other charts²⁰ it is found along the inner border of the Antihelix, above the Concha. The Nogier charts all conform to this latter view, with the Cervical and Thoracic Vertebrae just medial to the ridge along the peak of the Antihelix. The Throat, Chest and Abdomen in the Nogier system are correspondingly found on the outer aspects of the Antihelix, respectively opposite to the Cervical, Thoracic, and Lumbar Vertebrae. Nogier further contents that the anterior surface of the auricle represents the sensory aspects of the body and the posterior surface of the ear immediately opposite to that point corresponds to the motor aspects of that same body area.

The Fingers, Hand, Wrist, Elbow and Shoulder points found in the Scaphoid Fossa on the Chinese ear charts (Fig. 3) are basically identical to the representations of those same body areas on the Nogier auricular charts (Fig. 4). The ear points which correspond to the lower limbs of the body, however, are distinctly dissimilar in these two systems. On the Chinese ear charts, the Hip, Knee, and Foot are located on equal thirds of the Upper Crus of the Antihelix. In contrast, both the initial and the more recent somatotopic drawings of the ear done by Nogier place the Leg completely within the Triangular Fossa, with the Hip at the tip of the triangle and the Toes toward the medial rim of the Helix.

The two systems do not greatly differ with respect to the head. The Occiput, Temples, and Forehead regions of the Skull, utilized in ear acupuncture treatment for the control of

C. II. CHINESE EAR ACUPUNCTURE POINTS

INTERNAL ORGANS AND ENDOCRINE SYSTEM

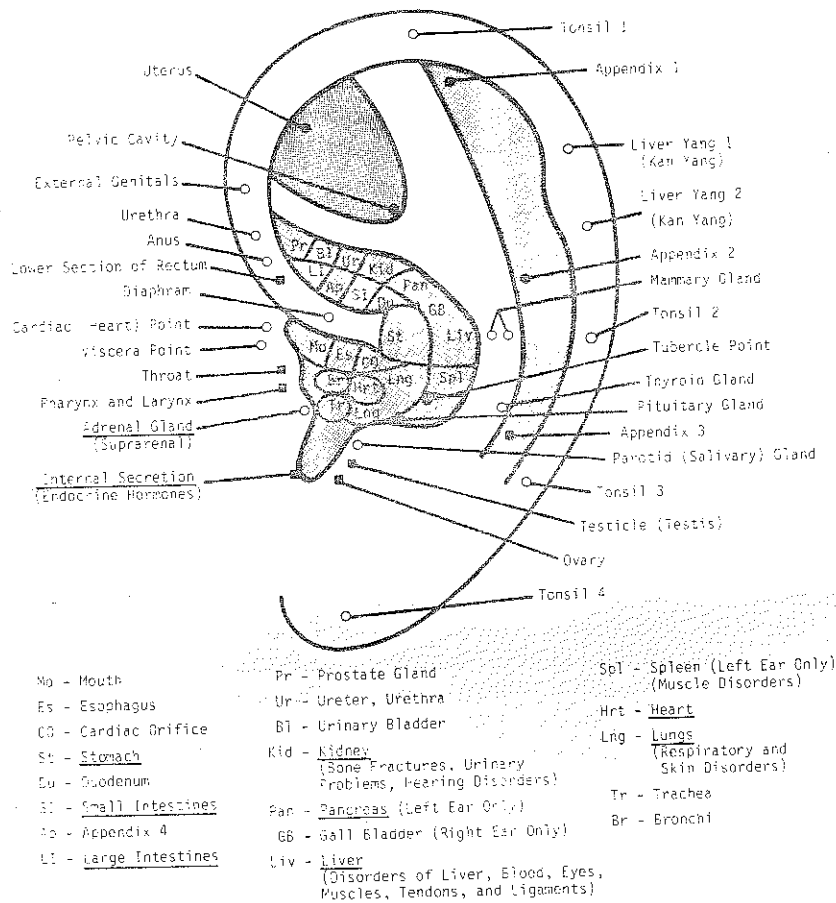


Fig. 5.

Chinese ear acupuncture points representing the internal organs and endocrine system (CII).

N II. NOGIER AURICULOTHERAPY POINTS
INTERNAL ORGANS AND ENDOCRINE SYSTEM

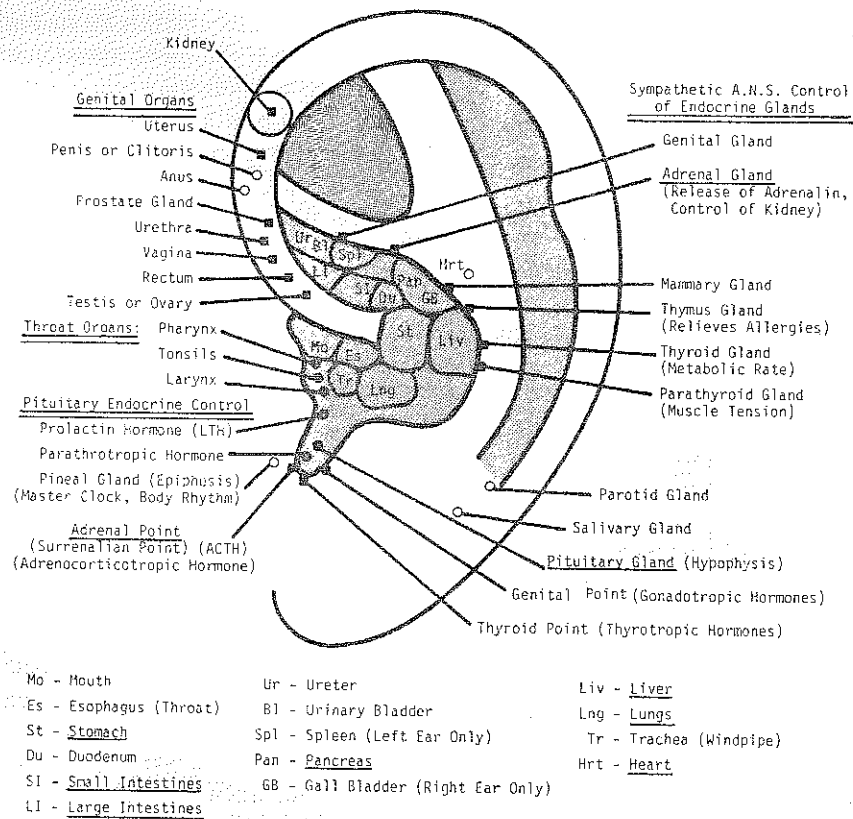


Fig. 6.

Nogier auriculotherapy points representing the internal organs and endocrine system (NII).

headaches, are aligned laterally along the Antitragus in both the Chinese and Nogier systems. Further similarities between the two charts (Fig. 3 and Fig. 4) include the location of the Jaw at the upper portion of the outer Lobule, the Ear lower down on the outer Lobule, and the Eye at the center of the Lobule. The Chinese have two additional points representing the Eye at the Intertragic Notch and place the nose on the Tragus. In the Nogier system, there are major zones on the Lobule used for controlling different sensory processes, including the sensations of Vision, Audition, Olfaction, and Touch. These controlling points are used for treating neurological disorders of the different sensory systems.

Internal Organs and Endocrine System

For the most part, the somatotopic patterns by which the Chinese charts (Fig. 5) indicate the location of the internal organs are very similar to the auricular drawings developed by Nogier (Fig. 6). Conforming to the inverted homunculus design, the thoracic organs are found in the Lower Concha and the abdominal organs in the Upper Concha. The digestive tract is represented in the floor of the Concha, wrapping around the Root of the Helix. In both the Chinese and Nogier systems, the mouth is found in the Lower Concha, near the opening to the Ear Canal. Curving around the Helix Root from the Lower to the Upper Concha are found in turn the Esophagus, Cardiac Orifice, Stomach, Duodenum, Small Intestines, and Large Intestines. The Rectum, Anus, and External Genitals are found on that part of the Helix adjacent to the face.

Other abdominal organs which are similarly located in the Chinese and Nogier ear charts include the Ureter, Bladder, Gall Bladder, Pancreas, and Liver, all found in the Upper Concha. Thoracic organs which have identical corresponding auricular representation on the Chinese and Nogier maps of the body include the Trachea and Lungs in the Lower Concha.

Three internal organs, however, are found in very different locations in these two somatotopic systems. On the Chinese ear charts, the Heart is located with the other thoracic organs in the Lower Concha. Nogier, however, con-

tends that only endodermally derived tissue is in the Concha; he places the Heart, which originates from mesodermal tissue, on the thoracic vertebral level of the Antihelix. Whereas the Chinese ear charts show the Kidney as located in the Upper Concha near other abdominal organs, Nogier placed the Kidney underneath the inner rim of the Helix. The last point of distinction between the two systems is the Spleen, which is found on the Chinese charts in the Lower Concha, just below the location of the Liver, but in the Nogier auricular charts is located in the Upper Concha, near the Small Intestines. The Chinese ear acupuncture charts show certain internal organs with representations on the outer ridges of the auricle, in addition to the points located in the Concha. A series of points spread out along the outer Helix are used to treat the Tonsils and the Liver, and several more points in the Scaphoid Fossa are related to the Appendix. None of these points are reported in the Nogier ear charts.

The endocrine glands, which are regulated by the anterior pituitary as a master gland, are represented on vertical ear surfaces in both auricular systems. The Chinese point labeled Internal Secretion seems by its name and its function to represent the general release of endocrine hormones into the blood. This point is found on the Wall of the Intertragic Notch. Located in this same intertragic area are specific points described by Nogier which relate to the release of pituitary hormones. Specific hormones from the pituitary gland regulate the amount of hormones released by other endocrine glands, and this control system is represented in the Intertragic Notch area by the Adrenal (Surrenalian) point, the Thyroid point, and the Genital point. These different points do not represent the respective endocrine glands themselves but rather represent the pituitary hormones which control those glands. Treating the Genital point corresponds to the activation of gonadotropic hormones which induce the ovaries or testes to release sex hormones. It is interesting that in the same Wall of Antitragus area which Nogier places the Genital point (Fig. 6), the Chinese ear

charts (Fig. 5) show the location of Ovary and Testis points.

The actual endocrine glands are represented in the Nogier auricular charts as points arranged along the Wall of the Antihelix. However, in some cases, even these points do not necessarily correspond to the particular endocrine gland but to the paravertebral, sympathetic nerve fibers controlling that gland. Although there is a Genital point on the Wall of the Antihelix, the actual representation of the Ovary and Testis is located on the underside of the Root of the Helix. As noted just previously, the Chinese place these internal sex organs on the Wall of the Antitragus. In both systems, the External Genitals are located on that part of the Helix which is transected by the Lower Crus of the Antihelix. The Chinese place the Adrenal Gland on the Tragus, the Salivary Gland on the Antitragus, and the Thyroid and Mammary Glands on the Antihelix. The location of the Adrenal Gland is at most dispute between these two auricular somatotopic systems. Only the Nogier ear charts show a location for the Pineal Gland, localizing it to the bottom of the Tragus.

Nervous System

Whereas there are only a few points representing the peripheral and central nervous systems on the Chinese acupuncture charts (Fig. 7), a plethora of points delineating the nervous system are shown on the Nogier auriculotherapy charts (Fig. 8). Identical to both systems is the location of the sciatic nerve midway along the Lower Crus of the Antihelix, the point Nogier first discovered for the treatment of sciatica. Other similarities between the two auricular systems include the location of the Hypothalamus in the Lower Concha and an area on the Wall of the Antitragus labeled Subcortex by the Chinese and identified as the Thalamus by Nogier.

The Sympathetic division of the autonomic nervous system is represented on the Chinese ear charts by one point on the inner border of the Lower Crus of the Antihelix. A more complicated depiction of this system is shown in the Nogier auricular charts. The paravertebral, sympathetic chain of autonomic

ganglia, containing the cell bodies of the postganglionic fibers, is found along the Wall of the Antihelix, while the sympathetic preganglionic fibers are observed on the inner rim of the Tail of the Helix. The raised surface portion of the Tail of the Helix is said by Nogier to correspond to the spinal cord, again in an inverted orientation, with the cervical level toward the Lobule. The parasympathetic division of the autonomic nervous system is reported by Nogier to occur at the inner border of the Lower Concha. The sacral nerve fibers of the parasympathetic division extends upwards onto the Helix, the cranial nerve fibers descend down on the Lobule, and the vagus nerve extends out into the Concha, representing vagal innervation of the internal organs.

The Brain Stem and Cerebral Cortex levels of the central nervous system are represented in the Nogier auricular charts as a set of points localized to the Antitragus and Lobule. The auricular points which correspond to the Medulla Oblongata, Pons, and Trigeminal Nucleus occur along the outer Lobule, while the Thalamus, which in the brain connects the Brain Stem and the Cerebral Cortex, is found on the Wall of the Antitragus. The lobes of the cerebral hemispheres are represented on the ear Lobule, with the Frontal Lobe at the inner region of the Lobule, the Occipital Lobe toward the outer aspect of the Antitragus, and the Parietal and Temporal Lobes in between. The Cerebellum is found on the posterior and anterior surfaces of the auricle, near the location of the Occipital Lobe. The only remaining parts of the central nervous system not occurring in the Antitragus/Lobule zones of the ear are the representations of the Corpus Callosum on the upper surface of the Tragus and the Reticular Formation on the under surface of the Subtragus.

General and Functional Problems

Ear charts developed both by the Chinese (Fig. 9) and by Nogier (Fig. 10) include certain points that do not represent the location of a part of the body but instead relate to the treatment of some physical disease, psychological disorder, or bodily symptom. One ear point that is used in auricular acupuncture

C. (11). CHINESE EAR ACUPUNCTURE POINTS

NERVOUS SYSTEM

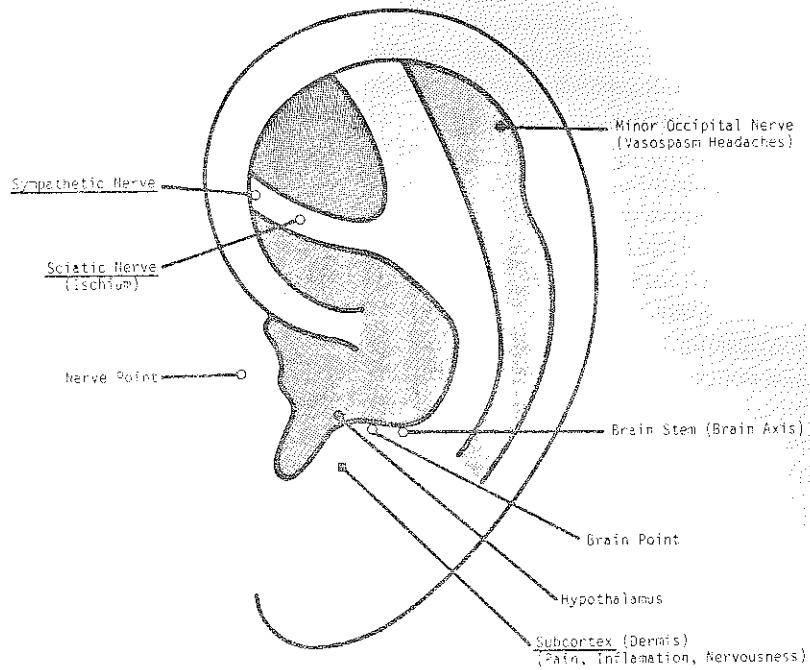


Fig. 7.

Chinese ear acupuncture points representing the nervous system (CIII).

N III. NOGIER AURICULOTHERAPY POINTS

NERVOUS SYSTEM

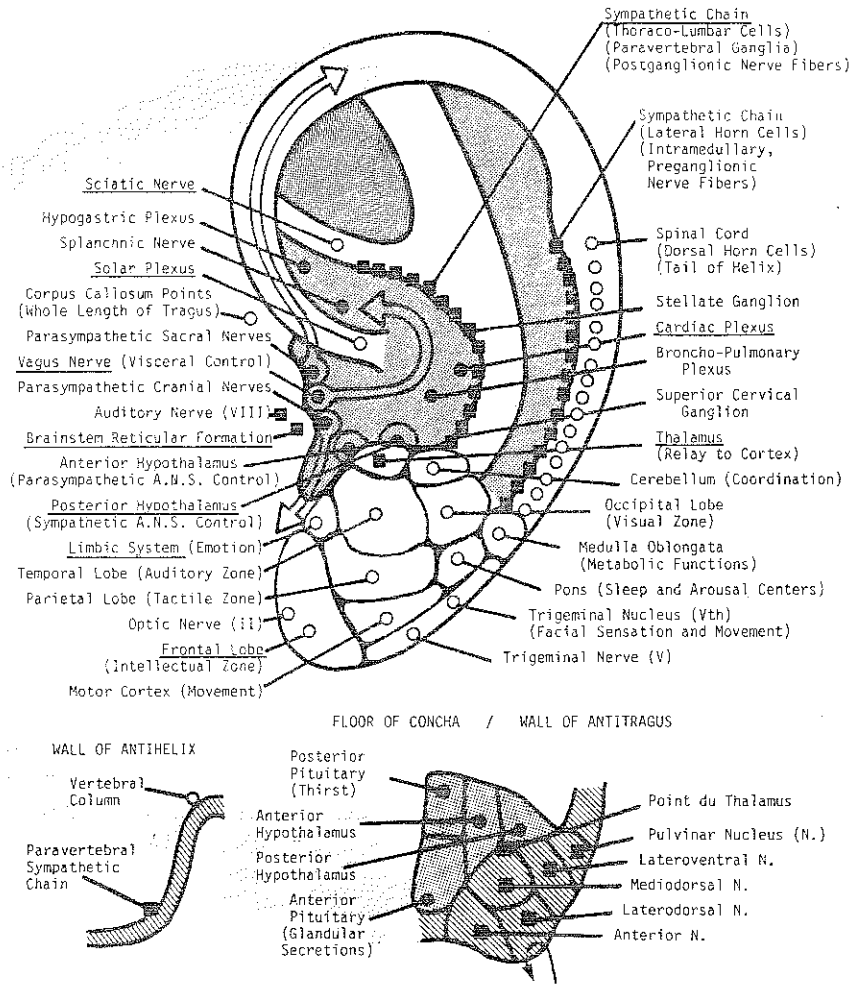


Fig. 8.

Nogier auriculotherapy points representing the nervous system (NIII).

treatment of most medical problems is located at the tip of the Triangular Fossa. First discovered by the Chinese, and labeled the Shen Men or Divine Gate point, treatment of this point proved to be so successful for the alleviation of pain, tension, and anxiety that it was incorporated into the Nogier system as the Wonder Point. The Point Zero ear loci discovered by Nogier in a notch on the Root of the Helix is similarly effective in relieving many symptoms and later became incorporated in some Chinese ear acupuncture charts. Because of their broad treatment uses, Shen Men and Point Zero are often categorized as master points, along with the Subcortex (Thalamus) and Internal Secretion (Pituitary Hormones) points.

The Chinese ear acupuncture charts (Fig. 9) show several points in the Triangular Fossa for the alleviation of specific medical disorders, with additional points found on other areas of the auricle. Besides the Triangular Fossa points, additional treatment points exist on the lower Tragus for reducing high blood pressure, on the peak of the Antitragus for alleviating asthma (Ping Chuan), and in the Lower Concha for relieving hepatitis. Other important Chinese functional treatment points include the Lumbodynia (Lumbago) point on the Antihelix, the Urticaria point in the Scaphoid Fossa, and the Neurasthenia point on the Lobule. The Hunger point on the Tragus is frequently effective for controlling weight problems and the Tooth Analgesia points on the medial Lobule are utilized for producing pain relief in dental procedures.

A completely different set of functional treatment points has been developed by Nogier and his followers. Besides the Wonder point, Point Zero, Thalamus point, and Pituitary Zone, other master points in the Nogier system include Omega 2 on the Helix, Omega 1 in the Upper Concha, Master Omega and Master Sensorial on the Lobule, and Master Oscillation in the Subtragus. The Valium Analogue Point on the lower Tragus, used for producing relaxation, is in a location similar to the Chinese point for decreasing high blood pressure. Nogier has noted a different point for reducing high blood pressure, the Wonderful

Point in the Concha. Both the Chinese and Nogier ear charts show a point on the tip of the Helix for controlling allergies, although, on the Nogier auricular maps this point is on the underside of the Helix.

Several auricular points are used in the treatment of psychological disorders; the Psychosomatic Point and Worry Point on the Nogier auricular charts occur on the same area of the Lobule which represents the Frontal Lobe. Moreover, they correspond to the location of the Chinese Neurasthenia Point. The Psychotherapeutic Point on the Helix curiously coincides with the location of the auricular representation of the External Genitals. Nogier has delineated two points which relate to sexual drive, a Sexual Arousal Point on the Upper Tragus, which increases libido, and a Sexual Control Point on the lower Tail of the Helix, which decreases libido. The Stress Fold Line on the Lobule has been derived from clinical studies⁹ which demonstrate that stress, hypertension, and coronary problems are related to the occurrence of this fold on the ear lobe.

Discussion

The auricular charts shown in this paper have noted the similarities and differences between the ear acupuncture maps of the body developed in China and those formulated by Paul Nogier of Lyon, France. The representations of the face, head, body, arms and most internal organs were located in nearly identical positions on the ear. The most distinct dissimilarities between the Chinese and Nogier ear charts related to the placement of points representing the Vertebral column, the Leg and Feet, the Heart, the Kidney, the Spleen, the Adrenal Gland, and most of the Nervous System. What can remain only speculative are the reasons for these discrepancies.

Because Nogier appears to have made the original discoveries of the auricular somatotopic system, there is some tendency to favor the complete acceptance of the Nogier ear charts over the Chinese ear charts where there are discrepancies between the two. Moreover, Nogier has continued with even more elabo-

rate research on these auricular maps since his initial discoveries of this system. The Chinese, though, have conducted extensive investigations of their own and provided definite support for the clinical efficacy of their system. Several possible factors could account for the accuracy of both the Chinese and Nogier auricular charts.

One problem that occurs in clinical research is that the medical diagnosis, which is used as the standard to assess the accuracy of auricular diagnosis, is not always as precise as would be necessary to determine a specific body pathology. For instance, a person may have a back pain problem which can be localized by X-ray to the second lumbar vertebrae. However, that same person may also have considerable muscle tension at the midthoracic level due to bracing against the low back pain. If the Nogier auricular maps are utilized for diagnosis, reactive ear points would be found for the low back on the Lower Crus of the Antihelix and for the thoracic musculoskeletal tension on the Tail of the Antihelix. The Chinese ear charts show the Lumbar Vertebrae as existing in the same Antihelix region as the Nogier Thoracic Vertebrae. In this case, the Nogier and Chinese ear charts would correctly find different reactive auricular points related to the medically diagnosed low back pain.

A different explanation for these chart discrepancies may simply be that the somatotopic maps on the ear do not have single, narrowly defined loci; rather, each area of the body may be represented on broad regions of the auricle. The representation of the lower back may extend some distance along the Antihelix and include both the Chinese and Nogier descriptions for the auricular location of the Lumbar Vertebrae. While the Chinese place the Leg on the Upper Crus of the Antihelix and Nogier localized the Leg to the Triangular Fossa, these are two adjacent regions of the ear. The Hip, Knee, and Foot points in each system are aligned in the same ascending order, extending towards the Top of the Helix. It could simply be that there are three narrow bands of points running from the Triangular

Fossa to the Upper Crus, which respectively correspond to the Hip, Knee, and Foot.

Differences in the location of Chinese and Nogier points for the Internal Organs are more difficult to account for by the previous explanation, since they are found in such widely disparate areas of the ear. An additional hypothesis may be that each area of the body has several different loci on the auricle to which it corresponds. Such a phenomenon does exist in the brain.²⁶ There are three different areas of the cerebral cortex which contain a complete, homuncular representation of the body. Moreover, in the primary somatotopic area the receptive fields are small and precise, whereas in the secondary and tertiary brain areas the receptive fields are broad and diffuse. The same may be true of the ear.

Nogier utilizes his knowledge about neuroanatomy in providing several ways to account for the discrepancies between his auriculotherapy system and the Chinese ear acupuncture charts. One of the most striking differences between the two sets of ear maps is the more extensive representation of the nervous system in the Nogier charts. In particular, Nogier has described elaborate representation of nerve plexus centers in the Concha of the ear, as well as other peripheral nerve fiber extensions of the autonomic nervous system. It is Nogier's contention that the Chinese Heart point and Kidney point in the Concha do not actually represent these two organs directly, but in fact correspond to the nervous innervation of the Heart and Kidney. In a similar vein, the Chinese points for the Ovary and Testis, which they place on the Wall of the Antitragus, are explained in the Nogier system as the representation of the pituitary gonadotropic hormones which indirectly control the Ovary and Testis.

There are two complicating factors which Nogier has introduced in his discussions of auriculotherapy. One is his concept of radiations, a symbol of which is shown in Fig. 4. It is Nogier's view that reactive points can not only be found at a specific locus corresponding to the part of the body where there is some pathology, but may also occur at 30° radiations from that point. More recently, Nogier

(CIV) CHINESE EAR ACUPUNCTURE POINTS

GENERAL AND FUNCTIONAL PROBLEMS

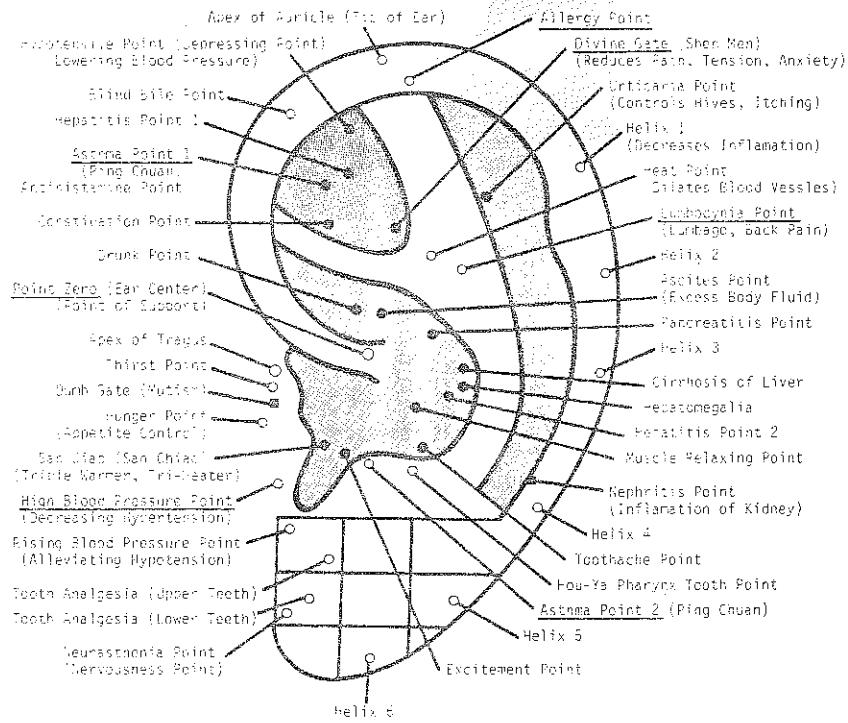


Fig. 9.

Chinese ear acupuncture representing general and functional problems (CIV).

N IV. NOGIER AURICULOTHERAPY POINTS

GENERAL AND FUNCTIONAL PROBLEMS

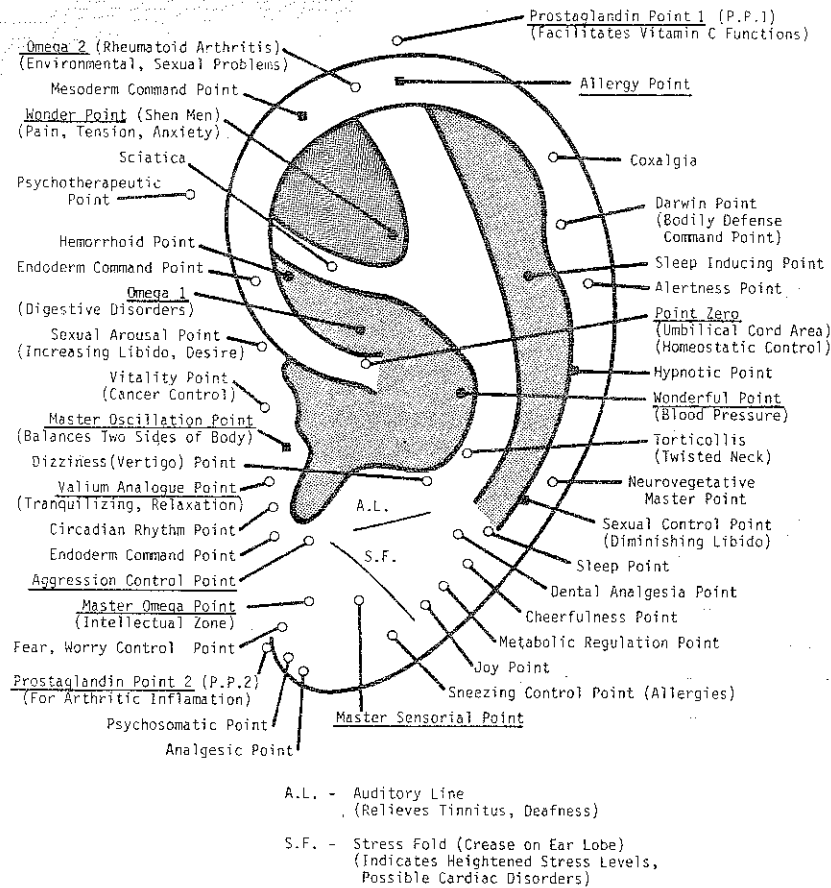


Fig. 10.

Nogier auriculotherapy points representing general and functional problems (NIV).

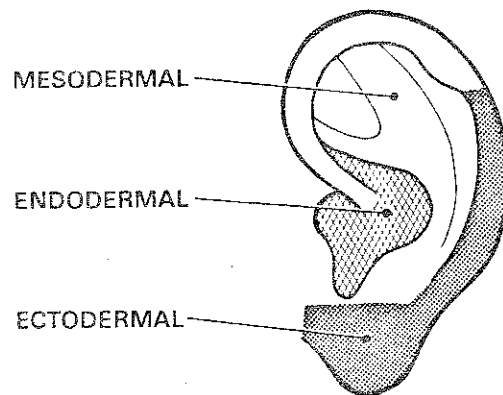


Fig. 11.

Embryological zones of the ear according to Nogier. Endodermal tissue is represented in the Concha. Mesodermal tissue on the Antihelix and surrounding areas, and Ectodermal tissue on the Lobule and Helix Tail.

has introduced the concept of three different zones of the auricle and three different phases. In the first phase, the Concha represents endodermal tissue, the Antihelix represents mesodermal tissue, and the Lobule represents ectodermal tissue (Fig. 11). In the other phases, the different zones on the ear alternatively represent the two other types of embryological tissue. Thus, each phase has a different somatotype and all three phases are superimposed upon each zone of the auricle.

The Chinese perspective of the ear is less neurophysiological than the Nogier system, instead utilizing the meridian theory of body acupuncture. These different meridians, carrying their vital, Chi energy, not only exist on the actual body but are also represented on the corresponding parts of the auricle. The Large Intestine point in the Upper Concha, for example, could not only represent the large intestine organ but also the Large Intestine meridian. A dental problem, which could be treated by the Large Intestine 4 (Hoku) point on the hand, could also be treated on the ear. Auriculotherapy could be applied not just at the Tooth Analgesia point on the Lobule, but also at the Large Intestine point in the Upper Concha and at the Hand point in the Scaphoid Fossa. The Chinese point for the Uterus is located in the Triangular Fossa, an auricular area which is shown in the Nogier charts as the location of the Lower Leg and Foot. Interestingly, there is a body acupuncture point on

the lower leg (Spleen 6), which is used for the treatment of the uterus.

Conclusion

It would certainly be much easier for beginning practitioner of ear acupuncture if there were only one set of auricular somatotypes. The discrepancies between these two systems and the variety of explanations to account for these contradictions does not leave one confident in the existence of homuncular representation upon the ear. Nonetheless, both auricular diagnosis and ear acupuncture treatments have proved to be of valuable clinical efficacy. Until further research delineates which aspects of these two systems are more accurate, it may simply be prudent to utilize them both. Certainly both systems maintain the concept of an inverted homunculus. Through its sensory and motor peripheral nerve connections to the brain, the auricle can be viewed as a computer terminal which can be used to diagnose problems registered in the central brain microprocessor. Central nervous system patterning of that disorder can be altered through auriculotherapy programming, achieving both pain relief and body healing. The auricular somatotype has not yet been shown to have direct neural pathways to the somatotopic areas of the brain, but this view of auriculotherapy may assist us in developing its clinical potential.

Acknowledgements:

The authors wish to thank Dr. Paul Nogier and Dr. Nolan Cordon for their consultation on the preparation of the charts in this manuscript, and also Mr. James Shores, Mr. Dennis Acklin and Mr. Donald Cerveny for their assistance in the preparation of auricular maps. We also wish to thank Mr. William Bishop of the UCLA School of Dentistry for graphic displays, and Daisy Valdez for manuscript preparation.

References

1. Leung, C.Y., Spoerel, W.E.: Effect of Auricular Acupuncture on Pain. *Am. J. Clin. Med.*, Vol. 2, No. 2, 1974, pp. 247-260.
2. Ng, E.K.: Results of 188 Cases of Low Back Pain Treated by Acupuncture. *Amer. J. Acupuncture*, Vol. 7, No. 1, 1979, pp. 55-60.
3. Wen, H.L., Cheung, S.Y.C.: Treatment of Drug Addiction by Acupuncture and Electrical Stimulation. *Amer. J. Acupuncture*, Vol. 1, No. 2, 1973, pp. 71-75.
4. Seversen, L., Markoff, R.A., Chun-Hoo, A.: Heroin Detoxification with Acupuncture and Electrical Stimulation. *Int. J. Addict.*, Vol. 12, No. 7, 1977, pp. 911-922.
5. Chen, J.Y.P.: Treatment of Cigarette Smoking by Auricular Acupuncture: A Report of 184 Cases. *Amer. J. Acupuncture*, Vol. 7, No. 3, 1979, pp. 229-234.
6. Sun, E.L.: Weight Reduction with Auricular Acupuncture. *Amer. J. Acupuncture*, Vol. 7, No. 4, pp. 31-315.
7. Premaratne, A.D.V.: Nerve Deafness of the Ear Treated with Acupuncture Therapy. *Amer. J. Acupuncture*, Vol. 6, No. 4, 1978, pp. 335-337.
8. Oleson, T.D., Kroening, R.J., Bresler, D.E.: An Experimental Evaluation of Auricular Diagnosis: The Somatotopic Mapping of Musculoskeletal Pain at Ear Acupuncture Points. *Pain*, Vol. 8, No. 2, 1980, pp. 217-219.
9. Lichstein, E., Chadda, K.D., Naik, D.N., Gupta, P.K.: Diagonal Ear-Lobe Crease: Prevalence and Implications as a Coronary Risk Factor. *New Engl. J. Med.*, Vol. 290, No. 11, 1974, pp. 615-616.
10. Clement-Jones, V., McLaughlin, L., Lowry, P.J., Besser, G.M., Rees, L.H., Wen, H.L.: Acupuncture in Heroin Addicts: Changes in Met-Enkephalin and Beta-Endorphin in Blood and Cerebrospinal Fluid. *Lancet*, Vol. 2, No. 8139, 1979, pp. 380-382.
11. Pert, A., Dionne, R., Ng, L., Bragin, E., Moody, T.W., Pert, C.: Alterations in Rat Central Nervous System Endorphins Following Transauricular Electroacupuncture. *Brain Res.*, Vol. 224, No. 1, 1981, pp. 83-93.
12. Choy, Y.M., Tso, W.W., Fung, K.P.: Suppression of Narcotic Withdrawals and Plasma ACTH by Auricular Electroacupuncture. *Biochem. Biophys. Res. Comm.*, Vol. 82, No. 1, 1978, pp. 305-309.
13. Huang, H.L., Warren, F.: *Ear Acupuncture*. Rodale Press, Emmaus, Pennsylvania, 1974.
14. Wexu, M.: *The Ear: Gateway to Balancing the Body. A Modern Guide to Ear Acupuncture*. ASI Publishers, New York, 1975.
15. Nehemkis, A.M., Smith, B.: *Ear Acupuncture Therapy*. Alba Press, Long Beach, California, 1975.
16. Veith, I.: *The Yellow Emperor's Classic of Internal Medicine*. University of California Press, Berkeley, California, 1972.
17. Nogier, P.F.M.: *Treatise of Auriculotherapy*. Maisonneuve, Moulins-les-Metz, France, 1972.
18. Lu, H.C.: *A Complete Text of Auricular Acupuncture*. Academy of Oriental Heritage, Vancouver, Canada, 1975.
19. Lowenschuss, L.S.: *Auriculotherapy Desk Manual. Bio-Instrumentation*, Goleta, California, 1976.
20. Chan, P.: *Ear Acupressure*. Center for Chinese Medicine, Monterey Park, California, 1977.
21. Nogier, P.F.M.: *De L'Auriculotherapie a L'Auriculomedecine*. Maisonneuve, Sainte-Ruffine, France, 1981.
22. Bahr, F.: *Introduction to Scientific Acupuncture*. German Academy for Auricular Medicine, Munich, Germany, 1977.
23. Bahr, F.: *The Clinical Practice of Scientific Auricular Acupuncture*. German Academy for Auricular Medicine, Munich, Germany, 1977.
24. Graf, M.F.: *Auricular Medicine and Acupuncture Physicians*. German Academy for Auricular Medicine, Kalamazoo, Michigan, 1975.
25. Kropce, H.: *The Fundamentals of Acupuncture*. K.F. Haug Verlag, Heidelberg, Germany, 1979.
26. Woolsey, C.N.: Organization of Somatic Sensory and Motor Areas of the Cerebral Cortex. In: Harlowe, H.F., Woolsey, C.N. (Eds): *Biological and Biochemical Bases of Behavior*. University of Wisconsin Press, Madison, Wisconsin, 1958, pp. 63-81.
27. Penfield, W., Rasmussen, A.: *The Cerebral Cortex of Man*. Macmillan, New York, 1950.