

Solving the Major Issue of Meridians in Traditional Chinese Medicine

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Abstract

Meridians(Jingluo, 经络), which have been debated in the medical community for thousands of years, are still in invisible and untouchable status. Its functions determine the human body life or death. Combined Chinese and modern medicine, we have firstly identified the anatomy and histological composition of triple energizer, which is the sum of connective tissues and its network is the carrier of meridians. Meridians are simply located on the triple energizer structure and is parts of it. We establish the concept of triple energizer-meridian network system. For the first time, we have seen meridians, touched and anatomized them, which feature universal significance to human health, and will open a new era of life science.

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Abstract : Meridians(Jingluo, 经络), which have been debated in the medical community for thousands of years, are still in invisible and untouchable status. Its functions determine the human body life or death. Combined Chinese and modern medicine, we have firstly identified the anatomy and histological composition of triple energizer, which is the sum of connective tissues and its network is the carrier of meridians. Meridians are simply located on the triple energizer structure and is parts of it. We establish the concept of triple energizer-meridian network system. For the first time, we have seen meridians, touched and anatomized them, which feature universal significance to human health, and will open a new era of life science.

One Sentence Summary: On the basis of revealing triple energizer, we unravel the anatomical essence of the meridians, from which we have seen the meridians, touched and anatomized them.

Main Text: The theory of meridians has been developed in the "Yellow Emperor's Canon of Medicine" [1]. Modern medicine still has a great deal of controversy on whether meridian structures exist or not. Qingren Wang of Qing Dynasty wrote "Traditional Chinese Medicine Anatomy Correction" and denied the existence of meridians[2]. Even experts who support it are unable to locate its positions, and believe that this theory derived from ancient civilization, which was discovered and applied by Chinese ancestors after the ice age.

Some doctors think that it was a product of the aliens, and people on earth cannot create such a magical meridian civilization.

There are a lot of researchers who study meridians. In 1950s, some people thought that the meridians were blood vessels spreading everywhere in the body. A North Korean researcher claimed to have found the meridians bodies in 1960, but committed suicide after found to be false. In 1970s, people tried to measure the meridians sensing phenomenon, and discovered the existence of its sensing way; by 1980s, researchers found that the isotope could follow the meridians pathway movement information, and at the same time detected that the meridians circuit had a low electrical resistance and smooth sound and light signal transmission. to commit suicide to commit suicide. Entering this century, hypotheses of neurology, liquidness and energy were formed to deal with the functions of meridians[3].

After thousands of years practice, meridians are proven to have functions without anatomical morphology. Modern medicine thinks that it might have only a functional virtual organization structure without real morphological localization. Ultimately, meridians remain to be an unsolved enigma.

First, triple energizer(Sanjiao,三焦) is meridians carrier

Firstly, we have nominated an entirely new definition of triple energizer, which has name, tangibility, anatomical body and functions[4]. We have found that the human body is surrounded by connective tissue of the triple energizer system. These connective tissues are as large as the pleural peritoneum surrounding the organs, followed by the connections wrapped by the tendon and ligament, as small as the outer membrane of blood vessels, periosteum and nerve sheaths. In a nutshell, triple energizer is the total of fibrous connective tissues of the whole body [5]. All basis of tissues and functions of viscera, blood vessels, nerves, lymphatic ducts and their morphology are packed, regulated and supported by the triple energizer system, which administrates "Qi from beginning to end" functions.

All acupoints of Duma meridian, from Changqiang(DU1) to Baihui(DU20), may be distributing in the connective tissue of supraspinal ligament and interspinous ligament atop the main line to the spinous process and the midline of the head[6]. Langevin et al. found that 50% of acupoints and 80% of meridians on the upper arm locate in the connective tissues[7]. Hu et al. found that slight acupuncture in connective tissue can produce acupuncture analgesia[8]. Chen and other studies have found that connective tissue plays an important role in the process of acupuncture analgesia[9]. The above discussion of the meridians and connective organizations is close to the understanding of the nature of the meridians. In the last mile, it didn't break through the confusion and failed to gain methodological perception.

Meridian system is a conductive pathway through the body, and triple energizer connective tissue structure containing liquid molecules and collagen, with conductive efficiency, has a very wide distribution of telecommunication transmission network linking skin, bone, ligaments, visceral organs and cells, which can be compared to the human universe wrapping and integrating all types of tissues and information[10]. Meridians bioelectric signals are transmitted through a triple energizer network of connective tissue to various parts of the body. Meridians and acupoints are located in the connective tissues, parts of systemic triple energizer connective tissue network. Without triple energizer system, there would not have meridians. Triple energizer is the meridians carrier.

Based on this, the location and morphological anatomy of the meridians are clarified. Meridians and acupoints are actually the tangible structures, which participate completion of the body Qi functions. Hence, it has opened a new era of complete understanding of the meridians.

Second, the morphology and functions of meridians

Meridian, like other organizations, has a real structure composed of two parts: morphology and function. Why ancient and modern medical scholars fail to see the meridians in human anatomy? It is because they did not understand and grasp the true structure of the triple energizer in human body[11]. All medical doctors see vascular vessels, nerves, viscera, and also very often tendons, fascias, nerve sheath and other systemic connective tissues in practical anatomy of the human body structure, since they took the fibrous connective

tissues only as human body ubiquitous connective tissue, and could not understand the true nature of the triple energizer, hence they had overlooked the living reality of meridians organization and ignored it up to now.

We found for the first time that the formation and distribution of meridians are along the triple energizer connective tissue system. Therefore, we combine them into a triple energizer-meridian system[4].

How does the meridian information enter the viscera? The distribution of meridians is from small to large, from shallow to deep, through the acupoints of Well, Brook, Stream, River and Sea into the triple energizer-meridian system established on the surrounding connective tissue network and into the viscera.

Traditional Chinese medicine(TCM) does not make clear the anatomic relationship between triple energizer and meridians. It treats them separately, and integrates them into one. We believe that only by establishing triple energizer-meridian fibrous connective tissue network in the viscera, can the comprehensive transportation function of systemic information integration be achieved. This system, like the global Internet system that connects the world, allows biological information to pass through the body. Slight movement of a part may affect overall functionality.

The triple energizer-meridian system connects and supports all human tissues, having the trunk and sub-network throughout the body. This distribution reflects its functions as the supporting and transmitting system. The meridians include twelve meridians, fifteen large collaterals and eight extraordinary meridians(Qijingmai). The twelve meridians are divided into twelve divergent channels which are the branches of twelve meridians going into the way of six pairs of viscera. The twelve meridians are also divided into twelve meridians sinews connecting muscles and joint tissues in order to maintain the normal function of joint tissues. Finally, the twelve meridians form twelve skin areas in the range of cutaneous innervations. The fifteen large collaterals can be subdivided into minute collaterals and then assigned to the skin to form superficial collaterals so as to produce network effect. In the end, the uninterrupted distribution of meridians will continuously link the interior-exterior Yin Yang of related viscera, so as to complete the triple energizer-meridian supporting, allocating and fostering functions. The eight extraordinary meridians assist twelve meridians to finish the overall network. Therefrom, each human viscus finds its place and coordinate in the triple energizer-meridian network, endlessly playing active role in its circulation. The functions generated are the foundation of the whole body functions with all-embracing[4,11].

The triple energizer-meridian main function is to remove the pathogen among the surface of the body, viscera and cells by the circulation and distribution of nutrient Qi(Yingxue) and defense Qi(Wei qi) which conduct energy information unblocked and regulate spiritual and physical balance.

Third, we can see meridians

Meridians system goes to as deep as the level of viscera and as shallow as the skin, and its network penetrates the entire body. Sick visceral information can be projected onto the skin surface, showing different colors. So the nature of meridians lesions can be evaluated on the basis of the changes of skin colors.

Meridians are connected to the skin surface with large collaterals, minute collaterals, superficial collaterals and twelve meridians cutaneous areas. Let's look at the color change of Yuji(LU10) acupoint to explain the case. Yuji acupoint is the Brook point of hand Taiyin Lung meridian, where the variation in skin color reflects the features of the Lung meridian lesion. The blue color of Yuji skin mirrors the cold in the Lung meridian, and the red color shows pathogenic heat. If the skin appears in green, black and red colors intersection, it means the Lung meridian suffers from simultaneous occurrence of cold and heat syndromes. Yuji acupoint under Lung meridian skin is distributed in the shape of a funnel, located at the first metacarpal midpoint radial dorso-ventral boundary. The needle inserted 1.0-1.6 centimeters vertically will reach the point. The specific anatomical arrangement is as follows from shallow to deep: the skin, subcutaneous tissue, abductor pollicis brevis and opponens pollicis, flexor hallucis brevis aponeurosis and the first metacarpal periosteum[12]. Yuji acupoint's core is composed of staggered aponeurosis, periosteal and other fibrous connective tissues, which are parts of the triple energizer-meridian system. Skin surface,

that is cutaneous areas of Yuji acupoint, is the open window of Lung meridian. The color change shows that meridians are tangible, functional and anatomic structures.

Fourth, we can touch meridians

Each acupoint, which is at interconnecting fringe area or dorso-ventral boundary and the junction of different fascia connective tissue network, is the channel for exogenous evil entering and being cleared. One can press acupoints and feel the energy transmission of meridians.

Yanglingquan(GB34)(Fig.1), the Sea acupoint of Gallbladder meridian, is located at fringe depression, where the connective tissue interconnects above the deep fibular periosteum, below fibular head between ligament and head of fibula. To press Yanglingquan to Deqi(acupoint breath) state, adjusting the breath and inward feeling the meridian, one can feel Gallbladder meridian subtle energy pulse through the skin surface.

Fifth, we can anatomize meridians

To explain the anatomical distribution space of acupoints, let's take the approach of Mingmen(DU4)(Fig.2) acupoint position in the Dumai connective tissues as example. It is located in the posterior midline, in the depression of second lumbar spinous process. The path for reaching the acupoint is as follows: sequentially through the skin, subcutaneous superficial fascia, supraspinous ligament, stopping in the interspinous ligaments. The entire depth of the acupuncture into the acupoint is between 1-2 centimeters.

Neiguan(PC6) acupoint, belonging to the hand Jueyin Pericardium meridian, is in the middle of the volar forearm median, 3.0 centimeters upward wrist rasceta between the palmaris longus tendon and flexor carpi radialis tendon. It penetrates from the skin and into the subcutaneous tissue; passes through flexor carpi radialis muscle and tendon palmaris longus; passes ulnar side of the median nerve and median artery; crosses flexor digitorum superficialis, flexor digitorum profundus and pronator quadratus muscle; finally it stops at radial and ulnar interosseous membrane. Three connective-tissue-rich regions containing nerves and blood vessels in Neiguan acupoint from shallow, medium to deep, are effective stimulation area. Acupuncture or traction nerve vascular connective tissue membrane produces a feeling of Deqi[13].

Sixth, countless stimulation points distributed in triple energizer space outside meridians

Triple energizer-meridian system features rapid autogenous-transmission functions and loops through the brain conveying information, which achieve the local and global efficacy of acupuncture anesthesia.

1. TCM scholars have discovered some nerve stimulation points which are located on the peripheral distribution area of nerve system[14]. The very short stimulation applied to the points will evoke neural discharge-like feeling, thus producing a therapeutic effect. They believe that effects are the outcome of direct needle stimulation on nerves, and has nothing to do with meridians. These stimulation points could not be regarded as existing acupoints.

After having solved the perplexity of the triple energizer-meridian system, and recognized its nature of anatomy, we make it clear that these puncture points are just on the nerve sheaths, which are the distribution area of connective tissues of the triple energizer-meridian system. The nerve sheaths and the nerves, like shadow following the body, join the dominative function of the nerves. Hence only 3 seconds stimulus each time will generate effects. Apart from this, effects from the stimulus points are of systemic role, rather than the nerve-dominative area as defined by modern neurology. The cross-nerve distribution effects produced from local stimulus points spread through the systemic connective tissue network of the triple energizers-meridians system.

2. Application of acupuncture anesthesia has obtained medical approval. It is clear that stimulating acupoints taken along meridians in the state of Deqi can reach analgesia in the far meridians dominating region. There is still one major puzzle. That is why stimulating non-meridians area, such as wrist-ankle acupuncture, float needle, and only a slight stimulation of superficial connective tissue without Deqi can produce analgesic effects.

Xiao, through stimulating the right side of Zusanli(ST36) and its next 2 cm of non-acupoint area, found more activation to varying degrees in the same brain regions, which suggests that all stimulating points are in the triple energizer connective tissue network beyond the dominating regions of the meridians system[15].

To stimulate triple energizer-meridian system can generate electrical activity in the cerebral cortex, and also directly through the rapid delivery of analgesic effect of connective tissue. It is believed that the Deqi sensation under the needle of the operator is achieved by inserting and twisting the needle to make the needle body and the connective tissue tightly bound and initiate the coupling effect[16].

To clarify the relation between triple energizer and meridians may terminate these doubts. Meridians are the key links of the triple energizer network, and acupoints are the key role points of meridians. Acupoints along meridians are considered more therapeutically valuable than others for analgesia, but those numerous extra acupoints on triple energizer producing similar or slight effect.

Chinese ancestors created the meridians civilization in ancient time. Although they were unable to explicitly locate them, they made it clear that its functions maintained the fundamental human survival. We have been inheriting and carrying forward the Chinese culture and have truly recognized the anatomical essence of meridians, which are parts of the triple energizer network. Indeed, meridians have the name, functions, tangibility, and anatomy distribution, which are made up with the staggered systemic connective tissue. We have not only seen meridians, but also touched them, and furthermore anatomized them.

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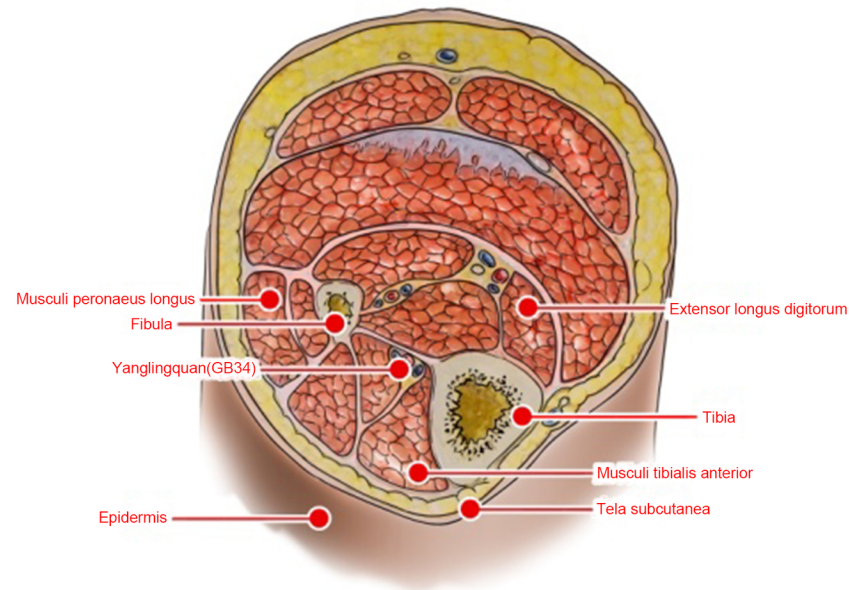


Figure 1, Yanglingquan(GB-34) acupoint position

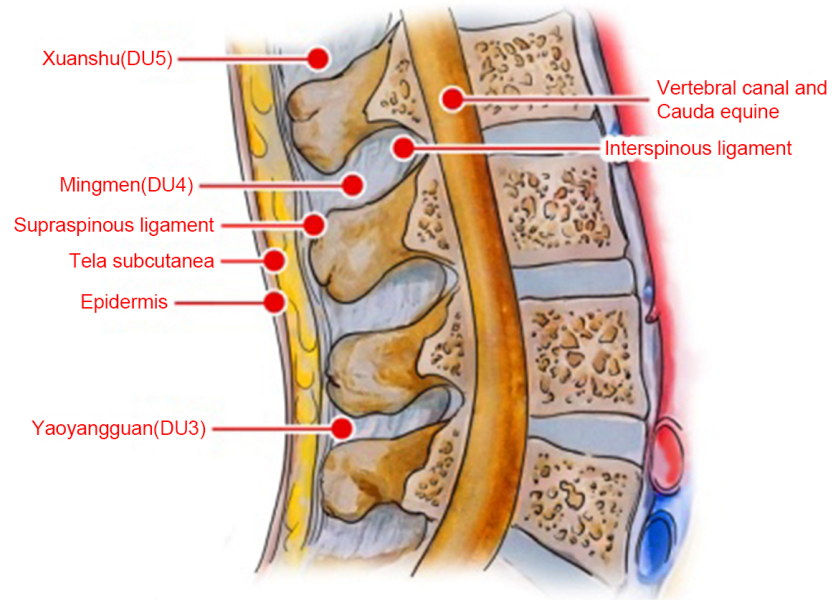


Figure 2, Mingmen(DU-4) acupoint, Yaoyangguan(DU-3) acupoint, Xuanshu(DU-5) acupoint position