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Exploring Traditional Chinese Medicine Diagnosis and Treatment of Spastic Tilt Neck

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Abstract: Based on the theoretical framework of meridian tendinomuscular channels, this analysis explores spastic torticollis by examining the pathways of these channels and their relationships with the liver, spleen, and bladder meridians. It posits that there is a significant correlation between meridian tendinomuscular channels and spastic torticollis. Drawing from the current understanding of meridian tendinomuscular theory, it is proposed that the pathology of spastic torticollis involves an imbalance between tendons and bones as well as damage to the tendinomuscular structures. This leads to a diagnostic approach that identifies affected tendinomuscular areas, locates the focal points of channel congestion, and applies specific needling techniques to these points. Furthermore, a differentiated approach to acupuncture treatment based on the meridian tendinomuscular perspective can expand the diagnostic framework and therapeutic strategies for torticollis, thus improving upon the conventional, singular treatment methods for spastic torticollis.

1. Introduction

Spasmodic torticollis is a focal dystonia disorder characterized by intermittent or sustained involuntary contractions of the neck muscles, leading to abnormal head and neck postures. The primarily affected muscles include the sternocleidomastoid, splenius capitis, and splenius cervicis, commonly resulting in muscle soreness, hypertrophy, and associated pain in the neck and shoulders. This condition can significantly reduce the quality of life for patients, leading to emotional distress and even symptoms of depression. The etiology remains unclear, with the onset typically occurring between the ages of 40 and 60, and a higher incidence rate in females compared to males [1]. In traditional Chinese medicine (TCM), spasmodic torticollis falls under the categories of "jing syndrome," "sinew disease," and "wind spasm." The "Ling Shu • Jing Jin" chapter states: "Diseases of the meridian tendinomuscular channels, when cold, cause contractions and rigidity of the tendons; when hot, lead to laxity and weakness of the tendons, resulting in flaccidity and loss of function. Excessive yang causes contractions, while excessive yin leads to an inability to stretch." This implies that tendinomuscular disorders generally manifest as ailments of the muscles and joints along the pathways of the meridian tendinomuscular channels, primarily presenting with pain and movement disorders such as stiffness, spasms, pain, rigidity, flaccidity, and paralysis.

Western medical treatments mainly involve local injections of botulinum toxin or oral medications like anticholinergic agents and dopamine-related drugs, which can alleviate clinical symptoms but often come with numerous side effects and unstable long-term efficacy. Given the chronic nature and unclear pathological mechanisms of spasmodic torticollis, along with limited treatment options and generally moderate prognoses in Western medicine, exploring and guiding the treatment of spasmodic torticollis from the perspective of TCM's meridian tendinomuscular theory may provide new therapeutic insights.

The theory of meridian tendinomuscular channels is an ancient conceptualization derived from anatomical knowledge at the time, using twelve running lines as a framework to summarize the physiological and pathological principles of human ligaments, muscles, and their associated structures. The term "meridian tendinomuscular channels" first appeared in "Ling Shu • Jing Jin," which divided the system into three yin and three yang channels for both the hands and feet, detailing their pathways, symptoms, and treatment principles. The twelve meridian tendinomuscular channels originate from the extremities and travel centripetally, not entering the internal organs. They are neither yin nor yang and do not have paired internal-external relationships, instead connecting through converging knots. Meridian tendinomuscular theory and the meridian system are two main components of the meridian network. In modern times, the meridian tendinomuscular system has been recognized as an independent system, with many practitioners reflecting on the causes and treatments of tendinomuscular diseases in clinical practice. For instance, Wei Wei et al.[2] consider the meridian tendinomuscular system to be a connective tissue system that is independent yet closely related to the meridian system, maintaining the body's dynamic mechanical balance. Dysfunction in this system manifests as bodily pain, sometimes detectable as abnormal nodules or cords. Wang Zhiliu and Liu An[3] suggest that the meridian tendinomuscular system is a distal diagnosis and treatment system based on tendons, rather than merely an anatomical structure. During diagnosis and treatment, it is crucial to understand the normal pathways and structures of the meridian tendinomuscular channels. By examining the tension or laxity of the muscles along these channels and analyzing how they influence the structure of the meridian tendinomuscular channels to cause pain or movement disorders, appropriate therapies can be selected to restore normal structure and complete the treatment. The following discussion will explore the physiology and pathology of torticollis from the perspective of the pathways and structural framework of the meridian tendinomuscular channels.

2. Understanding of spastic torticollis based on meridian tendon theory

2.1 Meridian tendon travel

"The tendinomuscular channel of the foot Taiyang meridian ties at the occiput... ties at the shoulder bone. Its pathology includes reversed spinal bending and stiff neck tendons."; "The tendinomuscular channel of the hand Yangming meridian, its branch encircles the scapula, and the spine... its pathology involves pain and spasms along its course, inability to raise the shoulder, and restricted neck movement."; "The tendinomuscular channel of the hand Taiyang meridian, its pathology involves pain encircling the scapula and extending to the neck, and stiff neck tendons...". From the indications of "pain and spasms along its course" and "stiff neck tendons," it can be deduced that spasmodic torticollis is related to the pathways of the foot Taiyang tendinomuscular channel, the hand Yangming tendinomuscular channel, and the hand Taiyang tendinomuscular channel.

2.2 Musculoskeletal structure

The twelve sinew channels accompany the twelve meridians. The sinew channels "mainly bind the bones and facilitate the joints," and their structural course reflects their functional characteristics: firstly, to bind the bones and joints, and secondly, to facilitate movement. According to "Lingshu • Meridians": "Bones serve as the framework, meridians nourish, sinews provide strength, muscles offer robustness, and skin is firm while hair grows," the bones, sinews, and muscles of the human body collectively form the musculoskeletal system. Under normal conditions, the skeletal and muscular systems rely on the nourishment of the meridians and blood flow, as well as their mutual coordination, to maintain the body's balance in both motion and stillness. Xie Jiao et al. [4], through a comparative study of the theories of sinew channels and myofascial chains, suggest that both possess a holistic nature. The holistic nature of the sinew channels determines that the muscles, bones, fascia, and joints of the human body maintain the balance of tension and contraction through mutual coordination. If a load is applied to one part, the entire structure will adapt accordingly. However, if the load exceeds the adaptive range, structural damage and imbalance will occur. The occurrence of spasmodic torticollis is an example of this, where the sternocleidomastoid, splenius capitis, or levator scapulae muscles generate muscle force to pull the neck into normal rotation. When the load on one of these muscles becomes excessive, the balance of the sinew and bone structure is disrupted, leading to irregular neck movements.

2.3 Meridians and meridians

From the holistic perspective of traditional Chinese medicine, the meridians and collaterals reflect the unity of internal and external holistic views, structural integrity, and the overall concept of qi and blood [5]. The human body is a unified entity, comprising internal organs and external skin, veins, muscles, tendons, and bones. The meridians and collaterals complement each other, with the former distributing alongside the latter, whose functional activities rely on the warmth and nourishment provided by the flow of qi and blood, as well as the regulation of meridian qi. The twelve meridians are most abundant in the muscles; when the spleen qi is strong, the muscles and tendons flourish, and the meridians require the nourishment of the Stomach Meridian of Foot-Yangming. The "Lingshu • Meridians" states that the Foot-Taiyang Meridian governs the conditions of the tendons, emphasizing the significance of the Liver in storing blood and the Taiyang in managing the meridians [6]. The Foot-Taiyang Meridian, being the meridian with the most vigorous yang energy, as explained by Zhang Zhichong in "Lingshu Collection • Volume II," asserts that "yang energy, when gentle, nourishes the tendons. "The yang energy can indeed nurture the meridians and collaterals [7]. The Foot-Taiyang Bladder Meridian runs along the back, governing the body's yang energy, while the Foot-Jueyin Liver Meridian traverses the body's inner side, governing yin and blood storage. Liver blood provides a source for nourishing the tendons, and yang energy enables the tendons to be flexible and supple. The spasmodic torticollis affects the back muscles, whose normal function depends on the nourishment of qi and blood, thus relating to the Yangming, Taiyang, and Jueyin meridians.

3. Pathologic understanding of spastic strabismus based on the meridian theory

In "Ling Shu: Tian Nian," it is stated that "muscle relaxation" is the physiological form of the meridians. The meridians in the neck and shoulder area maintain "muscle relaxation," requiring the support of bones and the stabilization of muscles. The major meridians support the bones and facilitate joint movement. The meridians maintain three-dimensional balance by constraining the

cervical and thoracic vertebrae. When the meridians are diseased, they primarily cause muscle and joint pain along their pathways, disrupting the intrinsic and extrinsic stability of the cervical spine and thoracic spine, pulling muscles, and leading to spasmodic torticollis [2].

The neck and shoulders maintain mechanical balance through the stability of the cervical spine, thoracic spine, and shoulder joints. Proper traction of the neck and shoulder muscles is necessary to ensure normal function. Joint movement relies on the muscle traction of the meridians. Thus, muscle contraction is the driving force behind joint activity. When the meridians are well-regulated, the muscles contract and relax freely, allowing joints to move smoothly, hence termed "facilitating joint movement." Conversely, if the muscles of the meridians are malnourished, they become flaccid, and the spirit and energy fail to move them, resulting in weak or uncontrolled joint activity. This ultimately manifests as impaired limb movement, loss of function, and symptoms such as involuntary twitching, tremors, weakness, and paralysis [8]. From the theory of meridians, the pathology of spasmodic torticollis can be deduced as twofold: imbalance of muscles and bones, and damage to the involved muscles.

3.1 Musculoskeletal imbalance

The joints are supported by bones as their structural foundation, with the meridians arranged longitudinally, connecting the joints through cohesive combinations, weaving a network throughout the body to form a three-dimensional framework. Bones themselves cannot move; it is through the coordinated actions of meridians, fascia, muscles, and ligaments that joints are capable of flexion, extension, rotation, and other movements. As stated in "The Inner Canon of the Yellow Emperor - Generating of the Five Viscera": "All tendons are related to the joints." The meridians adhere to the bone surface, restraining the bones, and assisting in joint movements, thus enabling normal body functions [2]. When the meridians attached to the bones are abnormal, joint movements become restricted, affecting the three-dimensional balance. For instance, when a joint within the cervical, thoracic vertebrae, or shoulder is compromised due to spasmodic torticollis, the balance in the neck and shoulder region is disrupted, leading to a shift in the center of gravity. This shift results in altered load-bearing on local muscles, either concentrating stress or exceeding load limits. Consequently, this causes compensatory hyperplasia and hypertrophy of the fascia and muscles [9], which is a pathological condition of the muscles, leading to muscular fatigue and protective spasms in the injured muscles, further exacerbating the imbalance of muscle strength.

3.2 Muscle damage

In the "Su Wen: Treatise on the Manifestation of Heavenly Qi," it is stated: "If damp heat is not expelled, the large tendons become soft and short, and the small tendons become lax and elongated; the softness and shortness cause contraction, while the laxity and elongation lead to atrophy." The pathological changes in spasmodic torticollis affect the trapezius, erector spinae, sternocleidomastoid, multifidus, interspinal, and intertransverse muscles [8]. These muscles, when subjected to uneven stress or overuse, can develop strain, leading to the formation of "deposits." These deposits, if accumulated over time, obstruct the flow of qi and blood, resulting in "stagnation and seepage," which manifests as pain. Prolonged accumulation of pathological substances and impaired circulation of qi and blood lead to the formation of local nodules. Chronic pressure on these nodules disrupts the flow of qi and blood in the meridians, causing tendons to either become excessively lax or atrophy.

4. Meridian theory guides acupuncture in the treatment of spastic cervical strabismus

For the treatment of spasmodic cervical strabismus, Xing Hengzhi et al [10] treat the disease by identifying the meridians, identifying the cold, heat, deficiency and solidity, and Zhang Jinjing et al [11] treat the disease by identifying the disease location, and create the “five adjustments method” to treat spasmodic cervical strabismus. Spasmodic cervix treatment methods are different, according to the theory of meridian tendon, find the meridian tendon foci, and dredge the meridian qi and blood and its maintenance of the normal operation of the meridian qi and its importance.

4.1 Finding meridian node foci in spastic strabismus

To locate the nodal points of the meridians, one can follow the traditional Chinese medicine method of "inspection, palpation, tracing, and determination" to identify these nodal points. "Inspection" involves observing the meridian pathways for any thickening of the muscles, changes in skin color, and the extent of these changes. "Palpation" involves feeling the muscle tissues for any depressions or protrusions and assessing whether they are soft or rigid. "Tracing" refers to following the identified nodal point from the superficial to the deeper layers of the meridians to determine the depth of the pathological changes, or tracing along the meridian pathway to understand the spread from a point to an area. To locate the nodal points in spasmodic torticollis, follow these steps to confirm the direction of the neck deviation, examine the range of the torticollis, further palpate the affected area to establish the pain points. Meridian pain points typically spread from a point to an area, initially starting as a point and gradually expanding as the condition progresses. The pain points or painful areas help identify which meridian is affected.

4.2 Dredging the relevant meridian qi and blood, and maintaining the normal operation of the meridian qi

To identify spasmodic strabismus from the circulation of the meridians and the overall concept of the meridians, one should dredge the qi of the foot syncopal liver meridian to soften the liver qi; take care of the qi and blood of the foot yangming stomach meridian to moisturize the sinews and muscles; regulate the qi of the foot shaoyangyin kidney meridian to maintain the stability of the bones and joints; and warm and nourish the qi of the foot solar bladder meridian so as to make the meridian and tendons warm and moist with a source of warmth.

4.3 Acupuncture method

The “Spiritual Pivot - meridian tendon” mentioned the general rule of treatment of meridian tendon disease: “treatment in burnt needle robbing stabbing, in order to know for the number, in order to pain for the acupoint”, in addition to the burnt needle, the clinic, acupuncture techniques are diverse, such as Yang Zhigang and so on to take the Guan prick method [12]. Ma Yuan and others take Qi prick method plus cupping method [13], in order to improve local blood transport, accelerate the removal of metabolites. Xu Minghui et al. took rows of stabbing method and so on [14]. Tendon knots tend to be distributed in three dimensions on the meridian tendons [15]. Because of the distribution of tendon knots in the tendon origin and termination points, stress points and muscle-rich parts, studies have shown that [16] sternocleidomastoid muscle origin, the upper angle of the inner scapula, the upper edge of the inner side of the scapula, the sternocleidomastoid muscle termination point and the seventh cervical vertebrae (C7) and shoulder crest line of the mid-point of the distribution of tendon knots in the high-frequency areas, and spastic cervical inclination susceptible to the involvement of the muscle is basically the same, the clinic in the identification of

the location of the disease, the origin and termination point of the corresponding muscle to be After identifying the location of the disease, acupuncture can be performed at the starting and stopping points of the corresponding muscles, and meridian stabbing can be performed at the meridian knot foci. At the same time, we can add or subtract acupoints by recognizing the disease, for example, if the patient is hyperactivity of liver yang, we can take acupoints of liver meridian such as Taichong, Li Gou; if the patient has been sick for a long time and the muscles are not nourished, we can take acupoints of yangmings meridian such as Shenggu, Ashansanli, and so on.

5. Conclusion

In conclusion, spasmodic torticollis is localized in the tendino-muscular meridians and is associated with the liver, spleen, and bladder meridians. The pathological mechanism involves the imbalance of tendons and bones in the neck and shoulder region and the atrophy of local muscles. Based on the theory of tendino-muscular meridians, the treatment of spasmodic torticollis should involve identifying the affected tendons and muscles, locating the meridian nodes, and using meridian needling techniques. This should be supplemented by nourishing the spleen and stomach, enriching the blood, softening the tendons, and invigorating yang energy to alleviate muscle spasms and promote the balance of tendons and bones.

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