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Treatment of Menstrual Mastalgia from the Perspective of Simultaneous Regulation of the Liver and Spleen

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Abstract: ***Menstrual mastalgia is a common cyclic clinical complaint among women of child-bearing age. Its major manifestations include breast distension and pain, even marked tenderness, occurring before, during or after menstruation [1]. Recurrent episodes severely impair women's physical and mental health as well as daily life. From the perspective of modern medicine, its pathological mechanism is defined as breast interstitial fluid retention and local neural sensitization induced by cyclic fluctuations of ovarian hormones [2]. Modern physiological studies demonstrate that relative changes in estrogen and progesterone levels in the late luteal phase give rise to hyperplasia of mammary ductal epithelium and interstitial edema, which constitute the direct physical basis for pain generation [3]. According to traditional TCM visceral and meridian theory, the disease is located in the breast and closely associated with the liver and spleen. Its core pathogenesis includes liver-qi stagnation, impaired spleen transportation, and intermingled excess and deficiency. The liver governs dispersion and free flow of qi, while the spleen governs transportation and transformation. Dysfunction of the liver and spleen serves as the root cause of recurrent attacks [4-6]. Therapeutically, a holistic regulatory strategy of "simultaneous regulation of the liver and spleen" is emphasized [7]. Recent studies verify that this traditional syndrome-differentiation framework shares high isomorphism with modern physiological mechanisms including stress-neuroendocrine regulation, gut-liver axis metabolism and inflammatory modulation, laying a solid theoretical foundation for integrative-medical intervention for menstrual mastalgia [8].***

Keywords: Menstrual mastalgia, Simultaneous regulation of the liver and spleen, Liver-qi stagnation with spleen deficiency, Traditional Chinese medicine therapy.

1. Physiological Correlation of the Liver-Spleen with the Breast and Menstruation

In TCM visceral-meridian theory, the nipple pertains to the Liver Meridian, and the breast is connected with the Stomach Collateral. The spleen and stomach form an exterior-interior relationship. Regular menstruation and breast physiological-pathological changes are tightly linked to the liver and spleen (stomach). The liver governs dispersion, which regulates qi movement and blood circulation throughout the body, modulates abundance-depletion of qi-blood in the Chong and Ren Meridians, and stabilizes qi-blood rhythm during menstruation. When liver-qi flows freely, meridians in the breast remain unobstructed so that distending pain cannot occur. As the acquired foundation and source of qi-blood generation, the spleen dominates transportation of food essence and distribution of body fluids, supplying sufficient qi-blood and nutrients for menstruation formation and breast nourishment [9].

Physiologically, the liver and spleen restrain and generate one another and complement each other. The liver wood promotes spleen earth, facilitating transportation – ascending - descending functions of the spleen-stomach and preventing dampness stagnation. The spleen earth nourishes liver wood; adequate qi-blood ensures soft and unobstructed liver-qi without stagnation or hyperactivity. For women of child-bearing age [10], qi-blood converges to the Chong-Ren Meridians and uterus before menstruation, redistributing systemic qi-blood. Hence, unobstructed liver-spleen qi movement and sufficient qi-blood production are particularly required. Normal liver-spleen function guarantees abundant qi-blood, smooth qi movement and unblocked breast meridians, avoiding menstrual breast distension-pain.

2. Pathogenesis Analysis of Menstrual Mastalgia Induced by Liver-Spleen Dysfunction

2.1 Liver-qi Stagnation and Obstruction of Breast Collaterals

The liver governs dispersion to regulate qi movement; the spleen governs transportation, controls blood and generates nutrient blood. Emotional disturbance causes liver-qi stagnation, blocking qi in breast collaterals and triggering distending pain, which is the manifestation of "liver depression" [6, 11]. Modern women commonly suffer heavy stress and emotional dysregulation; long-term depression, anxiety and irritability result in impaired liver dispersion and qi stagnation [12]. Before menstruation, qi-blood in the Chong-Ren Meridians becomes exuberant, aggravating liver-qi stagnation. Qi stagnates in breast meridians, leading to meridian obstruction and blood stasis. Pain arises from obstruction, producing breast distending pain. Prolonged liver-qi stagnation may be complicated by blood stasis and phlegm coagulation, forming breast lumps and worsening pain. Symptoms recur along with mood swings and menstrual cycles, representing the core excess-type pathogenesis of this disease.

2.2 Impaired Spleen Transportation: Insufficient Qi-blood and Endogenous Phlegm-dampness

Congenital spleen-stomach weakness, improper diet or excessive fatigue may damage spleen-stomach function and disturb splenic transportation. On one hand, qi-blood

generation becomes insufficient. Qi-blood flows down to the uterus pre-menstrually, so the breast lacks nourishment. Pain originates from malnourishment, resulting in deficiency-type distending pain. On the other hand, the failing spleen cannot metabolize water dampness [13]; accumulated dampness transforms into phlegm. Phlegm-dampness flows along qi movement, obstructing breast collaterals and binding with stagnant qi to aggravate breast distension and pain. Furthermore, long-standing liver depression invades the spleen earth, impairing splenic transportation and causing internal retention of water dampness that turns into phlegm. Phlegm-qi binds in the breast, generating nodules or amplifying swelling sensation, namely "dampness generated by spleen deficiency" [14].

2.3 Liver-Spleen Disharmony: Intermingled Excess and Deficiency as the Core Pathogenesis

Clinically, few patients with menstrual mastalgia present simple liver-qi stagnation or isolated spleen deficiency; most cases manifest liver-spleen disharmony with intermingled excess and deficiency [15]. Liver-qi stagnation constitutes the superficial excess, manifested as qi stagnation and binding of phlegm-blood stasis. Spleen deficiency is the root deficiency, marked by qi-blood insufficiency and endogenous phlegm-dampness. Stagnant liver-qi invades the spleen and further disrupts splenic transportation. Insufficient qi-blood due to spleen deficiency deprives the liver of nourishment and predisposes to persistent liver-qi stagnation, forming a vicious cycle that renders the disease intractable and cyclically recurrent. Therefore, menstrual mastalgia is frequently characterized by coexisting liver-qi stagnation and spleen deficiency, as well as interlocking qi stagnation and phlegm-dampness [16]. Recent clinical guidelines and expert consensuses highlight the prevalence of this compound pathogenesis [17]. For instance, multiple studies confirm that liver-qi stagnation combined with spleen-deficiency syndrome is one major pattern of mammary hyperplasia, requiring simultaneous liver-soothing and spleen-invigorating therapies [6]. Experts such as Wang Kunwu note that liver-spleen disharmony syndrome involves multiple factors including liver-qi hyperactivity, liver-qi stagnation, liver-blood insufficiency, spleen-qi stagnation and spleen-qi weakness, revealing the synergistic regulatory role of the liver and spleen in qi-blood-body fluid metabolism [13]. This theoretical model bears high isomorphism with cortisol rhythm disturbance caused by stress response (corresponding to liver depression) and fluid retention induced by metabolic dysfunction (corresponding to spleen deficiency) in modern medicine.

3. Therapeutic Principles and Formula Application for Simultaneous Regulation of the Liver and Spleen

Given the core pathogenesis of liver-spleen dysfunction and intermingled excess-deficiency, clinical practice abandons isolated liver-soothing or sole spleen-invigorating therapies [18]. The core principle of simultaneous liver-spleen regulation is established: soothe the liver and relieve stagnation, invigorate the spleen and nourish blood, regulate qi and resolve phlegm, unblock collaterals and alleviate pain, treating both root and superficial manifestations and harmonizing excess and deficiency.

3.1 Basic Formula: Modified Xiaoyao San (Free and Easy Wanderer Powder)

Xiaoyao San and its modified versions serve as classic representatives embodying simultaneous liver-spleen regulation [19]. Chaihu [20] (Radix Bupleuri) and Baishao (Radix Paeoniae Alba) soothe and soften the liver; Baizhu (Rhizoma Atractylodis Macrocephalae) and Fuling (Poria Cocos) invigorate the spleen and percolate dampness, realizing dual modulation of the liver and spleen. It soothes the liver without injuring the spleen and invigorates the spleen without stagnating qi, matching the disease pathogenesis and acting as the principal formula for menstrual mastalgia.

Basic composition: Chaihu (Radix Bupleuri), Danggui (Radix Angelicae Sinensis), Baishao (Radix Paeoniae Alba), Baizhu (Rhizoma Atractylodis Macrocephalae), Fuling (Poria Cocos), Zhigancao (Radix Glycyrrhizae Preparata), Bohe (Herba Menthae Haplocalycis), Shengjiang (Rhizoma Zingiberis Recens).

In this formula, Chaihu acts as the monarch herb to soothe liver stagnation and regulate qi movement, directly targeting liver-qi stagnation. Baishao and Danggui nourish blood and soften the liver, relieve spasm and pain, protect liver substance and prevent yin-blood consumption caused by excessive liver-soothing. Baizhu and Fuling invigorate spleen-qi, dry dampness and resolve phlegm, restore splenic transportation and cut off the source of phlegm-dampness to consolidate the acquired foundation. Bohe assists Chaihu in dissipating stagnant heat and unblocking qi movement. Shengjiang warms and activates the spleen-stomach and harmonizes qi-blood. Zhigancao harmonizes all ingredients and fortifies the spleen and middle-jiao. The whole formula exerts combined effects of soothing liver-invigorating spleen, harmonizing qi-blood and smoothing qi movement.

3.1.1 Soothing Liver and Relieving Stagnation: Modulating Neuroendocrine Homeostasis

The core of liver-soothing therapy lies in restoring free qi flow [21]. Modern research demonstrates that emotional stress is a critical trigger and aggravating factor for menstrual mastalgia. Abnormal emotions induce liver-qi stagnation and further local blood stasis in mammary tissues [12]. Professor Han Yanhua emphasizes that emotional disturbance leads to liver-qi stagnation and qi-blood stasis in mammary mass treatment; therapy should prioritize "clearing liver fire and softening hardness to dissipate masses", alongside unblocking qi movement [22]. In clinical practice, besides formulas such as Chaihu Shugan San (Bupleurum Liver-Soothing Powder), psychological counseling and mind-body intervention are indispensable. Professor Ban Xiuwen inherited and developed experiences of "dispelling stagnant liver-qi" and "softening the liver" in menstrual disorder treatment, regarding them as key for liver-system diseases [21]. By balancing autonomic nervous function, liver-soothing therapy reduces sympathetic nerve tone and elevates pain threshold so as to mitigate breast distending pain.

3.1.2 Invigorating Spleen Transportation: Optimizing

Metabolic and Body-fluid Homeostasis

Spleen-invigorating therapy aims to restore splenic transportation and boost dampness metabolism. Spleen deficiency generates dampness; accumulated dampness transforms into phlegm. Phlegm coagulates in breast collaterals, producing masses and pain. Professor Feng Xinghua proposed the "liver-soothing, blood-activating and spleen-invigorating method" for bi-syndrome, applicable to liver-qi stagnation-spleen deficiency pattern, highlighting spleen-invigoration in eliminating pathological products including phlegm-dampness and blood stasis. From a modern-medicine perspective, spleen-invigoration can be interpreted as optimizing intestinal microecology and promoting hepatic detoxification and excretion of estrogen. High-fiber diet and cruciferous vegetable intake help modulate the gut-liver axis, lower free estrogen levels and alleviate mammary interstitial edema. For patients marked by fatigue, loose stool and prominent edema, spleen-invigorating dampness-eliminating herbs such as Fuling and Baizhu significantly ameliorate disordered body-fluid metabolism.

3.2 Flexible Modification According to Syndrome

- Predominant liver-qi stagnation with severe breast distending pain and obvious depression: add Xiangfu (Rhizoma Cyperi), Yujin (Radix Curcumae) and Qingpi (Pericarpium Citri Reticulatae Viride) to strengthen liver-soothing, qi-regulating and collateral-unblocking analgesic effects.

- Predominant spleen-deficiency phlegm-dampness with heavy breast distension, lassitude and profuse leukorrhea: add Chenpi (Pericarpium Citri Reticulatae), Banxia (Rhizoma Pinelliae) and Yiyiren (Semen Coicis) to invigorate spleen, dry dampness, resolve phlegm and dissipate masses.

- Liver-qi stagnation transforming into fire with burning breast pain, dry-bitter mouth, irritability and insomnia: add Danpi (Cortex Moutan Radicis) and Zhizi (Fructus Gardeniae) to clear liver fire, cool blood and relieve stagnation.

- Long-standing disease with qi-blood stasis, indurated breast masses and fixed stabbing pain: add Chuanxiong (Rhizoma Chuanxiong), Wangbuliuxing (Semen Vaccariae) and Sigualuo (Retinervus Luffae Fructus) to activate blood circulation, unblock collaterals and dissipate nodules.

3.3 Medication Characteristics

As a cyclic disorder, menstrual mastalgia requires rhythm-oriented medication: treat superficial symptoms during menstruation and address root causes after menstruation. One week before menstruation, prioritize soothing liver-qi, unblocking collaterals and relieving pain to ease current distension-pain. Post-menstrually, qi-blood is insufficient and the liver-spleen are weak; focus on invigorating spleen-nourishing blood, softening liver-regulating qi to consolidate primordial qi, regulate visceral functions and prevent recurrence fundamentally [23].

4. Daily Nursing and Emotional Intervention

Liver-spleen dysfunction is closely associated with emotion, diet and work-rest rhythm. Pharmacotherapy should be combined with lifestyle nursing to consolidate curative effects and prevent relapse. Emotional care ranks first [24]: patients are advised to regulate mood and avoid chronic anxiety, rage and depression, for free-flowing liver-qi guarantees unobstructed qi movement. Diet should be light with regular daily routines; cold, greasy and sweet foods are contraindicated to protect splenic transportation and block endogenous phlegm-dampness formation. Moderate exercise unblocks systemic qi movement, promotes qi-blood circulation and harmonizes liver-spleen function. Avoid staying up late and over-exertion during menstruation to reduce qi-blood consumption and stabilize visceral functions [25].

5. Conclusion

Treating menstrual mastalgia from the perspective of simultaneous liver-spleen regulation embodies TCM wisdom of "treating disease from its root" and holistic regulation. It deserves popularization and application in gynecological clinical practice.

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