

Pathomechanisms of the Heart

心病病机

The heart holds the office of monarch and governs the blood and vessels of the entire body. It transports the nutrients and irrigates the four limbs and the hundred bones. Internally, it moistens the five viscera and six bowels; externally, it nourishes the skin, hair, and interstices. The heart also governs the spirit-mind. Thus, it regulates a person's essence-spirit, thought, and consciousness. The heart is the great governor of the five viscera and the six bowels; thus, it supervises the functions of the bowels and viscera and commands the entire body.

The heart corresponds to the vessels, its bloom is in the face, it opens at the tongue, and it stands in exterior-interior relationship with the small intestine. Irregularities in the physiological functioning of the heart manifest mainly in two types of pathomechanisms: abnormalities of the blood and vessels and changes in the spirit-mind.

心者君主之官，主一身之血脉，输送营养物质，灌溉四肢百骸，内润五脏六腑，外养皮毛腠理；又主神志，调节人的精神、思维、意识活动，统摄脏腑功能，主宰全身，为五脏六腑之大主。心在体为脉，其华在面，开窍于舌，与小肠互为表里。心的生理功能失调，常表现为血脉异常和神志改变两类病机变化。

1. Abnormalities of the Blood and Vessels

When the functions of the heart become irregular, severe pathologies may develop. When its ability to transport blood and to govern the vessels is impaired, the blood is deprived of nourishment in the heart viscus itself, as well as in the head and face, the four limbs, and all of the organs. This produces a series of pathomechanisms.

Heart Viscus: When the heart viscus is deprived of nourishment, the governing pathology involves stirring in the heart. In this category, the failure of the blood to nourish the heart and the inhibited movement of blood can manifest in symptoms such as heart palpitations and fearful throbbing, emptiness in the heart or heart pain. An abnormally fast or slow heartbeat may cause changes in the frequency, rhythm or strength of the pulse. This can manifest in a pulse that is rapid, slow, vacuous, replete, slippery, rough, skipping (rapid and irregularly interrupted), bound or intermittent (regularly interrupted).

Head and face: The blood vessels become full when blood and qi surge upwards. This results in redness in the face and eyes or red lips, as well as in redness, pain, and sores or ulcers on the tip of the tongue. Frenetic movement of blood may lead to blood ejection and spontaneous external bleeding. If blood and qi are deprived of nourishment and the blood vessels lose fullness, the result is a pale white or withered-yellow complexion with pale white lips and tongue. If the movement of blood is inhibited, blood stasis in the vessels presents externally with the color of the static blood; this manifests in a somber or soot-black complexion, green-blue or purple lips and tongue, or in stasis macules or stasis speckles on the tongue.

Four limbs: If the blood in the vessels is exuberant and heat is sufficient, there will be vexing heat in the four limbs and heat in the palms and soles. If the blood in the vessels is congealed by cold, the reduction of heat may lead to counterflow cold of the limbs, cold pain in the hands and feet, and purple or dark nails.

Entire Body: In cases where all the bowels and viscera of the body suffer from a lack of supply of blood and qi and are deprived of nourishment, many manifestations of lowered and weakened organ functions can be observed.

血脉异常

心的功能失调，很大一类病变为不能输布血液，主持血脉的功能异常，引起心脏自身、头面、四肢及全身脏腑血液失养而出现一系列病机变化。

心脏自身失养，病变以心动不安为主：其中血不养心，血行不畅，可见心悸怔忡，或心中空虚，心痛等症；心跳过速或过缓，引起脉搏的跳动频率、节律、强度等发生变化，可见数、迟、虚、实、滑、涩、促、结、代等脉象改变。

头面部位，当血气上冲时，血脉充盈，则为面红目赤，唇红，舌尖红赤、疼痛、溃烂；迫血妄行则为吐血、衄血；当血气失养时，

血脉失充，又为面色淡白，萎黄，唇舌淡白；当血行不畅时，血脉瘀滞，瘀血之色外现，又见面色晦暗、黧黑，唇舌青紫，或舌有瘀斑瘀点。

四肢部分，血脉充盛时，热能充足，则四肢烦热，手足心发烧；血脉寒凝时，热能减少，则四肢逆冷，手足冷痛，爪甲紫暗。

全身脏腑失却血气供养，可见脏腑功能低下、衰退的各种表现。

Summary of Abnormalities of the Blood and Vessels

1. Heart Viscus

Heart palpitations: Heart palpitations, fearful throbbing, emptiness in the heart, shortness of breath, and heart pain

Abnormally fast or slow heartbeat: A pulse that is rapid, slow, vacuous, replete, slippery, rough, skipping, bound or intermittent

2. Head and Face

Fullness in the blood vessels: Redness in the face and eyes, red painful lips and tongue, possibly with blood ejection or spontaneous external bleeding

Loss of fullness in the blood vessels: Pale white or withered-yellow complexion, pale white lips and tongue

Static blood in the vessels: Somber or soot black complexion, blue-green or purple lips and tongue, possibly with stasis macules or stasis speckles

3. Four Limbs

Heat vexation or counterflow cold

4. Entire Body

Lowered or weakened functions of the bowels and viscera

血脉失常

心脏

心悸不安——心悸怔忡，心中空虚，气短心痛。

过速过缓——数、迟、虚、实、滑、涩、促、结、代。

头面

血脉充盈——面红目赤，唇舌红赤疼痛，或吐血衄血。

血脉失充——面色淡白，萎黄，唇舌淡白。

血脉凝滞——面色晦暗、黧黑，唇舌青紫，或瘀斑瘀点。

四肢

烦热或逆冷。

全身

脏腑功能低下、衰退。

2. Changes in the Spirit-Mind

In Chinese medicine, pathologies of the essence-spirit and affect-mind are ascribed to the heart. When the heart fails to govern the spirit-mind, the functions and activities of the essence-spirit, thoughts, and consciousness become irregular. This pathomechanism manifests as a heart spirit deprived of nourishment, a harassed heart spirit, or an ungoverned heart spirit.

If the heart spirit is deprived of nourishment, it is unable to govern and control the ordinary activities of the thoughts and consciousness; this often leads to a disquieted heart spirit. This may present with a disquieted state of mind, unfocused thinking, and mental listlessness or reduced memory capacity.

If the heart spirit is harassed by disease evils, there will be stirring of the heart. In mild cases, this will manifest as heart vexation, insomnia, and profuse dreaming. In severe cases, it will give rise to mental derangement or possibly to agitation. This presents with vexation and agitation, manic raving and cursing, and hitting people and breaking things regardless of who is present. It may also result in ceaseless joy and laughter. Alternatively, it may present with deep withdrawal and little speech, manifesting in an indifferent expression, deep silence and lack of communication, deranged speech, alternating crying and laughing spells, and feeble-mindedness.

If the heart spirit has suffered severe damage, the spirit-mind will be ungoverned, causing the heart spirit to float astray. In mild cases, this manifests as somnolence, abstraction, and drowsiness. In severe cases, it manifests with an unclear spirit-mind, sudden collapse, delirious speech, and frenetic stirring.

神志改变

人的精神情志病变，中医归属于心。心不主神志，精神、思维、意识等功能活动失调，可见心神失养、心神受扰和心神无主等病机变化。

心神失养，不能主持正常的思维意识活动，常致心神不宁，可见心绪不安，思想不集中，精神萎靡，记忆力减退等症。

心神受到病邪干扰，心动不安，轻者表现为心烦，失眠，多梦；重者引起精神错乱，或为躁动不安，表现为烦躁不宁，狂言怒骂，打人毁物，不避亲疏，喜笑不休；或为沉静少言，表现为表情淡漠，沉默寡言，语言错乱，时哭时笑，呆痴。

心神严重受损，神志无主，心神浮越，轻者为嗜睡，恍惚，朦胧。重者为神志不清，突然倒仆，谵语，妄动。

Summary of Pathological Changes in the Spirit-Mind

1. Heart Spirit Deprived of Nourishment
Disquieted heart spirit, manifesting in pathoconditions of mental disquiet, inability to concentrate, and reduced memory capacity.
2. Harassed Heart Spirit
Mild cases: Heart vexation, insomnia, profuse dreaming.
Severe cases: Mental derangement.
Vexation and agitation: Vexation and agitation, manic raving and cursing, hitting people and breaking things regardless of who is present
Deep withdrawal: Indifferent expression, deep silence and lack of communication, alternating crying and laughing, and feeble-mindedness.
3. Heart Spirit Floating Astray
Mild cases: Somnolence, abstraction, drowsiness.
Severe cases: Unclear spirit-mind, sudden collapse, delirious speech and frenetic stirring.

神志病变

心神失养

心神不宁，可见心绪不安，思想不集中，记忆力减退等症。

心神受扰

轻者——心烦，失眠，多梦。

重者——精神错乱

烦躁——烦躁不宁，狂言怒骂，打人毁物，不避亲疏。

沉静——表情淡漠，沉默寡言，时哭时笑，呆痴。

心神浮越

轻者——嗜睡，恍惚，朦胧。

重者——神志不清，突然倒仆，谵语妄动。

Overview of Pathomechanisms of the Heart

Heart disorders are primarily caused by external contraction of the six excesses and by internal damage from the seven affects. Of the six excesses, wind, cold, dampness, and heat are most likely to invade the heart. Heart disorders are easily caused by internal damage from the seven affects, particularly from sorrow, joy, anxiety, and thought. In addition, the following factors can all lead to various pathological changes in the heart: constitutional insufficiency, excessive taxation fatigue, dietary irregularities, a predilection for fatty and sweet foods, an inhibited qì dynamic,

phlegm turbidity causing internal obstruction, an internal collection of dampness, upward invasion of water qì, collection of static blood, chronic and severe illness, a lack of treatment or inappropriate treatment, and the transmission of disorders from the other organs.

The pathomechanisms of the heart are best categorized under the two major headings of vacuity and repletion, in order to distinguish between the conditions of exuberance or debility of right and evil qì.

The *Huáng Dì Nèi Jīng* (“Yellow Emperor’s Inner Canon”) contains a discussion of “heart vacuity,” beginning with the statement that “thought and preoccupation damage the heart.” This statement is found in the *Sù Wèn* (“Plain Questions”) chapter “Treatise on the Engenderment of the Five Viscera.”

Huá Tuó’s *Zhōng Zàng Jīng* (“Central Treasury Canon”), from the Hàn Dynasty, is the first text to include a separate chapter discussing the heart viscus in terms of vacuity and repletion, cold and heat, life and death, and smoothness and counterflow. Mentioning “heart qì exuberance,” “heart qì repletion,” “heart vacuity,” and similar terms, it discusses the pathomechanisms of heart disorders from the angles of vacuity and repletion, exuberance and debility.

Wáng Shū-Hé’s *Mài Jīng* (“Pulse Canon”), from the Jin Dynasty, describes the pathomechanisms of “heart repletion” and “heart vacuity” in even greater clarity. The chapter on “Feeling the Pulses at Man’s Prognosis (*rén yíng*) [ST-9], Spirit Gate (*shén mén*) [HT-7] and Qì Opening [Wrist Pulse] in Front and Back” states:

“In cases of heart repletion, when the pulses at the inch opening on the left hand and the pulse in front of Man’s Prognosis (*rén yíng*) [ST-9] reflect yīn repletion, this is [disease of] the hand reverting yīn channel. The patient will suffer from oppression, inhibited bowel movements, abdominal fullness, heaviness in the four limbs, generalized heat effusion, and stomach distention.

In cases of heart vacuity, when the pulses at the inch opening on the left hand and in front of Man’s Prognosis (*rén yíng*) [ST-9] reflect yīn vacuity, this is [a disease of] the hand reverting yīn channel. The patient will suffer from palpitations, fear and unhappiness, pain in the heart and abdomen, difficulty in speaking, a heart as in a state of cold, and abstraction.”

This is a preliminary description of the various manifestations and pathomechanisms involved in heart vacuity and repletion. Following this text, detailed descriptions of the pathomechanisms of “heart repletion” and “heart vacuity” are found in the *Zhū Bìng Yuán Hòu Lùn* (“Origin and Indicators of Disease”), *Shèng Jì Zōng Lù* (“Sages’ Salvation Records”), *Jì Shēng Fāng* (full name *Yán Shì Jì Shēng Fāng* (“Yan’s Formulas

for Saving Lives”), *Dān Xī Shǒu Jìng* (“Dān-Xī’s Hand Mirror”), and *Jǐng Yuè Quán Shū* (“Jǐng-Yuè’s Complete Compendium”).

Heart vacuity, mostly of such fundamental substances as heart qì, blood or fluids, tends to manifest as depletion damage in the organ functions related to heart qì, heart yáng, heart blood, and heart yīn. Heart repletion, mostly caused by the contraction of evil qì or the collection of pathological products, tends to adopt the pathomechanisms described as the struggle between right and evil qì.

In addition to this, the *Líng Shū* (“Magic Pivot”) chapter “Visiting of Evil” contains the statement: “As for the evils that are located in the heart, they are all located in the pericardiac network.” The *Wēn Rè Jīng Wēi* (“Warp and Weft of Warm Heat”) chapter entitled “Yè Xiāng-Yán’s External Contraction of Warmth and Heat” takes this idea one step further: “The heart is the great governor of the entire body and must not contract evil. If it contracts evil, the spirit leaves and the person will die. Whenever a statement refers to evil located in the heart, it is always the pericardiac network that has contracted it.” This statement explicitly emphasizes that whenever external evils invade, they mostly attack the pericardiac network; it is only attributed to the heart when internal damage and vacuity damage cause a decline in function. There is no great value in debating whether heart diseases of repletion are definitely attributed to the pericardium and heart diseases of vacuity are definitely attributed to the heart. However, the significance of classifying the pathomechanisms of heart disease into vacuity and repletion can be determined with absolute certainty.

心病的病因，有外感六淫，特别是风、寒、湿、热之邪最易犯心。内伤七情，悲喜忧思，也易致心病。其它如禀赋不足，劳倦过度，饮食不节，嗜食肥甘，气机不畅，痰浊内阻，湿邪内停，水气上犯，瘀血停滞，久病重病，失治误治，以及其它脏腑疾病的传变，均可引起各种心的病变。

心的病机多以虚、实为纲，可分别反映心脏邪正双方的盛衰状态。从《素问·五藏生成篇》提出：“思虑而伤心”开始，《黄帝内经》中已包含有“心虚”的论述。汉代华佗《中藏经》开始有专论心脏虚实寒热生死逆顺的篇章，提到“心气盛”、“心气实”、“心虚”等名称，从虚实盛衰的角度论及心病的病机变化。晋代王叔和的《脉经》更明确地阐述了“心实”和“心虚”的病机。如《平人迎神门气口前后脉篇》云：“心实，左手寸口人迎以前脉阴实者，手厥阴经也。病苦闭，大便不利，腹满，四肢重，身热，苦胃胀；心虚，左手寸口人迎以前脉阴虚者，手厥阴经也。病苦悸恐不乐，心腹痛，难以

言，心如寒状，恍惚。”初步描述了心的虚实病机变化时所引起的不同表现。其后，《诸病源候论》、《圣济总录》、《济生方》、《丹溪手镜》、《景岳全书》均有“心实”和“心虚”病机的详细论述。

心虚，主要由于心的气血津液等基本物质缺乏，易表现出心气、心阳、心血、心阴等脏腑功能的亏损；心实，多由感受邪气或病理产物停留，易呈现邪正相争的病机变化。

此外，《灵枢·邪客篇》有“邪之在于心者，皆在于心之包络”之说，《温热经纬·叶香岩外感温热篇》则进一步指出：“心为一身之大主，而不受邪，受邪则神去而死。凡言邪之在心者，皆心之包络受之。”明确强调凡属外邪相侵，多侵犯心包络；内伤虚损，功能衰退，才归咎于心。至于是否一定要将心病偏实归咎于心包络，偏虚归属于心，并无多大争论价值。但有一点可以肯定，心病病机从虚、实分类确有十分重要的意义。

Literature Review

📖 *Zhōng Zàng Jīng* (“Central Treasury Canon”), Chapter on “Methods for Discussing Repletion and Vacuity, Cold and Heat, Life and Death, and Smoothness and Counterflow in the Heart Viscus”

“Exuberant heart qì causes dreams of happiness and laughter, worries and fear. Evil qì settling in the heart results in dreams of mountains and hills, smoke and fire. Heart distention causes shortness of breath, unquiet sleep, pain in the heart and abdomen, anguish...qì coming and going into the abdomen, heat with a liking for water, and drooling... Heart vacuity causes a fear of other people, closed eyes and a desire for sleep, a devitalized essence-spirit, and frenetic activity of the ethereal and corporeal souls. Replete heart qì causes inhibited urination, abdominal fullness, generalized heat and heaviness, seething with a desire to vomit [“seething” is an archaic expression that describes a subjective sensation of movement in the stomach], vomiting without any emission, rapid panting, and disquieted sleep. The pulse for this condition is a replete and large pulse at the left inch opening and at Man’s Prognosis (*rén yíng*) [ST-9]. Heart vacuity leads to fear and susceptibility to fright, worry and unhappiness, pain in the chest and abdomen, trembling speech, aversion to cold and abstraction, a red face and yellow eyes, and a tendency to have spontaneous external bleeding. When examining the pulse, it is empty and faint at the inch opening both on the right and left.”

This states that exuberance and debility of heart qì can cause pathological changes in the spirit-mind and the blood vessels.

📖 *Zhū Bìng Yuán Hòu Lùn* (“The Origin and Indicators of Disease”), “Symptoms of Heart Disease” and “Symptoms of Heart Suspension, Tension, Anguish, and Pain”

“Exuberance of heart qì refers to a superabundance of spirit. The person suffers from pain inside the chest, propping fullness in the rib-sides, pain below the rib-sides, pain between the anterior chest, back, arms, and armpit, pain on the inside of both arms, and incessant happiness and laughter. This is heart qì repletion and should therefore be treated by draining. Heart qì insufficiency causes an enlarged chest and abdomen, with pain stretching into the area below the rib-sides and into the lumbus and back, as well as fright palpitations and abstraction, lack of color, stiffness in the root of the tongue, and a tendency to experience anxiety and sorrow. All these symptoms are related to heart qì vacuity.”

This states that heart qì exuberance is identical with heart repletion and heart qì insufficiency is identical with heart vacuity, and that one can distinguish between their respective pathomechanisms.

📖 *Qiān Jīn Yào Fāng* (“A Thousand Gold Pieces Prescriptions”), “Heart Repletion Heat”

“When the pulse at the inch opening on the left hand and in the front of Man’s Prognosis (*rén yíng*) [ST-9] signifies yīn repletion, the hand lesser yīn channel is indicated. If the patient suffers from oppression, inhibited bowel movements, abdominal fullness, heaviness of the four limbs, and generalized heat effusion, it is called heart repletion heat.”

This describes the pathomechanisms involved in heart repletion heat.

📖 *Qiān Jīn Yào Fāng* (“A Thousand Gold Pieces Prescriptions”), “Heart Vacuity Cold”

“When the pulses at the inch opening on the left hand and in the front of Man’s Prognosis (*rén yíng*) [ST-9] are yīn and vacuous, this [is disease of] the hand lesser yīn channel. This is called heart vacuity cold if the patient suffers from palpitations, fear and unhappiness, pain in the heart and abdomen, difficulty in speaking, a heart as in a state of cold, and abstraction.”

This describes the pathomechanisms involved in heart vacuity cold.

📖 *Shèng Jì Zǒng Lù* (“Sages’ Salvation Records”), “Heart Vacuity”

“The condition of heart vacuity is marked by scant blood and debilitated qì, a yellow face, vexation and heat, a tendency to experience fear, palpitations, unhappiness, pain in the heart and abdomen, difficulty in speaking, intermittent emission of clear drool, distention and fullness in the heart and diaphragm, forgetfulness, a tendency to experience fright, dreaming and disturbed sleep, and abstraction of the essence-spirit. All

these symptoms are caused by vacuity cold in the hand lesser yīn channel. In the pulse, it is indicated by the observation of yīn vacuity at the inch opening on the left hand and in the front of Man's Prognosis (*rén yíng*) [ST-9].”

This further describes the pathomechanisms involved in heart vacuity cold.

📖 *Shèng Jì Zǒng Lù* (“Sages’ Salvation Records”), “Heart Repletion”

“When the pulse at the inch opening of the left hand before the bar is yīn and replete, this is heart repletion. Qi ascends and there is fullness and drum in the chest that spreads to the shoulders. Biǎn Què said that heart repletion heat leads to panting counterflow, a full chest and breathing in the supine position. The increase of heat in the hand lesser yīn channel causes the disorder of heart repletion. Serious cases are marked by bitterness in the mouth, intemperate drinking, and sores on the trunk and back. This leads to pain of the thighs, knees, heels, and shins.”

This further describes the pathomechanisms involved in heart repletion heat.

📖 *Dān Xī Shǒu Jìng* (“Dān-Xī’s Hand Mirror”), “Vacuity and Repletion of the Five Viscera”

“The heart: Vacuity causes fulminant pain in the heart and abdomen, distention and fullness in the heart and diaphragm, intermittent spitting of clear drool, excessive fright, fear, and abstraction, lack of color, stiffness in the root of the tongue, and a floating and vacuous pulse. Repletion causes vexation and derangement of the heart spirit, a red face, generalized heat, sores of the mouth and tongue, a dry throat, headache, heat in the palms, spontaneous external bleeding, frequent laughing, and a pulse that is surging and replete.”

This is a more generalized description of the various clinical manifestations and pathomechanisms involved in heart vacuity and heart repletion.

文献评述

《中藏经·论心脏虚实寒热生死逆顺篇之法》说：“心气盛，则梦喜笑恐畏，邪气客于心，则梦山丘烟火。心胀则短气，夜卧不宁，心腹痛，懊憹。... 气往来腹中，热喜水涎出。... 心虚则畏人，瞑目欲眠，精神不依，魂魄妄乱。... 心气实则小便不利，腹满身热而重，温温欲吐，吐而不出，喘息急，不安卧，其脉左寸口与人迎皆实大者是也。心虚则恐惧多惊，忧思不乐，胸腹中苦痛，言语颤栗，恶寒恍惚，面赤目黄，喜衄血，诊其脉，左右寸口两虚而微者是也。”提出心气盛衰可引起神志和血脉病变。

《诸病源候论·心病候·心悬急懊痛候》说：“心气盛，为神有余，则病胸内痛，胁支满，胁下痛，膺背膊腋间痛，两臂内痛，喜笑不休，是心气之实也，则宜泻之。心气不足，则胸腹大，胁下与腰背相引痛，惊悸恍惚，少颜色，舌本强，善忧悲，是为心气之虚也。”指出心气盛则是心实，心气不足则是心虚，可分别引起不同的病机变化。

《千金要方·心实热》说：“左手寸口人迎以前脉阴实者，手少阴经也。病苦闭大便不利，腹满，四肢重，身热，名曰心实热也。”阐述了心实热引起的病机变化。

《千金要方·心虚寒》说：“左手寸口人迎以前脉阴虚者，手少阴经也。病苦悸恐不乐，心腹痛，难以言，心如寒，恍惚，名曰心虚寒也。”阐述了心虚寒引起的病机变化。

《圣济总录·心虚》说：“心虚之状，气血衰少，面黄烦热，多恐悸不乐，心腹痛难以言，时出清涎，心膈胀满，善忘多惊，梦寝不宁，精神恍惚，皆手少阴经虚寒所致。其脉见于左手寸口人迎以前阴虚者，乃其候也。”进一步阐述了心虚寒可引起的病机变化。

《圣济总录·心实》说：“左手关前寸口阴实者，心实也。上气胸中满膨膨，与肩相引。扁鹊曰：心实热，则喘逆胸盈仰息，此手少阴为热所加，故为心实之病。甚则口苦引饮无度，体背生疮，以至股膝踠胫皆痛。”进一步阐述了心实热可引起的病机变化。

《丹溪手镜·五脏虚实》说：“心：虚，心腹暴痛，心膈胀满，时唾清涎，多惊恐恍惚，少颜色，舌本强，脉浮虚。实，心神烦乱，面赤，身热，口舌生疮，咽燥，头痛，手心热，衄血，喜笑，脉洪实。”较为全面的论述了心虚、实病机变化时所引起的各种临床表现。