Review

Integrative Views of the Heart in Chinese and Western Medicine

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Keywords

Heart · Circulation system · Integrative medicine · Traditional Chinese medicine · Western medicine

Abstract

There is a general acknowledgement in almost all civilizations that the heart is the most important organ in the human body. Both Chinese medicine and Western traditional medicine have a long history of heart research, but they have developed different points of view based on the basic cognition. Traditional Chinese medicine is good at summarizing the correspondence and relationship between the heart and exterior things. The physiological functions of the heart are governing blood and vessels, controlling the mind, opening into the tongue, manifesting on the face, and so on, while modern Western medicine does well in exploring the anatomical structure, spacial connection, and micromechanical character of the organ. Chinese medicine and Western medicine have established the diagnosis and management system, respectively, from their own angles. Combining the knowledge of Chinese and Western medicine can take the advantages of either of the two, making it deeper and more comprehensive for studying and treating heart diseases.

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Introduction

The heart is an important organ in the chest cavity for a creature, especially for human beings. That is a general acknowledgement in almost all civilizations. Every culture has its own view on the functions of the heart, so variant concepts developed from these views and different medical theories gradually emerged from these concepts [1]. Ancient traditional

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Chinese medicine (TCM), which is one type of integrative medicine, has been practiced for over 2,000 years [2] and is still in use. Modern Western medicine was introduced in the 19th century, and since then, the practice of medicine has changed in the face of rapid advances in science as well as new approaches employed by physicians [3]. Both Chinese medicine and Western medicine have their own understanding of the human heart and treat its diseases according to the respective theories. Nevertheless, when we take an integrative view on the study of the human heart in Chinese and Western medicine, many common grounds can be found, although the related concepts and theories come from 2 totally different cultural backgrounds (Fig. 1).

Basic Cognition

Anatomical descriptions of the heart can already be found in the Bible. In ancient medical classics from Babylon, Egypt, Greece, Rome, and China, it is generally described as being the center of a system of vessels supplying the various parts of the body [4]. Based on this fundamental truth, Chinese medicine and Western medicine have formed their own knowledge systems and have developed respective theories for the diagnosis and management of heart diseases.

The heart is regarded as the monarch of all organs in TCM, and “Shen Ming” (神明) what makes people thinking and seeing is believed to be derived from it. The shape of the heart looks like a lotus bud and it is situated above the diaphragm, covered by the lungs, attached to the fifth vertebrae (fifth thoracic vertebrae), and surrounded and guarded by the chest. The famous “Yin-Yang” (陰陽) system is also used to describe the position of the heart. When it comes to the human body’s Yin-Yang, the “Yellow Emperor’s Classic of Internal Medicine” (黃帝內經) says that the back is Yang and the abdomen is Yin, so the Yang of Yang is the heart. The responsibility of the heart is to be the emperor of all organs, even of the brain, for the commander-in-chief achieved dominion over the whole body by governing blood and vessels. Furthermore, at a higher level, the heart is seen as the center of the mind and consciousness for its storing spirit [5]. Normal mental activity depends on regular cardiac function, for example, people will lose their mind when the heart is in disorder.

From the point of view of Western medicine, the heart is irregularly conical in shape and is placed obliquely in the middle mediastinum. It is like a pump that generates pressure to transport blood through the body. Besides its role as the dynamic source of circulation, the heart is also seen as the engine of the body because it propels the blood flow. The exact structure of the heart was not clear until the Renaissance period when it was discovered that the heart is made up of 4 separate chambers. Further anatomical studies revealed that the heart has a blood supply system of its own and a conducting system that consists of specialized cardiac muscles found in the sinuatrial node and in the atrioventricular node and bundle [6]. These neoteric discoveries constitute the important foundation for modern cardiology.

It is hard to find a clear contradiction in the description about the location, shape, and basic function of the heart between Chinese and Western medicine if the texts are translated into actual medical implications, although they come from different academic systems in different languages and are based on different cultures. Systematic descriptions of the heart by TCM terms can be found in ancient Chinese medical classics, which were recompiled in 200 BC. From then on, TCM theories have been guiding the clinical practice steadily for more than 2,000 years. In comparison, Western medicine, originating from the “Corpus Hippocraticum,” has continuously been updating its theories with new discoveries. It looks as if these 2 types of medicine have been running on 2 different rails starting from the same station but going into different directions.

Fig. 1. Integrative view of the heart in traditional Chinese medicine (left half) and Western medicine (right half).

Different Focus

An obvious feature of the heart theories in TCM is the emphasis on the relationship between this organ and exterior things, while Western medicine pays more attention to the structure and function of the heart itself within the circulation system. Considerable differences have been found in further statements on the heart between Chinese and Western medicine. However, if we compare the data mentioned in Chinese and Western medicine, many unexpected commonalities will emerge in different contexts.

TCM assumes that all organs are like courtiers, helping the heart perform its function. Among them, the lungs and small intestine are 2 close associates of the heart. The lungs are called a baldachin because they embrace the heart in anatomy. Furthermore, the lungs are also deemed a prime minister because “Zong Qi” (宗氣) coming from the lungs are infusing into the heart vessels to insure that the heart beats normally. The meridian vessel of the small intestine is situated lateral corresponding to the heart’s meridian vessel, which is in a medial position of the upper limb. Thus, “Qi” and blood in these 2 meridians can influence each other

easily. Moreover the five-element doctrine has been used in TCM, in which the heart is attributed to the element of fire. The heart is connected to the things that are attributed to the element of fire, namely the face, tongue, heat, red, bitter, southward, summer, etc. In the “Five Yun and Six Qi” (五運六氣) theory, a theory of the relationships between the climatic factors and the behaviors of the organs in the human body, the heart is either excited or restrained in the different seasons and years according to its five-element property. All these connections can give clues to achieve information about the condition of the heart from outside and to provide remedial ways for the treatment of heart diseases.

In TCM, every organ has its own meridian by which it connects to the whole circulation. The heart’s meridian is called hand “shao-yin” (手少陰) vessel, which is stemming from the heart, going superficially to the axillary and along the back-medial side of the arm, arriving at the little finger’s tip through the ulnar side. This path is very similar to the areas where pain occurs in the case of angina or myocardial infarction. Although having no corresponding concept of nerve, ancient Chinese medical records on the meridian and acupoints of the heart have revealed that the heart has a close relation to some fixed body locations, which are in accordance with the findings in Western medicine. For example, “Xinshu” (心膻), the organ acupoint of the heart, is located at 1.5 “Cun” (寸, about 2.31 cm) lateral to the lower border of the fifth spinous process of the fifth thoracic vertebra. Anatomically, the nerve supply of the heart is derived from the vagus nerve, cervix, and thoracic sympathetic ganglia 1–5 by way of superficial and deep cardiac plexuses [7].

The existing literature shows that the ancient knowledge about the heart itself was very hazy in both oriental and occidental medicine. By contrast, Western medicine does well in exploring the anatomical structure, spacial connection, and micromechanical character of the heart. It figured out the inner structure of the heart and found that it takes part in the pulmonary and general circulation through vessels connecting to the atria and ventricles. Recently, with the development of neuroanatomy, neurophysiology, and functional imaging technology, a new perspective of the central and peripheral mechanisms of cardiac function in the central nervous system has become possible. Neuronal elements distributed throughout the cardiac nervous system, from the level of the insular cortex to the intrinsic cardiac nervous system, are in constant communication with one another to ensure that cardiac output matches the dynamic process of regional blood flow demand [8]. That means there are actual neural pathways between the heart and central neural system, and maybe one day we can find the mechanism by which the heart affects one’s memory and thinking.

Examination

In TCM, the purpose of cardiovascular-related examination is judging the vitality of the heart. Common ways are inspection, inquiry, and pulse-feeling. Inspection means to observe the body and specific regions to know the general situation and pathological condition of the patient. The special regions in heart inspection are the face and tongue because TCM assumes that the heart’s brilliance manifests in the face and opens into the tongue. Actually, the face and tongue are both rich in blood vessels and convenient for external observation. According to TCM, the tongue provides a geographic map of the organ systems; characteristics of the tongue in each of these areas provide information critical to the TCM diagnosis [9]. Overall, judgment of heart vitality is also made looking at the whole status including mental state, facial expression, complexion, physical condition, and so on. Inquiry is another main method to receive information about the heart. Patients are asked about their complaints and history of illness. Many symptoms such as palpitation, listlessness, insomnia, dream-disturbed sleep, feeling pressure in the chest, reversal cold of limbs, constipation, deeply colored urine, and

mental abnormality with a flushed or pale face, reddened tongue tip, or an irregular pulse can give hints about heart dysfunction. Pulse-feeling is a comprehensive pulse system based on organ diagnosis that is applicable in both acupuncture and Chinese herbal medicine [10]. It is believed that the circulation period for Qi and blood is about 50 heartbeats, so pulse-feeling needs to take 50 pulses at least one time. By pulse-feeling, a highly trained TCM physician can get to know not only the heart rate and rhythm but also the whole situation of Qi and blood in the viscera.

TCM studies the condition of the heart mainly by direct examinations that are performed without instruments. Nowadays, Western medicine has a more subtle way of exploring the structure and function of the heart with modern medical apparatuses. The results come from clinical, laboratory, and imaging departments and provide huge amounts of data. Such high amounts of data may obscure a clear view of the situation. How to unify the results of machine examination and the impression of the physician's personal inspection is the concerted effort of TCM and Western medicine.

Diagnosis and Treatment

A whole TCM diagnosis includes the differentiation between disease and syndrome. The former is to identify the disease, and the latter is the analysis of the patient's pathological state. Actually, in TCM, there are only 2 disease names directly relating to the heart, namely "Xin Ji" (palpitations) and "Zhen Xin Tong" (truly cardiac pain, angina) because TCM assumes that the heart as a monarch is rarely directly affected by pathogenic factors; otherwise, the consequences can be fatal. Although the monarch has zero tolerance of disease, there are still many factors that can interfere with the normal function of the heart. The deficiency of Qi, blood, Yin, and Yang can lead to dysfunction of the heart. Some pathological products such as phlegm, fluid retention, and pathological hyperfunction, for example fire or heat, can also result in cardiac abnormalities. Moreover, problems or maladjustment occurring in or between other organs can also affect the heart. So a comprehensive analysis of the pathological situation leads to the differentiation of syndromes.

Syndrome research has always been a hot and difficult topic in TCM basic studies [11] because it is conducive to the formation of management. When the diagnosis is confirmed, TCM doctors can choose a therapeutic principle according to it. Then, some specific treatment can be developed based on the chosen principle and applied to the patient. Acupuncture, moxibustion, and herbal medicine are the main treatment methods in TCM. Although these therapies are not directly exerted on the heart from the point of view of modern medicine, definite curative effects on the heart and related diseases are proved by modern research.

Summary

With the development of modern medicine, the complementary effect between Chinese and Western medicine is becoming more and more obvious. Western medicine does well in examination and diagnosis, while Chinese medicine is good at conservative treatment. Cardiac surgery in symptomatic, severe coronary heart disease leads to significantly better functional capacity and prolonged survival when compared to medical treatment alone [12], but no one is willing to wait until surgery is needed. Today, many heart-related diseases can be diagnosed early with the developed medical technology. TCM gets increasing attention because of its definite effect, low risk of side effects, and convenient and economical nature [13].

Integrating the knowledge of Chinese medicine into Western medicine and vice versa can make the study of the heart and the related diseases more effective and comprehensive. The goal of integrative medicine should be to utilize the huge potential of complementary and alternative medicine, traditional medicine, and modern technology to identify effective means of diagnosis, quantitative evaluation, and precision treatment of diseases [14] to improve the treatment of heart disease patients.

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