
Ideas and the Methodology of Information Physical Medicine

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Abstract: Traditional physiotherapy of Chinese medicine, represented by acupuncture and directed by the theory of Chinese medicine, has been improved during its modernization and has become an embryo of modern information physiotherapy. This is a recent achievement of modernization of Chinese medicine, which can be correlated with and complement the mechanical physiotherapy and energy physiotherapy in Western medicine, providing a new system for physiotherapy and creating some conditions for integrating Chinese medicine and Western medicine in terms of science and technology. The system of information physiotherapy needs the technology corporation of therapeutic techniques and effect appraising methods that can be tested and quantified. The therapeutic system consists of electric information therapy (through meridian windows), He-He therapy (based on field effects) and spectrum therapy), while the effect appraising system includes the meridian impedance test, the organ infrared test, and the qi-blood brain image test. The efficacy of both systems has been proven in the cure of some common diseases, such as children myopia, cervical spondylosis, calculosis, astriction, damages of limbs and trunk as well as cerebral palsy. The foundation of the system is information medicine that is based on information tests for meridians, organs, and qi-blood, involving three physiological functions: qi activity, transformation, and catharsis; three pathological mechanisms: deficiency, disorder, and toxin; three cures: tonification, regulation, and purgation. Apart from knowledge propagating, technique training, and environmental protection, the establishment of information physical medicine will solve the contradiction between large scale and individualization in the standard-setting Chinese medicine industry and clear the way for the modernization of Chinese medicine.

Keywords: Mechanical Physiotherapy, Energy Physiotherapy, Information Physiotherapy, Effect Appraising, Qi Activity, Transformation, Catharsis

1. Introduction

There are three general fields in traditional Chinese and Western medicine: internal medicine, surgical medicine, and physical therapy. Physical therapy has two dimensions (physical and psychological dimension) and two types (mechanical and energy physical therapy), based on physical and psychological techniques which originate from the practice in clinical medical treatment of Western medicine. Mechanical therapy, energy therapy, psychological and behavioral therapy are widely used in modern physical therapy [1].

Internal medicine is based on the study of physiology and biochemistry, while surgical medicine is based on the study of

systematic anatomy. Physical therapy, however, is less popular compared with internal and surgical medicine due to the lack of a strong theoretical basis. Although the basic theoretical knowledge of internal and surgical medicine can be drawn on by physiotherapists, the reliance on their experience is way more common in treatment because the knowledge related to physical medicine is not profound enough and it is difficult to understand the rationale behind the effects imposed by physical factors on the body. This situation limits physical medicine not only in its technical development but also in its clinical application and it becomes a big challenge in its progress.

Traditional Chinese medicine and Western medicine have an entirely different theoretical basis, but they both have

internal medicine, surgical medicine, and physical therapy as three different divisions. They share the same technical type (medicine, surgery, and instruments) for a long time stably, and they are different in styles only. Acupuncture and moxibustion, massage, and Qigong are typical techniques in traditional Chinese medicine [2]—acupuncture dominates the information regulation of the body; moxibustion dominates the energy regulation of the body; massage dominates the mechanical regulation of the body; Qigong dominates the psychological regulation. These traditional techniques are changing with the modernization of traditional Chinese medicine and there are two distinguishing features of these changes—one is the emergence of the systematology of traditional Chinese medicine about its rationale; another is the improvement of its techniques with the help of the latest information technologies of Chinese medicine. These changes create the possibility of the theoretical interaction between Chinese and Western medicine, and they also make it possible to combine the technologies of both.

The formation and development of information physical medicine will bring three obvious changes: Firstly, it will be a fundamental driving factor in the process of the modernization of Chinese medicine. Traditional Chinese medicine has long been considered confusing and passive by people and information physical medicine will improve this situation [3]; Secondly, it can be used to bridge the gap between the two medical systems which also known as structure medicine and information medicine, making $1+1>2$, combining both on a whole new level [4]; moreover, it will also promote the status of physical medicine in the modern medical system and expand the range of indications. With the development of information medicine, people will attach greater importance to physical medicine than before because it is intended to build not only a new medical system that is human-friendly and eco-friendly but also a new medical platform that is low-cost and cost-effective and with higher rates of coverage.

2. The Principles of Information Physical Medicine in the Systematic Framework of Chinese Medicine

The theories of traditional Chinese medicine are vague and flexible (like a “dough”) that they cannot establish a standard and behavioral norm as Western medicine (like “steel”) did. Although they can fulfill the current needs of individual diagnoses and treatments, they are likely to be floundering in modern industrialized society. After a long struggle, a new theoretical model—the systematology of Chinese medicine has been built to overcome the obstacles [5]. The new model combines the advantages of traditional Chinese medicine and Western medicine—flexible and normative (like “rubber”), which not only can be used in the individual diagnoses and treatments but also make it possible to set up a standard and behavioral norm. There are two prominent features of this model: one is the foundation of its systematology framework allows the informatization of the core physiological concepts

in traditional Chinese medicine such as meridians, organs, and qi-blood; another is the integration of the three basic forms of life activities (qi activity, transformation, and catharsis) connecting the theories of physiology and pathology and the process of diagnoses and treatments [6].

Deficiency, disorder, and toxin are the three pathological mechanisms in Chinese medicine: deficiency is the pathological state of the patients with poor qi activities, which has the strongest correlation with the lungs and the kidneys. The treatment for it is always based on the invigoration and the regulation of the kidney qi; disorder is the pathological state of the patients with poor transformation which has the strongest correlation with the heart and the spleen. The treatment for it is always based on the regulation of the heart and the spleen to remove stasis; toxin is the pathological state of the patients with poor catharsis which has the strongest correlation with the liver and the pericardium. Soothing the liver and clearing the heart fire have always been used to resolve the toxin.

The essence of Western medicine is structure medicine, focusing on the detection of lesions and removing lesions with the help of external forces, while the essence of Chinese medicine is information medicine, focusing on the intervention and the mobilization of the self-organizing forces in the body to maintain the internal balance of body and thereby to promote the rehabilitation. Thus, the systematology of Chinese medicine focuses on the understanding and the intervention of life information of the body rather than its physical structures.

Meridians are the basis of Chinese medicine systematology. The physical structures of meridians were never found according to western anatomy. However, with the help of biophysical methods, signals such as sound, light, heat, electricity, and magnetism are found on the running courses of the fourteen meridians. These signals are not only related to the brain, genome, and activities of organs inside the body but also linked with spatiotemporal and environmental factors outside the body. Full interpretation of the essence of meridians is still a frontier scientific issue that needs to be solved. But for now, with the existing knowledge and the information physical medicine, further progress can be made to combine the latest achievement of the modernization of Chinese medicine with Western physical and rehabilitation medicine. Maximizing the benefit of patients and contributing to the establishment of a new medicine mode which will be better than both.

In the long process of the modernization and the industrialization of Chinese medicine, a batch of Chinese physiotherapy equipment with safe and effective methods has emerged. Unfortunately, they are difficult to be accepted by society because of their inadequate explanations about their principles of medical science [7]. However, with the continuous progress in their modernization, systems science and information technologies have created conditions for their scientific explanations. Unlike Western physiotherapists using mechanical and energy factors for the local treatment of lesions, Chinese physiotherapists use information physical

therapies for the holistic treatment of the body by the regulatory intervention of meridians. In some cases, local lesions and pain can be controlled by using holistic treatment methods only; in other cases, additional local treatments are also needed. The treatment methods used may differ from patient to patient, but holistic treatment is crucial in every case, and this is the main feature of Chinese medicine.

3. Chinese Information Physical Medicine System Armed with Information Technology

Chinese information physical medicine system is a technical system focusing on the principles of Chinese medicine—ontology, holism, and syndrome differentiation. It includes the processes of the assessment of the holistic health status of patients and the random dynamic intervention: The assessment of general health status accomplished by the informationized detection and analysis of meridians, organs, and qi-blood to determine the status of the body and the degree and the pathological nature of symptoms, producing evidence for treatment; The random dynamic intervention is based on the syndrome differentiation to promote the recovery of qi activity, transformation and catharsis by tonifying the qi activity, regulating the transformation, and removing the toxin respectively.

Meridian impedance test [8], organ infrared test [9], and qi-blood brain image test [10] are used in the assessment of the holistic health status of patients to make quantitative analyses of the status of meridians, viscera, qi, and blood respectively, followed by the data integration and the holistic health status summary. These methods have produced important progress over the last decade, but they are still not well understood by people and lack large-scale applications because the informationized methods they used to be neither the structure analyses of Western medicine nor the four diagnostic methods of traditional Chinese medicine (observation, auscultation and olfaction, inquiry, pulse feeling and palpation). They are still in the exploration stage, but with bright prospects. The methods used in the assessment of the holistic health status of patients can play an important role in health management, clinical diagnosis and treatment, and practical rehabilitation. They are the tools for the diagnosis before treatment, the monitor in treatment, and the assessment after treatment.

Random dynamic intervention always uses He-He therapy apparatus [11], electric information therapy apparatus [12], and spectrum therapy apparatus [13] targeting deficiency, disorder, and toxin respectively to promote the restoration of balance in the body. The intervention focuses on the changing of the holistic health status of patients rather than the lesion itself as Western medicine did. Thus, the principle “random” and “dynamic” become extremely important. “Random” means every case must follow the rules of holistic assessment, choosing the most appropriate treatment in accordance with the specific conditions rather than experiences. “Dynamic” is similar to “random”, which is vary from case to case, but the

other three additional factors must be taken into consideration when it comes to the principle “dynamic”, which are constitutions type, season, and geographical environment.

4. The Application Value of Information Physical Medicine

The equipments mentioned above are the main components of the information physical medicine system and have been in the market for more than ten years. Each of them has its characteristics and limitations, therefore, the integration of their functions is required to improve their effectiveness. He-He therapy apparatus shows satisfactory treatment effects especially in extremity injuries and cerebral palsy in children, the effects of it always better with the combination of other treatment methods in Chinese medicine; Spectrum therapy apparatus shows excellent treatment effects in constipation and cervical spondylosis, the effects always better with the use of spectrum water; The cases of myopia in children and lithiasis (including biliary calculi and urinary systematic calculi) make up a large proportion of all the successful cases involved with electric information therapy, however, its effects for the treatment of deficiency syndrome is less obvious, adjuvant therapy is required for further treatment. Apart from the treatment methods, information physical medicine also has its evaluation system which can record the changes of the physical and mental state of patients, providing technical support to precision treatment and maintenance. If we take the three therapeutic equipment as a “rifle”, then the tree diagnostic methods (meridian impedance test, organ infrared test, and qi-blood brain image test) would be the “rifle scope” which not only points the way to the successful treatment but also making the assessment of treatment, thereby producing the qualitative and quantitative evidence for the feedback adjustment of treatment.

According to the mechanism behind information physical medicine, which is the holistic assessment and the random dynamic intervention, three important inferences can be drawn: Firstly, it has multiple therapeutic functions in actual treatments, therefore, new fields of treatment and therapeutic functions should be explored rather than sticking to the known functions only; Secondly, its therapeutic effects vary with constitutions type, season, and geographical environment. Thus, it is necessary to use Chinese medicine theory knowledge for the probing of individualized conditions and the accumulation of successful treatment experiences; Moreover, minimized intervention during treatment and maximized maintenance after treatment have always been encouraged. “30% of treating and 70% of maintaining” always plays an important role in Chinese medicine [14], this means that the usage of the internal forces of the body itself is a key factor in successful treatments rather than relying on the external forces.

Information physical medicine is a product of the modernization of Chinese medicine, it belongs to the category of modern Chinese information medicine. Information medicine can be generally classified as information physical

medicine, information internal medicine, and information surgery, categorized by technical types. By using physical medicine as a starting point, information physical medicine has become the main part of this system and the range of its application can be expanded with internal medicine and surgery. The medical and surgical methods can also be informationized, turning molecular intervention and organizational intervention into informational intervention which is more extensive and convenient to ensure the treatment is effective, low-cost, and patient-friendly. Interdisciplinary cooperation is required in the development of information physical medicine, not only between Chinese medicine and Western medicine but also between traditional Chinese medicine and modern Chinese medicine. In addition, life sciences and mathematical sciences are also needed in multi-dimensional and multi-leveled interactions.

5. Discussion

Information physical medicine is an attempt to establish a new medical system that is lower-cost, more cost-effective, and with higher rates of coverage. It also suggests three ideas: the value of health promotion; the complexity view of science; and the technical view in combining Chinese medicine and Western medicine. Thus, tasks of removing lesions should always be accompanied by restoring patients' functions [15]; the system science that combines physics and life sciences will be the theoretical basis of the new medicine [16]; information diagnosis and treatment technologies that combine modern Western medicine and modern Chinese medicine will scale up quickly in the field of medicine [17].

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