

Academic Exploration

Current Situation and Reconsideration on Study of Integrated Chinese and Western Medicine Andrology*

JIN Bao-fang¹, YANG Wen-tao², SUN Da-lin¹, and LI Hong-jun³

ABSTRACT The development of Chinese medicine and Western medicine andrology is based on different social background and academic systems, either Chinese medicine or Western medicine andrology has their limitations, therefore, integration of Chinese and Western medicine (ICWM) andrology is in a great need. After more than 30 years of development, andrology has made great achievements in the construction of specialized academic association, holding academic conferences and publication of academic monographs, and the research progress on this field is mainly in the combination of disease and syndrome, microdifferentiation of symptoms and signs and basic research development. However, the comprehensive theoretic system of ICWM andrology has not yet established, and the related studies are still on the primary stage. In the future studies, great efforts still need to be made to expand the methods for the investigation of ICWM, and make innovations in the field of andrology.

KEYWORDS integrative medicine, andrology, late-onset hypogonadism, male infertility, chronic prostatitis

After more than 30 years of development, remarkable achievements have been made in the field of integrated Chinese and Western medicine (ICWM) andrology, however, there still exists several concerns which are worthy of reconsidering. The purpose of this paper is to explore the current situation on ICWM andrology, and to explore a new way of development.

Dilemma of Chinese Medicine Andrology Limitations of Treatment Based on Syndrome Differentiation

Syndrome differentiation and treatment is the characteristic and advantage of Chinese medicine (CM). However, excessive emphasis and pursuit of dialectical treatment often leads to limitations, especially in modern andrology. Many maleic diseases, such as hereditary infertility, obstructive azoospermia, etc., which did not have obvious clinical symptoms, cannot be diagnosed by syndrome differentiation. Moreover, the cause of testicular pain may be orchitis, testicular hematoma, testicular cyst, testicular tumor, epididymitis, epididymal tuberculosis, epididymal cyst, epididymal deposition, varicocele, for testicular pain with different reasons, the treatment plan and prognosis varies, which cannot be solved simply by using dialectical treatment alone.

CM Diagnostic Methods Lacks of Objectivity and Accuracy

It is considered that the external changes of the body can accurately reflect the internal pathological changes, through "observation, auscultation and olfaction, inquiry, and pulse feeling and palpation" in CM theory. Due to the lack of objective diagnostic criteria, one patient may have multiple diagnostic results. For example, according to the patient's disease history of infertility for many years, the patient has been diagnosed as "sterility", however, the specific etiology of sterility is complex, including congenital abnormality, varicocele, genital tract infection, gonadal hypofunction, systemic disease, obstruction of the vas deferens, and so on. If the diagnosis of infertility is not specific, it is difficult to

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1. Andrology Department of Integrative Medicine, Zhongda Hospital, School of Medicine, Southeast University, Nanjing (210009), China; 2. Department of Andrology, Ruikang Hospital Affiliated to Guangxi University of Chinese Medicine, Nanning (530011), China; 3. Department of Urology, Peking Union Medical College Hospital, Peking Union Medical College, Chinese Academy of Medical Sciences, Beijing (100730), China

Correspondence to: Prof. LI Hong-jun, E-mail: hongjun63@163.com

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design reliable therapeutic plans.

Dilemma of Western Medicine Andrology **Limitations of Laboratory Tests in the Diagnosis of Diseases**

At present, the white blood cell (WBC) count in prostatic fluid examination is the main method for diagnosis and evaluation of the clinical outcomes of prostatitis, however, the WBC count is often not consistent with the severity of patients' symptoms, and it cannot always be used as an index to evaluate the therapeutic efficacy of prostatitis.^(1,2) The testosterone (T) level is not a golden standard for the diagnosis of late-onset hypogonadism (LOH). The relationship between the levels of age-related hormone and the clinical symptoms of LOH is not completely clear, and related researches are relatively rare.⁽³⁾ At present, the diagnosis of primary premature ejaculation still lacks of effective laboratory methods and objective tests to evaluate the effects of varicocele on pain, fertility and sexual capacity. Semen analysis results may predict fertility potential, but are not directly related to fertility. Data from a human sperm bank suggest that most healthy men who have already given birth do not meet normal sperm standards. Clinically, sperm from patients with severe oligozoospermia can lead to naturally pregnant while preparing for *in vitro* fertilization treatment and the infant was delivered successfully. In addition, the accuracy, standardization and quality control of semen analysis are not perfect, semen analysis results are also disturbed by semen collection process. At present, there is a lack of normal reference range for semen parameters in China.

Pathogenesis of Most Maleic Diseases Is still Unclear

The specific causes of many maleic diseases are still unclear. A survey from 7,057 male infertility patients showed that 75.1% of infertile patients do not have a definite cause.⁽⁴⁾ The etiology of chronic prostatitis is very complex, although there has been a considerable understanding of its many pathogenesis, but there is no breakthrough.⁽⁵⁾ The etiology of premature ejaculation has not been elucidated by a generally accepted theory, and there is either no objective and reliable diagnostic method either.⁽⁶⁾

Lack of Effective Therapeutic Methods

In the treatment of andrology diseases, although scholars all over the world have carried out

a large number of basic and clinical researches in recent years, many diseases are still lack of specific clinical treatments, such as male infertility, especially idiopathic infertility. Most of the current methods for the treatment of erectile dysfunction and premature ejaculation are lack of etiological treatment. There are many treatment methods for chronic prostatitis, but most are based on previous experiences, which are far from the requirement of evidence-based medicine (EBM), and the effects of treatment are not satisfactory. The etiology of LOH is complex and androgen supplementation alone cannot solve all the problems.⁽⁷⁾

Western medicine is based on the results of in-depth experimental study of the disease of the local, microscopic, pathogenicity; meanwhile, CM is the dialectical analysis of the disease with logical reasoning as a whole. Although they have completely different characteristics, they precisely reflect the obvious complementary characteristics of the two medical systems. ICWM is an inevitable trend to fully understand diseases and deepen the development of modern medicine.⁽⁸⁾

Present Situation of ICWM in Andrology

The discipline system of CM andrology was formed in 1980s. The history of CM andrology can be traced back to 2,000 years ago. In recent years, achievements have been made on the discipline construction of ICWM andrology, such as the development of specialized academy, academic conferences and publication of academic monographs. The Urology Department of the Third Hospital of Peking University has led a multi-center study of several proprietary Chinese medicines, such as Kirin Pill (麒麟丸), Imusac Tablet (伊木萨克片), etc. This study not only clarified the clinical efficacy of Chinese patent medicine, but also provided a certain standard for the rational use of proprietary CM.^(9,10) At present, the research progress of ICWM andrology are in the following aspects.

Development of the Guidelines for Diagnosis and Treatment of ICWM Andrology

From 2007 to 2018, the Andrology Committee of the Chinese Society of successively organized experts to set up a series of guidelines for the diagnosis and treatment of chronic prostatitis,⁽¹¹⁾ male infertility,⁽¹²⁾ erectile dysfunction,⁽¹³⁾ benign prostatic hyperplasia,⁽¹⁴⁾ and early ejaculation⁽¹⁵⁾ in China.

Disease and Syndrome Combination

The combination of disease and syndrome is the mode of modern medical approaches with the combination of Chinese and Western methods, which has now become the main method for most of the ICWM therapies.⁽¹⁶⁾ Take male infertility as an example, etiological diagnosis was determined by asking for the disease history and laboratory examinations, including semen, endocrine or chromosome examination, etc. On the other hand, using the theory of CM, the doctors examine the cause of the disease, analyze its internal pathogenesis, and make the diagnosis of the "syndrome type" of the patient at that time. For patients with different syndrome type, different treatment methods were applied, e.g., invigorating Shen (Kidney) and filling essence, nourishing qi and blood, or eliminating phlegm and smoothing collaterals, etc. Song, et al⁽¹⁷⁾ treated male infertility on the basis of combination of disease and syndrome, focusing on invigorating Shen and Pi (Spleen), activating blood circulation and removing blood stasis, and finally improved the therapeutic efficacy.

The method of combination of disease and syndrome is also a direction for the development of animal models of CM syndromes. Zhu, et al⁽¹⁸⁾ developed the mice model of autoimmune prostatitis with dampness-heat syndrome induced by high-fat and high-sugar diet, liquor, dampness-heat environment and purified prostatic protein solution. The pathological changes of prostate tissues and the expression of cytokines and transcription factors were analyzed. The results were consistent with the expression in patients with chronic prostatitis in dampness-heat syndrome.

Micro-syndrome Differentiation

CM syndrome differentiation is often through "inspecting, listening and smelling, inquiry, the pulse-taking and palpation" to collect the information of the disease. Traditional macro-dialectical methods lack a deeper understanding of the disease, and sometimes some male diseases may be unidentifiable. Microcosmic syndrome differentiation is another important way for CM to recognize diseases on the basis of macro-syndrome differentiation, which was first put forward by SHEN Zi-yin.⁽¹⁹⁾ Microcosmic syndrome differentiation is a process by using advanced technology of Western medicine to understand the structure, metabolism and functional characteristics of the organism from a micro-

perspective, which can completely and accurately clarify the essence of the syndrome. By introducing genomics and EBM to micro-syndrome differentiation and integrating thoughts, the principle of micro-syndrome differentiation was enriched.⁽²⁰⁾

At present, microcosmic syndrome differentiation is widely used in diagnosis and treatment of male infertility, for example semen syndrome differentiation, endocrine syndrome differentiation and so on. According to the CM yin-yang theory, the number of spermatozoa belongs to yin and the motility rate of spermatozoa belongs to yang. Therefore, the amount of sperm and semen might be associated with the profit and loss of Shen yin, and the strength of sperm motility may be correlated with the rise and fall of Shen yang. Less semen, sperm and poor liquefaction are more common in patients with deficiency of Shen yin; cold semen, sparsely sperm, low viability, weak motility are more seen in patients with deficiency of Shen yang.⁽²¹⁾ When dead sperm and deformed sperm increased in semen, it should be identified as heat toxin accumulation knot.⁽²²⁾ Sun, et al⁽²³⁾ analyzed the relationship between semen routine parameters of male infertility patients and CM syndromes. The results showed that the sperm concentration and total sperm count in the patients with Shen yin deficiency were significantly lower than those in the other syndromes, and the total sperm motility rate in the patients with Shen yang deficiency was significantly lower than other syndrome groups. Therefore, for many unidentifiable infertility patients, the semen parameters can be referred to the treatment of syndrome differentiation. Sex hormone examination is the routine examination of male infertility patients. The hormone closely related to male reproductive function includes T, luteinizing hormone (LH), follicle stimulating hormone (FSH). Ca, et al⁽²⁴⁾ studied the relationship between CM syndrome types and sex hormone test results through clinical trials. The results showed that the content of T was the lowest in the Shen-yang deficiency group compared with the other groups, and the LH, FSH levels in the Shen-yin deficiency group were significantly lower than those in the Shen-yang deficiency group.

Basic Research Development

"Shen and essence" is the important theoretical basis of the CM "qi" theory. In andrology, Shen is also closely related to spermatogenic function. Spermatogenesis and its normal function depend on

many hormones, including androgen, FSH, luteinizing hormone, prolactin, inhibin, growth hormone, thyroxine, insulin and so on. It has also been confirmed that Chinese herbs of tonifying Shen can improve spermatogenic function by regulating gonadal axis or directly acting on spermatogenic cells.⁽²⁵⁾ The theory of "Gan (Liver) is responsible for dredging" is also closely related to the diagnosis and treatment of andrology disease. Modern studies suggested that the physiology and pathology of the Gan is closely related to the neuro-endocrine-immune system, hemorheology and coagulation mechanism,⁽²⁶⁾ which could lead to the occurrence and development of a variety of andrology diseases, such as sexual dysfunction, prostatitis, male infertility, and so on. The method of soothing Gan can be widely used in andrology.⁽²⁷⁾

The pharmacology of CM is to study the function and mechanism of CM on organism with modern scientific methods under the guidance of CM theory. Jin, et al⁽²⁸⁻³³⁾ found Yangjing Capsule (养精胶囊) improved spermatogenic function and sexual function by regulating androgen synthesis, spermatogonial cell proliferation and apoptosis, and improved the spermatogenic microenvironment. Jia, et al⁽³⁴⁾ found that Xiaolong Tongbi Capsule (消癥通闭胶囊), a traditional CM for invigorating qi and activating blood circulation, had the effect of antagonizing α receptor and 5 α -reductase, promoting the apoptosis of prostatic epithelial cells, reducing the volume of prostate and treating prostatic hyperplasia. Zhang, et al⁽³⁵⁾ confirmed that Qianlie Tongqiao Capsule (前列通窍胶囊), a traditional CM for tonifying Shen and activating blood circulation, reduced the wet weight and the index of prostate by lowering the levels of T and epidermal growth factor in the prostate tissue of the rats with prostatic hyperplasia, inhibiting prostatic tissue proliferation.

Reconsideration on ICWM in Andrology

Integrated Chinese and Western medicine, which is still in the primary stage of development, has not yet formed a comprehensive theoretical system.

At present, ICWM andrology has not formed a perfect theoretical system. The combination from practical experience to theory is an inevitable process and trend of development.⁽³⁶⁾ However, the research on the combination of CM and andrology is still in its infancy. The guidance of this two-track system, on the

one hand, has promoted the development of practical work to a certain extent, such as the application of the model of "combination of disease and syndrome". On the other hand, the mistakes and confusion of thinking mode caused by their defects greatly hindered the development of ICWM.⁽³⁷⁾ Therefore, a set of independent, systematic, modern medical theory system is critical for the development of ICWM andrology.

Although the reports on the development of ICWM andrology is increasing recent years, it is still difficult to interpret the connotation of ICWM andrology. Moreover, it is common to see the patients with severe disease manifesting slight symptoms. Furthermore, immature animal model and therapeutics are stills used for development of basic research. Such a large amount of manpower and material resources still cannot explain the essence of CM syndrome differentiation and its mechanism. In the future, great efforts still need to be made to investigate the methods for ICWM, and to make innovations in the field of andrology.

Conflict of Interest

The authors have declared that no conflict of interest exists.

Author Contributions

Jin BF contributed to the conception of the paper; Li HJ contributed significantly to analysis and manuscript preparation; Sun DL wrote and revised the manuscript; Yang WT helped to perform the analysis with constructive discussions.

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