

Rules of Prescription and Medication for Spermatorrhea in Zhonghua Yidian

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Keywords: Spermatorrhea, the Doctor of Traditional Chinese Medicine, Traditional Chinese Medicine (TCM), Data Mining, Rules of Prescription and Medication

Abstract: **Objective:** With the aid of traditional Chinese medicine inheritance platform, to analyze and summarize the prescriptions for spermatorrhea in Zhonghua Yidian, and to obtain the rules of medication and prescription principles for spermatorrhea. **Methods:** Through searching the Chinese medicine prescriptions for spermatorrhea in Zhonghua Yidian, the data were filtered and processed, and input into the "Traditional Chinese Medicine Inheritance auxiliary platform" (V2.5) to analyze the drug frequency, four qi, five tastes, meridians and association rules. **Results:** A total of 127 effective prescriptions were screened out, using 177 Chinese herbs. There were 21 Chinese herbs with frequency ≥ 15 times, 11 common drug combinations, 5 pairs of association rule combinations, and 1 new prescription. **Conclusion:** The compatibility of high-frequency drugs reflects the principle of tonifying kidney, consolidating essence and regulating heart and spleen in the treatment of spermatorrhea. In ancient Chinese medicine books, the drugs for spermatorrhea were mainly used for the kidney, heart, liver and spleen meridians, mainly tonifying the kidney and fixing the essence, and also taking into account the benefit of qi. The academic thought of solidification of the kidney, calming the heart and tonifying qi and blood as the basic treatment method was formed, which could provide reference for the clinical treatment of spermatorrhea.

Spermatorrhea refers to the phenomenon of frequent ejaculation of semen in the absence of sexual life, which occurs mostly in adolescent males. It is a common syndrome of kidney disease and andrology in traditional Chinese medicine. With the development of social economy, bad emotions such as stress and anxiety can also induce spermatorrhea. Studies have shown that more than 90% of young and middle-aged men have suffered from spermatorrhea [1]. Prolonged spermatorrhea greatly affects people's mental state and physical and mental health, and is not conducive to work, study, and interpersonal communication. At present, there are many adverse reactions in the modern medical treatment of spermatorrhea, and the course of the disease is long and easy to repeat. TCM syndrome differentiation has good effect and advantages in the treatment of spermatorrhea.

1. Materials and Methods

1.1. The Sources of Data

Included "4. Formulary books", "8. General medical books", "9. The directory of "medical theory and medical cases" was used as the retrieval node, and 256 results were retrieved in the fifth edition of the Zhonghua Yidan with the search terms of "Spermatorrhea," "wet dream," "slippage," "loss of sperm".

1.1.1. Inclusion Criteria

To identify and treat "spermatorrhea", "dream-spermatorrhea", "slippage" and "azoospermia" in oral Chinese medicine prescriptions.

1.1.2. Exclusion Criteria

Prescriptions containing only a single herb were excluded; Non-oral prescriptions were excluded. Prescriptions with no prescription name and repeated drug composition were excluded.

1.1.3. Literature Screening and Data Entry

Using the method of double entry, the TCM prescription information that met the standards was entered into the Excel sheet, and the spermatorrhea database was established after checking each other.

1.1.4. Database Normalisation

According to the Pharmacopoeia of the People's Republic of China [2], the name of traditional Chinese medicine is standardized. For example, "chicken head" is "Euryale seed", "lotus bud" and "lotus whisker" are "lotus whisker", "horseshoe fragrance" is "Xixin", and "Shanyu flesh" is "Shanzhuyu".

1.1.5. Data Analysis

The 127 prescriptions in the database were input into the "prescription management" section under the TCM inheritance assistance platform, and the button of "Statistical report" was clenched to observe the results of the indicators such as frequency, four qi, five tastes, and return meridian. Click the "Data Analysis" button to observe the rules of composition and the combination of new formulations.

2. Results

2.1. Medication Frequency Statistics

The Zhonghua Yidian Semen database contains prescriptions of Good Prescriptions for First Aid, Hua Tuo Shen Fang, Criteria for Syndrome and Treatment · Lei Fang, Selected Essentials of Medical Prescriptions, Not Understanding the Necessity of medical Treatment, Jiu Sheng Ji, Treatise on Large and Small Evidences, New Compilation of Empirical Prescriptions, Simple and Effective Prescriptions for Miraculous effects, Lei Fang, Several books, such as empirical-qi Prescriptions, Wai Zhi Shou shi Fang, Hui Sheng Ji, Brief Prescriptions for difficult and emergency cases, The Complete Collection of empirical-good prescriptions, Simple effective Prescriptions for Four Disciplines, Zhong Xing Xian Fang, Zheng Zhi hui Fu, etc., obtained 127 prescriptions of

Chinese medicine, a total of 177 Chinese medicines, and the total frequency of use was 1014 times. According to the frequency of traditional Chinese medicine, there were 21 herbs used more than 15 times, and the cumulative frequency was 503 times, accounting for 49.6% of the total frequency. Among them, the top 10 Chinese herbs were Poria coporia (50 times), yam (41 times), Polygala (34 times), Euryale euryale (30 times), ginseng (28 times), Schisandrae fructus (26 times), cornus officinalis (24 times), keels (24 times), Phellodendri huangpu (23 times), and cooked rehmannia (23 times), and the other results are shown in Figure 1.

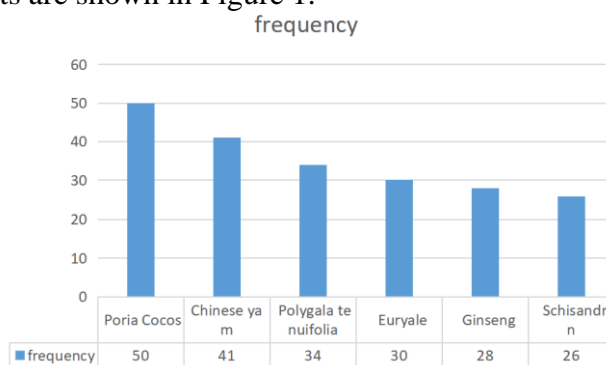


Figure 1: Statistics of the frequency of Chinese materia medica ≥ 25 times in the spermatorrhea database of Zhonghua Yidian.

2.2. Statistics of Four Qi, Five Tastes and Meridians

The results of statistical analysis of the four qi, five flavors, and meridian-dependent characteristics of TCM contained in the Spermatorrhea database of the Chinese Medical Canon are shown in Figure 2, the main types of four qi were warm (three hundred and fifty-two times), flat (two hundred and ninety-three times) and cold (one hundred and eighty-eight times). The five tastes were mainly sweet (five hundred and ninety-six times), bitter (two hundred and thirty-seven times), and spicy (two hundred and thirty-three times). The main meridian homing was kidney (five hundred and seventy-four times), spleen (three hundred and seventy-eight times), heart (three hundred and forty-two times), and liver (three hundred and thirty times).

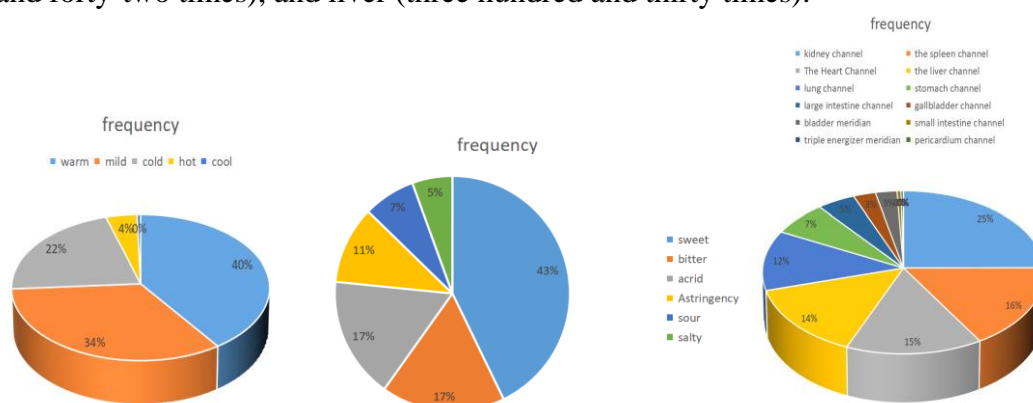


Figure 2: Statistics of four qi, five tastes, and Meridians

2.3. Analysis of Prescription Rule

The number of supports was defined as 14 (that is, appeared when the drug combination had at least 14 prescriptions), and the confidence level was 0.6 (namely, drug A was present and 60% of drug B was present), by selecting the medication mode button under the prescription rule, a total of

11 common drug combination modes with frequency greater than 10 were obtained, as shown in Figure 3. Select the rule analysis button, and a total of 5 pairs of association rules with confidence greater than 60% were obtained, as shown in Table 1.

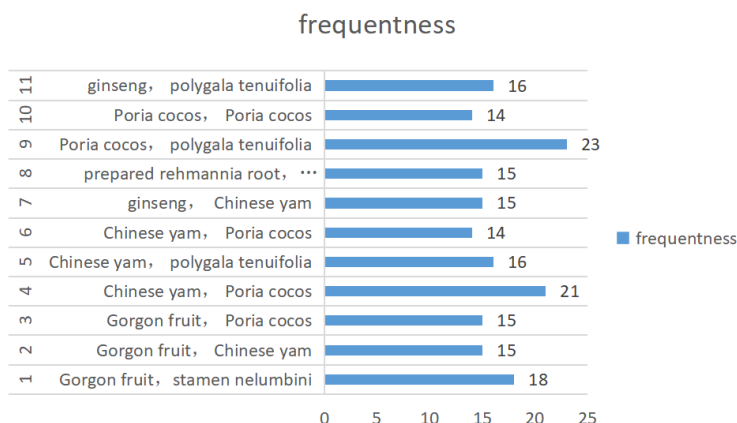


Figure 3: The number of common drug combinations with support was 14 and confidence ≥ 0.6

Table 1: Association rule combination with 14 support degrees and confidence ≥ 0.6

| serial number | regulation | confidence coefficient |
|---------------|------------------------------------|------------------------|
| 1 | stamen nelumbini-> Gorgon fruit | 0.818181818181818 |
| 2 | dogwood -> prepared rehmannia root | 0.625 |
| 3 | prepared rehmannia root-> dogwood | 0.652173913043478 |
| 4 | polygala tenuifolia -> Poria cocos | 0.676470588235294 |
| 5 | liquorice-> polygala tenuifolia | 0.857142857142857 |

2.4. Network Display Diagram Display

Select the network show button, support degree is defined as number 14, it is concluded that the network diagram (see Figure 4), also shown in the figure, Gordon euryale seed, dogwood, cooked rehmannia root, tuckahoe, god eight, atractylodes, yam, polygala, ginseng, fructus schisandrae, radix glycyrrhizae, dodder 13 of TCM, so setting can be more intuitive to the Chinese medical spermatorrhea prescription drug laws into contained in the database. Overall grasp and fine understanding.

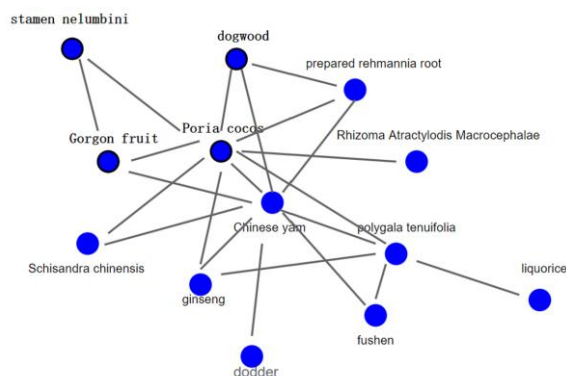


Figure 4: Presentation of the network with a support of 14

2.5. Analysis of core drug groups and new prescriptions based on cluster analysis

Based on the entropy hierarchical clustering algorithm, set the correlation degree to 3, the penalty degree to 3, select the "extract combination" button, and two potential core drug groups can be found, the core drug group was again combined into a new prescription: Cerufructus chinensis _ Euryale ferurensis _ Lotus beard _ Cistanche _ Achyrants achyrants _ Phellodendron officinalis (different from 127 prescriptions for spermatorrhea already existing in the database), as shown in Table 2. Select the "network display" button to obtain a network display map between the drugs included in the new prescription, as shown in Figure 5.

Table 2: Core drug groups and new prescriptions for the treatment of spermatorrhea based on cluster analysis

| Core drug group | |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Core drug group 1 | Cerufructus chinensis _ Euryale ferurensis _ Lotus beard |
| Core drug group 2 | Cistanche _ Achyrants achyrants _ Phellodendron officinalis |
| The new prescription | |
| Cerufructus chinensis _ Euryale ferurensis _ Lotus beard _ Cistanche _ Achyrants achyrants _ Phellodendron officinalis | |

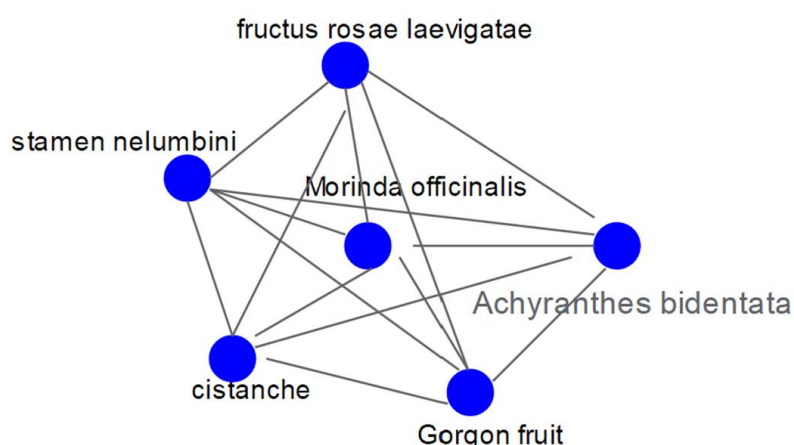


Figure 5: Presentation of the network of newly prescribed drugs for the treatment of spermatorrhea

3. Discussion

The name of spermatorrhea was first recorded in "Emperor's Inner Classic", in which it was first recorded that spermatorrhea occurred from the bottom. In the book "Benshen of Miraculous Pivot", it is stated that "fear and misunderstanding will damage the sperms, and the sperms will weaken and the sperms will start from below, pointing out that fear is one of the causes of spermatorrhea. In "Jingui Yaolu" (Synopsis of Prescriptions of the Golden Chamber), spermatorrhea is also referred to as "loss of essence", and considered that fatigue is also one of the causes of spermatorrhea. In "theory of Zhu Bing Yuan and Hou Lun", it is pointed out that spermatorrhea is caused by the weakness of kidney qi and experience. In "Prescriptions for Universal Relief", two major names of spermatorrhea and nocturnal emission were officially proposed. Zhu Danxi believes that spermatorrhea is triggered by heart fire, liver and kidney phase fire, and spermatorrhea. Huang Chenghao pointed out in "The Plication of the Humerus" that inharmony between the heart and the kidney can also cause spermatorrhea. According to traditional Chinese medicine (TCM), spermatorrhea is mainly caused by overwork and indulgence, and the disease is located in the heart,

liver and kidney. The basic pathogenesis is the loss of kidney sealing and storage and instability of essence and seal. Professor Qin Guozheng believes that the occurrence of spermatospermia is closely related to the disturbance of spermatospermia by Qi stagnation, blood stasis and dampness and heat, so he advocates the treatment of this disease by the method of clearing [3]. Hu Xishu, a master of typhoid fever, put forward the view of "under coke deficiency, cold, drinking, evil spirits, be disturbed, arouse desire and leave sperm". In clinical practice, cassia branch and keel oyster soup are often used as the basic party to add ripe attached seeds and Bai Wei to treat the disease[4]. The modern traditional Chinese medicine industry standard "Efficacy Standard for the diagnosis of TCM Internal Medicine Certificate" mentions that Yin deficiency, hot and heart infusion, heart and spleen deficiency, and kidney deficiency are the four major syndromes [5]. Professor Guo Jun clinically advocated the age theory of rational sperm, young and middle-aged men treated by heart and heat and heart, and middle-aged and elderly patients treated by spleen, kidney, and phlegm and stasis respectively[6].

Through the study of 127 semen treatment prescriptions in the Chinese Medical Code, it is found that the top 5 Chinese medicines used in the semen prescription prescriptions are poria cocos, Chinese yam, Yuanzhi, Gordon euryale seed and ginseng. Poria cocos taste sweet, light, flat, heart, lung, spleen, kidney meridian, can benefit water infiltration wet, spleen Ning heart, mainly treat adverse urine, edema swelling, spermatorrhea and other [7]. "Materia Medica Classic Reading" said, " Chinese yam can tonify the kidney and fill the essence, fine foot is Yin strong, bright eyes, deaf hearing." Yam is also a tonic medicine, and can strengthen the essence. The description of Gordon euryale seeds in Compendium of Materia Medica: " Gordon euryale seeds can quench the thirst and benefit the kidney. Treat urine can not help but spermatorrhea, white turbidity, take down " [8]. Chinese yam and Gordon euryale seed effect is similar, Chinese yam is more conducive to nourishing Yin, Gordon euryale seed is more conducive to collecting astringent, the two match, can enhance the effect of astringent essence to stop the heritage of [9]. Polygala tenuifolia has the function of fixed mind and intelligence, traffic, heart and kidney, god and fixed mind is calm heart, and the heart and gas from the kidney, And kidney, and stop semen fluid false discharge [10]. Ginseng taste sweet, warm, slightly cold, can rise, and can fall, Yang Yin, for the tonic of qi, "the heart of ten, eight into the liver, ten, five into the kidney three of ten ears" [11]. All medicine together, qi convergence, mind, spleen health, liver drainage has often, essence is not discharged. Mr. Bao Yanzhong, a national famous old traditional Chinese medicine doctor, pays attention to the treatment of the essence of the heart and liver, and advocates the use of more drugs to relieve depression and recuperate the mind, supplemented by psychotherapy, which is proved with [12].

From the drug to see, much of the kidney, spleen, heart, liver, from the perspective of the four gas of drugs warm, flat, and cold drugs, from the five tastes sweet, bitter, bitter ingredients, most combinations to see spermatorrhea treatment medication for GanPing, XinWen, their drugs, so the treatment of seminal emission more to make up for the virtual method is given priority to, followed by heat and dry wet. Xingan and warm medicine tonifying kidney and fixing essence, regulating and tonifying heart and spleen; Cold medicine dispels the fire, clearing the heart and relieving the liver. Professor Wang Wan-chun believes that the heart is the "master of the five zangfu organs" and plays a leading role in the physiological function of the five zangfu organs. The kidney is the master of the accumulation of essence, while the liver is the master of the movement and emission of essence. If the heart and mind are disturbed, spermatorrhea will occur without the right to control the essence, and the liver will also have spermatorrhea if it is lost in the dispersion [13]. On the basis of the original prescription of Xiaojianzhong Decoction, Zhang Chunhe added herbs such as yams, semen, dodder, and Polygalae to treat spermatorrhea by instilling qi, reducing the discharge phase fire and adjusting the four dimensions, and its clinical efficacy can be seen [14]. The results

of association rules showed that the composition of commonly used drugs was mainly tonifying kidney and fixing the essence, nourishing heart, and calming mind. Among them, lotus beard, Euryale euryale, and cornus officinalis were all essential drugs for tonifying kidney. In Bencao Zaixin, it is recorded that lotus whisker is bland in taste, flat in nature and non-toxic. Homing heart, kidney meridian, tonifying kidney astringent essence, stop bleeding, hemostatic belt, clinically used for the treatment of sleep-leaving slip, vomiting, stasis, collapse, belt, diarrhea and other symptoms. Euryale nourishing kidney solid essence, nature and taste sweet astringent convergence, suitable for kidney deficiency, spermatorrhea, spermatorrhea and other diseases, the two drugs combined with cornus officinalis to enhance the function of solid astringent. With the aid of Traditional Chinese Medicine inheritance platform (V2.5) software, in the column of "prescription rules", the support degree was set as 12, and the confidence degree was 0.6. A total of 11 common drug combinations and 5 pairs of association rule combinations were obtained. Among them, the occurrence frequency of "Euryale Euryale - Lotus root" drug pair is 18, ranking first, and the confidence of association rule is 0.8, ranking first. Just as in the collection of prescriptions, the Golden Suogujing pill is used with Euryale seed and lotus seed, Liu Lin et al found that Euryale seed combined with lotus seed was commonly used in clinical treatment of spermatorrhea.

Entropy clustering algorithm was used to analyze the rules of prescription for the treatment of spermatorrhea in the Chinese Medical records, and to obtain the best new prescription for the treatment of spermatorrhea. The new prescription is golden sakura _ Euryale _ lotus beard _ Cistanch _ Niuxi _ Ba Ji Tian, which can be regarded as golden Suogu Jing pill and Huanshaodan addition and reduction formula, Golden Suogu Jing pill solid essence astringent essence, this prescription was first recorded in the Yi Fang Ji jie · Shu astringent Agents of Wang Ang, a famous doctor in the Qing Dynasty. It is a representative prescription for treating spermatorrhea caused by unstable kidney deficiency, essence and regulation. Huan shaodan warm spleen and kidney, Yin and Yang fill, Cistanch, Morbido day powder cold fill fire, cow knee strong waist knee. The pathogenesis theory of the new prescription is in accordance with the theory of spleen and kidney deficiency and the instability of essence and guan, which is widely believed in traditional Chinese medicine. The new prescription reflects the medication characteristics of warm kidney, warm spleen, solid, and astringent, which provides ideas for the treatment of clinical spermatorrhea.

This study, based on a heritage of traditional Chinese medicine auxiliary platform in the Chinese medical basis directory 127 first prescription for the treatment of seminal emission, carries on the preliminary analysis of the data mining drug formula law, setting up a bridge between the ancient books of traditional Chinese medicine and traditional Chinese medicine information technology, to provide clinical treatment-based on syndrome differentiation of traditional Chinese medicine diagnosis and treatment spermatorrhea characteristics worthy of learning ideas and strong data support.

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