

Middle Jiao and IgA Nephropathy

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Abstract: IgA1 (GdIgA1) in the glomerular thylakoid region leads to kidney damage. There is growing evidence that intestinal microecological dysregulation plays a role in the pathogenesis of IgAN. The disease belongs to the category of "oedema," "deficiency labour," and "blood in urine" in Chinese medicine. In recent years, several TCM practitioners have conducted in-depth studies and research from genetics and immunohistology and confirmed that the abnormal immune function of the gastrointestinal mucosa is involved in developing the pathogenesis of IgA nephropathy. Therefore, Chinese medicine in the clinical treatment and prevention of IgAN nephropathy pays much attention to regulating the function of the spleen and stomach in the middle jiao. In this paper, we will study the prevention and treatment of IgA nephropathy from two aspects: the middle jiao and mucosal immunity.

1. Introduction

IgA nephropathy is the most common primary glomerular disease in Asia and Western countries, with a global incidence of approximately 25/100,000 per year. The leading cause of IgAN pathogenesis is the deposition of immune complexes characterized by galactose-deficient IgA nephropathy (IgAN) is the most common primary glomerular disease and accounts for a large proportion of the global burden of end-stage renal disease (ESKD). Renal immunopathology shows IgA-dominant immune complexes deposited in the glomerular thylakoid region, resulting in damage to the thylakoid region as a feature. IgA thylakoid deposition in IgAN is mainly polymeric IgA1, and the mucosal immune system is its primary source. The study found that 91.8% of patients with IgA nephropathy suffered from mucosal infections [1], and chronic inflammatory infections are one of the major causes of the lingering and prolonged progression of IgA nephropathy, including chronic pharyngitis, chronic tonsillitis, chronic gastroenteritis. Modern medicine needs more effective treatment and control measures. More research on Chinese medicine treating IgAN has shown certain advantages and efficacy in recent years. This paper reviews the latest research progress in diagnosing and treating IgAN in Chinese medicine.

2. Mucosal immunity and IgA nephropathy

The pathogenesis of IgA nephropathy (IgAN), as referred to in the "four strikes theory," is widely

considered to be the most widely accepted theory [2]. First Strike: Mucosal infection affects the transformation of primitive B cells and induces plasma cells to produce large amounts of abnormally glycosylated IgA1 molecules; The second strike: The body uses this abnormally glycosylated IgA1 molecule as its antigen and recognizes it in the blood with circulating IgG/IgA molecules, forming an immune complex; The third strike: Immunocomplexes accumulate in the glomerular mesangial zone during blood circulation; quadruple strike: Activation of the complement bypass pathway causes a further inflammatory response and damage to the kidney. Moreover, mucosal immunity is involved in the pathogenesis of IgA nephropathy in the "fourth strike" Theoretically, "the first Strike - elevated levels of abnormally glycosylated IgA1 in the body's circulation." Some patients with IgA nephropathy have clinical symptoms that are exacerbated by upper respiratory or gastrointestinal infections, suggesting a correlation between IgA nephropathy and mucosal immunity, and this correlation suggests that an enhanced or abnormal IgA mucosal immune response may play a role in IgA nephropathy.

3. Zhong Jiao and Kidney

3.1. Correlation between Zhong Jiao and the kidney

The spleen is the source of Qi and blood and the postnatal essence. The spleen and kidney are the origins of the innate and the origin of the postnatal; both of them nourish and promote each other, they are independent parts, yet they are inseparable whole; the innate depends on the moistening of the postnatal, the postnatal depends on the innate and is born. The spleen and kidneys are related to water and grain essence and essence. The fullness of the essence of the kidneys, through the moistening of the spleen, transports and transforms qi, blood, and essence; on the other hand, the spleen is the master of qi and blood the spleen has to transport qi and blood essence and also depends on the kidney yang to keep warming it so that it can function correctly.

The Su Wen - Collection of Notes says, "The kidney is the master of water, controlled by the spleen and earth, so the spleen is the master of the kidney." In the relationship between the five elements, the earth can control water so that the spleen can restrain the kidney. This restraining effect is especially evident when one of these abnormalities occurs. For example, in the case of Spleen-Yang deficiency, Spleen deficiency fails to restrain the water metabolism of the Kidneys. This situation will lead to Qi-chemistry disorders in the Kidneys, disorders of opening and closing, and internal storage of water-dampness. The middle Jiao and Kidney are closely related physiologically and influence each other pathologically.

3.2. Exploration of the relationship between the middle jiao and the kidney by successive generations of physicians

During the Sui and Tang dynasties, there was a more systematic understanding of the names, characteristics, etiology, and pathogenesis of kidney and urinary tract diseases and the invention of many scriptures. In the "Treatise on the Origin of Diseases" by Chao Yuanfang, Sui discussed the symptoms of genitourinary diseases: "Shixian is a person who generates and produces stones. The kidney is the master of water, water knots into stone, so the kidney allows sand and stone", pointing out that the source of stone gonorrhea in the kidney, and put forward "all gonorrhea, from kidney deficiency and bladder heat as well. It is also the first time that "oedema" as a general term for various water diseases, that "water disease, by the spleen and kidney deficiency also. Kidney deficiencies cannot promote water, and spleen deficiency cannot control water, so water overflows, seeping skin and flowing all over the limbs, so the body swells. The term "kidney labour" also makes the upper gas heavy, the urine yellow and astringent, and the swollen areas rise with the hand when pressed.

The relationship between the spleen and the kidneys were first brought up in Su Wen - The Theory of the Generation of the Organs: "The kidneys are also the unity of the bones, their glory and hair, and their main spleen transformation." At the end of the Eastern Han Dynasty, Zhang Zhongjing pointed out in "The Essentials of the Golden Horoscope" that "Spleen and Kidney Deficiency Cause Kidney Disease," which developed the doctrine of the correlation between the spleen and the kidney in terms of etiology and pathogenesis. Sui dynasty doctor Chao Yuanfang in the "Source of diseases - water through the body swelling," said: "Water disease, by the spleen and kidney deficiency as well. Kidney deficiencies cannot promote water, and spleen deficiency cannot control water, so water overflows, seeps through the skin, and flows all over the limbs, so the body swells." It means that the cause of edema is spleen deficiency. Sun Simiao, a Tang Dynasty physician, said, "The kidney is not as good as the spleen," and believed that it should be nourished from the later days.

3.3. The relationship between the middle focus and IgA nephropathy

The primary physiological function of the middle Jiao is to transform food, water, and grains into qi, blood, fluid, and other substances distributed throughout the body. Li Dong Yuan has a cloud "Stomach deficiency is five organs, six internal organs, twelve meridians, fifteen loops, limbs are not operating, and a hundred diseases are born." Wu Jutong had the "warm disease" in the cloud: "warm disease from the mouth and nose and into the nose, nose gas and lung, mouth gas and stomach, lung disease reverse transmission, it is the heart package. When diseases of the Upper Jiao are left untreated, the heart, stomach, and spleen become ill." this shows that dysfunction of the spleen and stomach is the intrinsic aetiology of disease development in IgA.

The upper Jiao is responsible for the lung, the middle Jiao is responsible for the spleen, and the lower Jiao is responsible for the kidney. The spleen lives in the middle Jiao and is the hub of water and grain essence and gasification; the spleen and stomach are damaged, the gas and blood biochemically have no source, the middle Jiao is deficient in gas or even trapped in gas, the clear yang does not rise, the cloudy yin does not descend, the water and grain do not return to the correct transformation and proteinuria occurs, as the saying goes, "Insufficient middle gas, urination for the change," Li Dongyuan said: "The spleen and stomach are deficient in gas, it flows down to the Kidney." Su Wen - Zhi Zhen Yao Da Lun said: "All dampness, swelling, and fullness belong to the spleen." The spleen is the main organ of transportation and dispersal of the essence; the kidney is the main organ of water, and the spleen is the organ of water control; the spleen yang is trapped, the spleen qi is damaged, the upper cannot transport essence to nourish the lung. Instead, it becomes phlegm and drinks and dries up the lung; the lower cannot help the kidney to control water, and the water-cold qi hurts the kidney yang; the water liquid stops in the middle Jiao, overflows everywhere, and spreads to the five organs, thus becoming oedema. In the Qing dynasty, Li Yongcui pointed out in the "Evidence and Treatment - Blood Evidence": "Where there is spleen deficiency in the blood, the spleen should be first to unify its blood." The spleen is the master of blood control, which allows blood to travel through the veins and prevents it from overflowing outside the veins. If the spleen is deficient, the middle qi is insufficient, and the blood has no power to regulate the blood, the blood will fall with the qi and not follow the usual path, and if the blood moves away from the meridians, it will drown the blood.

4. Treatment by type

Chinese Association of Traditional Chinese and Western Medicine (CACWM) Nephrology Committee has proposed a TCM classification of IgA nephropathy as acute and chronic exacerbations. In this paper, we intend to take the middle jiao as the entry point to explore the chronic persistent phase, which may be caused by the transmission of the disease from the upper jiao to the middle jiao

or by internal injury to the spleen and stomach, the stagnation of dampness and drinks, and the internal and external attraction of external dampness and heat, Internal injuries to the spleen and stomach from the upper burner to the middle burner. It is common in the middle stage of IgA nephropathy. However, there are also cases of early onset of symptoms of middle-jiao disease, in addition to the common clinical manifestations of IgA nephropathy, such as oedema, blood in urine, and proteinuria. Based on other clinical manifestations, there are four types of IgA nephropathy: spleen and stomach qi deficiency, spleen deficiency and dampness obstruction, spleen and stomach dampness and heat, and heat toxicity incandescence, but the exact mechanism is not precise.

4.1. Spleen and Stomach Qi Deficiency Evidence

In patients with spleen and stomach qi deficiency, abdominal distension is joint, and it is even after eating, with a pale mouth, little breath, lazy speech, lack of limbs and body fatigue, withered or pale face, little food, loose stools, pale tongue with white fur, and slow and thin pulse. Prof. Lu Yueqing [3] mainly used Gui Spleen Tang to strengthen the spleen and benefit the qi and consolidate the kidney and essence, using Astragalus, Radix Codonopsis, Fried Atractylodes, Poria, Longan Pulp, Roasted Licorice, Gorgonzola, Fructus Lycii, Radix Angelicae Sinensis, and Muxiang. Professor Zhou Jin [4] believes that the strength of stomach qi corresponds to the strength of vitality, and the clinical use of Huai Shan Yao, Dandelion, Lotus root, Ping Di Mu, Gan Song, and Jiao Liu Qu to strengthen the spleen and benefit the kidney, dispel dampness and relieve pain. Prof. Wang Shirong [5] mainly takes the principle of strengthening the spleen and benefiting qi to nourish the kidney. The formula is selected from nutritious Zhong Yi Qi Tang with addition and subtraction, using Huang Qi, Dang Gui, Bai Zhu, Chen Pi, Sheng Ma, and roasted liquorice. According to Professor Shi Zhensheng [6], there is a distinction between the party ginseng series and the astragalus series, with the party ginseng as the mainstay, such as Jian Spleen Soup, Isogong San, Xiang Sha Liu Jun Zi Tang, et al., which are primarily used for those with weakness, poor appetite and stool pond; with the astragalus as the mainstay, such as Fang Ji Huang Qi Tang, Huang Qi Da Zao Tang, Yu Ping Feng San, et al.

4.2. Spleen deficiency and dampness obstruction

Spleen deficiency with dampness obstruction is clinically seen as a bitter mouth, sticky stools, fullness in the abdomen and stomach, poor appetite and vomiting, tiredness, and weakness. Professor Liu Yuning [7] believes the spleen should be replenishment to benefit the qi, win the dampness, and promote water, and the clinical use of raw astragalus, almond, cardamom, coix seed, raw gardenia, and other drugs. Professor Wang Shirong [8] mainly used San Ren Tang with addition and subtraction, using cardamom, talcum powder, light bamboo leaf, patchouli, Chen Pi, Fu Ling, Bai Zhu, Jiang Han Xia, roasted liquorice, and coix seeds to promote dampness and resolve turbidity. Prof. Fu Bin [9] advocates promoting the upward and downward direction so that the middle jiao can be dredged and have the right to use drugs such as astragalus, lycopodium, Dioscorea, and dendrobium. Prof. Chen Yiping [10] used Cang Zhu, Coix Seed, Pig Ling, Fu Ling, et al. to permeate water dampness lightly. Suppose there is a significant deficiency of the spleen and kidney. In that case, Huang Qi, Shan Yao, Huang Jing, Duzhong, Ba Ji Tian, Cornu Cervi Pantotrichum, et al. are used to strengthen the spleen and benefit the kidney. Prof. Yu Junsheng [11] often adds Xie Cao, Xianhe Cao, Qing Fengtou, et al., to Ginseng and Baijiao San to strengthen the spleen, resolve dampness, stop bleeding, and open the ligaments so that the qi of the whole body, qi, blood, and fluids can operate normally and the latter can nourish the innate. Prof. Li-Min Zhang [12] believes wind medicine can overcome dampness and be treated with solid spleen drink with Shengma, Chaihu, and Fangfeng to strengthen the spleen, raise Yang, dispel wind, and overcome dampness.

4.3. Dampness and heat in the spleen and stomach

People with damp heat in the spleen and stomach are clinically seen to have a bitter and sticky mouth, fullness in the abdomen and stomach, abdominal pain and diarrhoea or sticky stools, heavy waist and knees, yellow and greasy tongue coating, slippery or moist pulse, et al. They all belong to people with damp heat in the spleen and stomach. Professor Liu Yuning [3] commonly used Chai Hu, Yu Jin, Yin Chen, raw gardenia, Hou Pu, Huang Lian, Citrus aurantium, wine rhubarb, and betel nut to remove damp-heat obstruction in the gastrointestinal tract to remove damp-heat entrapment in the stomach and intestines. Professor Liu Baohou [13] used Huopu Xia Ling Tang with addition and subtraction to promote qi circulation, dry dampness and promote water, using Huo Xiang, Han Xia, Red Poria, Raw Coix Seed, Almond, Cardamom, Pig Ling, Ze Di, Hou Pu, and Tempeh. Professor Wang Yaoxian [14] believes that the development of the disease so far should emphasize the treatment of damp heat in the gastrointestinal tract and the regulation of qi, choosing Yin Chen, Qian Cao, Huo Xiang, Huang Bai, and Coix seeds to clear heat and strengthen the spleen. Prof. Linqi Zhang [15] selected the formula Manfenqing Drink with addition and subtraction, using Lian, Astragalus, Semen Astragali, Sharen, Dry Ginger, Chen Pi, Houpuao, Zedoary, Poria, Poria, and Atractylodes to clear heat and remove dampness, strengthen the spleen and harmonize the middle, and supplement the kidney and benefit the qi.

4.4. Incandescence of heat and poison

The clinical manifestations of heat toxin burning are irritable heat, dry mouth, preference for coolness, pale face, dry throat, poor excretion, frequent red and white urination, and red tongue with yellow coating. Prof. Chen Yangrong proposed [16] that in the pathogenesis of the disease, the damp-heat evil of the spleen, stomach, and intestines often exists, and Upper Jiao Heart and Lung Heat Evil are not cured. It goes down to the intestines in the middle jiao and forms and is commonly used to clear the heat and detoxify the toxins, such as white-flowered snake tongue herb, wild chrysanthemum, and forsythia. Prof. Guan Jinghuan advocates [17] clearing heat, detoxifying, nourishing the kidney, and filling the essence. The medicine is selected from Huang Qi, Dan Shen, Chuan Xiong, Bai Hua Serpent's Tongue and Tongue, Xuan Shen, Mai Dong, Zhen Zhen Zi, and Dry Lotus Grass. Professor Zhang Yu [18] believes that the disease has developed to the point that it is primarily embedded in turbid toxins. Hence, the treatment is to clear heat, reduce drainage, dissolve turbidity, and detoxify toxins. Most drugs used are pelargonium, patchouli, cao Guo, white-flowered snake tongue herb, fishy grass, dandelion, and Jin Yinhua. Professor Zhu Bangxian [19] took the principle of ascending and lowering the turbidity, dispelling evil and detoxifying the toxin, and selected Sophora and lotus leaves to divide the evil toxin and Shengma and Pueraria lobata to ascend and lift the qi of the clear yang to clear the damp-heat and toxic evil in the spleen and stomach.

In the treatment can be added to nourish the kidney and strengthen the kidney herbal medicines, such as Eucommia, mulberry cuttlebone, Rehmannia, distances, bone flesh, dogwood, chaste berry, Cuscuta, Ba Jitian, henhouse, mulberry, poria, zedoary, koozie, et al.

4.5. Exploring the TCM typing of IgAN in the context of evidence-based medicine

The symptoms are the reaction of the patient's particular external environmental elements at a certain period in the evolution of the pathogenesis of IgA nephropathy, and they are also the basis of the dialectical treatment in TCM, so the TCM typology and characteristics of IgA nephropathy was under investigation. Tang Ying et al. [20] showed that: In patients with IgAN, liver-kidney (qi) yin deficiency is predominant, followed by spleen-kidney (qi) yang deficiency and yin-yang deficiency, and the proportion of patients with liver-kidney yin (qi) deficiency decreases with age, while the

proportion of patients with spleen-kidney (qi) yang increases. Pan Li et al. [21] analyzed 316 patients with IgAN, and the results showed that IgAN belongs to the type of deficiency of the root and the symptoms of the symptoms, and there are few patients with pure deficiency or actual symptoms. Among the proportion of each type of evidence, patients with Qi and Yin deficiency accounted for the majority, followed by Liver and Kidney Yin deficiency, Spleen and Kidney Qi deficiency, and Spleen and Kidney Yang deficiency ranked third. Wan Tingxin et al. [22] collected information on 354 patients with IgAN and performed statistics on their diagnostic data, and the results showed that IgAN could be divided into five different types of evidence, with Qi-Yin deficiency and Damp-Heat evidence accounting for the most significant proportion (29.7%), followed by Spleen-Qi deficiency and Phlegm-Dampness evidence, Lung-Qi deficiency and Wind-Heat evidence, Liver-Kidney Yin deficiency and Spleen-Kidney-Yang deficiency and Blood stasis evidence.

5. Conclusion

In conclusion, in the pathological process of IgA nephropathy, the immune system of the gastrointestinal tract mucosa plays a pivotal role. Suppose the spleen and stomach in the middle jiao are out of harmony. In that case, there will be obstacles to the transformation of kidney qi and the opening of the door, resulting in a large amount of loss or loss of essence and microorganisms and the accumulation of water and metabolic toxins inside the body, which cannot be eliminated quickly, thus causing a The vicious circle of "no upper intake, lower flow loss." Therefore, during the treatment of IgA nephropathy, we must always pay attention to its protection because, with the qi of the spleen and stomach, new life will be generated, so maintaining the qi of the spleen and stomach is protecting the kidney function, therefore; in patients with chronic kidney disease, it is essential to maintain sufficient qi of spleen and stomach. The pathogenesis of IgA nephropathy is complex, with the kidney as the core, involving multiple organs, and there is a lack of clinically specific drugs. Chinese medicine uses "disease identification" and "evidence-based typing" treatment, which can improve clinical symptoms, stabilize kidney function long-term, slow disease development, and reduce Western medicine's toxic side effects. However, it also has shortcomings: No objective and standardized index exists. The sample size of clinical studies is small and needs more perspective, so trust is low. There is no unified standard for determining the symptoms and efficacy of TCM, and most patients do not undergo kidney biopsy after treatment, so it is impossible to make dynamic comparisons before and after.

References

- [1] Jiang Jian, Wang Xianxian, Shen Peicheng, Sun Chuan, He Liqun. *Clinical investigation of mucosal immune system in Ig A nephropathy patients [J]. Journal of Dalian Medical University, 2016, 38(06):558-561.*
- [2] He Jiawei, Zhou Xuji, Lv Jicheng, et al. *Perspectives on how mucosal immune responses, infections and gut microbiome shape IgA nephropathy and future therapies [J]. Theranostics. 2020; 10(25):11462-11478.*
- [3] Jia Jianwei, Zhang Wen. *Experience of Professor Lu Yueqing in Treating IgA Nephropathy [J]. Chinese Medicine Modern Distance Education of China, 2018, 16(09):91-92+103.*
- [4] Hao Liyang, Zhou Jin, Zhu Minjie, et al. *Zhou Jin's clinical experience in discriminatory treatment of IgA nephropathy [J]. Shanxi Journal of Traditional Chinese Medicine, 2019, 35(4): 8-10.*
- [5] Li Ruochi, Wang Shirong. *Wang Shirong's experience in treating immunoglobulin a nephropathy using Sanjiao discernment [J]. China's Naturopathy, 2019, 27(23):12-14.*
- [6] Li Ping, Shi Zhensheng's experience in treating proteinuria [J]. *Chinese Journal of Integrated Traditional and Western Nephrology, 2005, 6(8):438-440.*
- [7] Cui Hailan, Huang Yishan, Jiang Hanxue, Liu Yuning. *Clinical experience of Professor Liu Yuning in treating IgA nephropathy using Sanjiao discernment [J]. Chinese Journal of Integrated Traditional and Western Nephrology, 2018, 19(12): 1035-1037.*
- [8] Liu Xiaoying, Du Heng, Wang Wenguang, et al. *Initial Exploration of Establishing IgAN nephropathy Models with Damp-Heat Syndrome [J]. Chinese Archives of Traditional Chinese Medicine, 2008, 26(9): 1947-1949.*

- [9] Tian Wenwen, Fu Bin, Gao Changbai, et al. Fu Bin's experience in treating IgA nephropathy[J]. *Hunan Journal of Traditional Chinese Medicine*, 2018, 34(10):31-33.
- [10] Wang Lin. Study on academic ideas of Professor Chen Yiping's diagnosis and treatment of moderately severe IgA nephropathy [J]. *Chinese Journal of Integrated Traditional and Western Nephrology*, 2010, 11(12):1043-1045.
- [11] Liu Yuping, Yu Junsheng, Huan Na. Medical Records of Chronic Kidney Diseases Treated from the Spleen by Professor YU Junsheng [J]. *Chinese Journal of Ethnomedicine and Ethnopharmacy*, 2017, 26(19):57-58.
- [12] Zhang Limin, Chen Wenli. Tonicity of the spleen, ascending the Yang and chronic ephritis [J]. *Jiangxi Journal of Traditional Chinese Medicine*, 2004(05):19-20.
- [13] Shang Jiufang, Liu Biaohou, Wei Jinhui. Professor Liu Baohou's experience in identifying and treating kidney disease from damp-heat [J]. *Lishizhen Medicine and Materia Medica Research*, 2015, 26(10):2524-2525.
- [14] Huo Guangxu. Wang Yaoxian's experience in treating IgA nephropathy from the Sanjiao theory [J]. *Clinical Journal of Traditional Chinese Medicine*, 2005, 17(1): 76 - 78.
- [15] Guo Weijie, Zhang Linqi. Professor Zhang Linqi's experience in treating nephrotic syndrome from the spleen and stomach theory [J]. *Guangming Journal of Chinese Medicine*, 2009, 24(06):1025-1026.
- [16] Zhu Xiaohong, Wu Jing, Chen Yangrong. Professor Chen Yangrong's experience in identifying and treating IgA nephropathy hematuria from the San Jiao theory [J]. *Asia-Pacific Traditional Medicine*, 2019, 15(3): 103-105.
- [17] Nie Xiangzhi, Zhou Wenxiang. Professor Guan Jinghuan's experience in the treatment of IgA nephropathy by staging and differentiating evidence [J]. *Chinese Medicine Modern Distance Education of China*, 2011, 9(19):10-12.
- [18] Li Liusheng, Zhao Mingming, Zhang Yu. Zhang Yu's Experiences in the Diagnosis and Treatment of IgA Nephropathy on the Basis of "Deficiency-Wind-Stasis-Toxin" Complicated Pathogenesis Network [J]. *World Journal of Integrated Traditional and Western Medicine*, 2017, 12(04):450-455+472.
- [19] Ye Qing, Huang Botao, Yang Lina, et al. Zhu Bangxian's experience in treating IgA nephropathy with methods of ascending the clear and descending the turbid, removing poison and reinforcing the kidney[J]. *Shanghai Journal of Traditional Chinese Medicine*, 2017, 51(1): 5-7.
- [20] Tang Ying, Shen Peicheng, Zhang Wenjun, He Liqun. Correlativity between Chinesemedical syndromes and clinical prognosis of IgA nephropathy [J]. *Shanghai Journal of Traditional Chinese Medicine*, 2010, 44(05):27-30.
- [21] Pan Li, Ding Yingjun, Wang Yuehua, Li Xinhua, Chang Fengyun, Xu Qingyou, Zhao Yuyong. Study on the distribution pattern of Chinese medical evidence in IgA nephropathy [J]. *Lishizhen Medicine and Materia Medica Research*, 2011, 22(04):1003-1004.
- [22] Wan Tingxin, Dai Enlai, Wang Wenge, et al. Prospective Study on Relationship of Deficiency Syndrome Classification in TCM and Renal Pathology of IgA Nephropathy in 354 Patients [J]. *Chinese Journal of Integrated Traditional and Western Nephrology*, 2014, 0(8):696-700.