

Talk about Erectile Mechanism Based on Liver

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Abstract: The incidence of impotence is increasing year by year. The relationship between liver qi, liver blood, liver meridian and erection is described more pathologically. The author thinks that the liver urges the penis with desire; to help the penis with qi; to fill the penis with blood; to constitute penis with tendon and to assist penis with emotion. When the sexual desire is encouraged, the liver qi is power; the liver blood is filler; the liver channel is body, so the penis can erect.

1. Introduction

Impotence refers to the male penis with “impotence without lifting, lifting but not strong, strong and soon” as the main performance of the disease, the first is also called “impotence”, “Yin Wei”. Western medicine calls it “erectile dysfunction ED”, which refers to the continuous inability of the penis to achieve and maintain sufficient erection to obtain satisfactory sexual life for more than 3 months^[1]. The incidence of ED is increasing year by year. Compared with about 152 million ED patients in 1995, the number of ED patients worldwide is expected to increase to 322 million in 2025^[2]. An epidemiological survey of outpatient ED in hospitals of 11 cities in China found that 60% of the patients were 30-50 years old, and 71.9% of the patients with moderate to severe ED^[3], indicating that the incidence of ED has a trend of gradually younger, which deserves the attention of patients and medical staff.

For the cause of impotence, in ancient times in: “Seven injuries from all sorts of pains, true Yang decay..... Yang things do not lift”, “Every man impotence can not afford, by the life of the fire decline, the essence is cold..... But the fire failure, seven or eight out of ten, and the fire is abundant, only under the guidance of the theory of “and so on, mostly attributed to the kidney Yang deficiency. However, Note to the explanatory paragraph explains: “The force is the same as the tendon, which means that the force is enough to be based on the tendon and health. In Huangdi The Huangdi Neijing · Su Wen it is recorded that “the former Yin is the accumulation of tendons”. It can be known that the former Yin is formed by the accumulation of tendons. There is also a saying that “the liver is dominant tendon” in the Nine Needles on Miraculous Pivot, which proves that the tendons that become Yin organs are dominated by the liver. The liver has “body Yin and Yang”, the liver is a blood storage of the viscera, its quality is very delicate, but it plays a strong nature, which is very similar to the structure and function of the penis, penis texture is soft, but its physiological role is the need for its anger, big, strong, hot. Data mining found that in ancient prescriptions for impotence treated with acupuncture and moxibustion, 4 of the top 10 acupoints with the highest

frequency were from the liver meridian of foot-Jueyin, and the liver meridian of foot-jueyin was also the most frequently used meridian, up to 29.7%^[4]. From the physiological structure, functional role, and treatment plan, it is not difficult to see that the liver is closely related to the penis. Since Professor Wang Qi proposed the treatment of impotence from the liver in modern times, more and more scholars have put forward similar views. The author believes that when human sexual desire germinates, the penis is empowered by the Yang qi of the liver, filled by the Yin blood of the liver, and the meridians of the liver are used as the body.

2. The Liver Controls Desire

Sexual desire refers to the desire for sexual intercourse between men and women, which is an instinctive response to meet sexual needs and the driving force for the expression of sexual function. Modern medicine has confirmed that sexual desire can release nitrogen oxide NO in the corpus cavernosum, As a result, 5-guanosine triphosphate GTP is converted to cyclic guanosine monophosphate cGMP, which leads to arterial relaxation and venous contraction, resulting in penile erectile function. Erection begins with the initiation of sexual desire, and sexual desire is the physiological expression of the nature and decanoate. Although governed by the mind and mind, it is closely related to the discharge of the liver^[5]. Under the physiological state, the Kidney essence festival, the mind has the right, the dispersion has the degree, then the sexual desire begins to sprout. In the pathological state, the liver is depressed, its qi is not free, and it is manifested as low sexual desire.

Traditional Chinese medicine believes that the liver hides the soul, the main will activity, what is the soul? “Shuo Wen Jie Zi” interpretation: “the soul, Yang Qi also”, “four sacred heart source” contains: “The soul, God at the beginning, so with the spirit” refers to the germination of Yang qi, prior to the liver of the soul, after Yang qi is vigorous, only into the heart of the God. The spirit is hidden in the heart, and the so-called object is the heart, which responds to the information received by vision, hearing and smell^[6]. Therefore, sexual desire comes from the liver and its master is in the heart. If the liver blood is full, Yang qi hair, Yang qi hair is the soul, the soul is healthy into the heart of God, mind is prosperous, then sexual desire as usual, so can be strong. If the liver and blood dry up, the soul exhausted god failure, so indifferent without desire, can not be strong.

3. Liver Qi Helps Penis

With regard to qi, “Qi is the fundamental of human being” is summarized in “Qi dominated by genial” in traditional Chinese medicine, which indicates that qi is the fundamental driving force of human life activities and has physiological functions such as biochemistry, warmth, nutrition and defense. Zhuangzi's Zhi le contains: “The change of qi is tangible, the change of deformation is alive”, which points out that only the change of qi can bring about the change of form. Modern anatomy confirms that the penis is only composed of soft tissue, so if you want to lift the penis, you must rely on the invisible Yang qi. Liver belongs to the wind wood, is the first of the five luck, spring, containing less Yang and spring qi, spring is the beginning of heaven and earth, all things are glorious^[7]. Zhang Shi summarized it as: “The liver hides the qi of genesis”. “Dialectics” contained: “The liver qi is flourishing and the tendons are extended”, “Guang si Minutes” also contained: “The yang road is fen Ang and vibration, liver qi to also”, indicating that if the liver qi reaches and is healthy, the tendons can be extended and the Yang road can be full, and the penis can be warm and strong. Zhou Shenzhai recorded in Shen zhai Suicide Note that “when the young and poor people commit impotence, most of them belong to depression”. Clinical research also showed that liver stagnation, kidney deficiency and blood stasis are the most basic pathological changes of impotence, among which liver stagnation is the main pathological feature. If the liver qi stagnation,

Yang qi does not reach the Penis, the penis has no gas to fill, Yin and Yang and no to change, so soft contraction does not lift.

It is recorded in Plain Questions: “Eating qi enters the stomach, dispersing refined qi into the liver, and promoting qi and tendons”. The spleen and stomach are the places of acquired compounds. When eating into the stomach, under the action of the spleen, the water and grains are transformed into refined substances, which are distributed throughout the body under the push of liver qi. The penis, as the place where the meridians gather, is also nourished by the refined substances transported by the liver qi. Zhu Danxi also put forward for the first time in his book “on Gezhi Yu Lun: On the Deficiency of Yang and Yin” that “the kidney is also the main closed and the liver is also the main drained”. Later Fu Qingzhu also said: “The liver is the son of the kidney, liver depression is the kidney depression, kidney depression and qi ratio is not promote and distribute... The liver or open or close, that is, the kidney qi or go or stay, and thus caused “, clearly shows that the dispersion of the liver regulates the accumulation of the kidney, and the liver qi is regulated in the physiological state. One helps the subtle transport, nourishment and nourishment of the penis, and the two help the kidney to implement the accumulation and discharge, so the penis has erection, powerful, sometimes. If liver qi is insufficient or liver qi stagnation, the penis has no support or the kidney can not be carried out, so it is unable to lift, lift but not firm, firm and soon^[8]. In clinical practice, Professor Zhang Chun he used the method of toning liver qi to promote the refinement and nourishing of the penis^[9]. Some scholars also used the method of soothing the liver to treat the kidney syndrome according to the pathological characteristics of insufficient kidney accumulation and drainage caused by liver loss , which happened to be consistent with Fu Qingzhu's belief that “soothing the stagnation of the liver is the stagnation of opening the kidney”.

4. Liver Blood Filling Penis

As for blood, in the book of Jie Qi of Miraculous Pivot, it is stated that “the middle burner is taken by qi, and the juice is changed to red, which is called blood”. In the book of All Diseases, it is also recorded that “the kidneys store essence, the essence, and the blood is formed.” It can be seen that the blood contains Ying qi, body fluid and kidney essence. Modern anatomy confirms that the penis has no bony component and that the corpus cavernosum must be a hard reservoir of blood if it is to be rigid enough to insert into the vagina. Western medicine also points out that erection is a complex psycho-physiological process occurring under sexual stimulation, and its essence is penile artery filling, trabecular smooth muscle relaxation and cavernous vein occlusion^[10], indicating that penile erection is closely related to blood filling. And traditional Chinese medicine thinks that “the liver is the main storage of blood”, “plain ask · Five viscera generation article 10” said : “blood belongs to the liver, eye by blood and can see, foot by blood and can walk, palm by blood and can hold, refers to blood and can take”, “ Huangdi Neijing. Tai Su · Ying Wei Qi” said: “the body is expensive, not before blood”, thus deduced that the penis can only be raised by blood, which leads to the same understanding of modern medicine. The liver holds blood and regulates the amount of blood. If the blood is abundant in the liver, the tendons are excited by the blood, so the Yang can be used for things. For the dryness of liver and blood, which is not thought to cause penile weakness, Professor Zhang Chunhe mostly treats it by reinforcing liver and blood ^[9]. If due to liver blood stasis, the seminal blood is not to be, to lift the Bo can not be used, the method of promoting blood circulation and removing blood stasis. This is in accordance with the theory of penile apoplexy proposed by Professor Li Yueqing. The so-called penile stroke refers to the blockage of blood in the penis, so that the qi and blood are not smooth, and the erection is not good for a long time ; Moreover, the blood stasis for a long time leads to qi and blood obstruction, and the penis has nothing to help it, which induces “internal movement of collateral wind”, which causes the penis to

fail in its desire and eventually leads to impotence^[11]. In clinical treatment, it is mainly used to promote blood circulation and clear collaterals. Angelica sinensis, and centipede are commonly used to promote blood circulation and remove blood stasis, which are all aimed at filling the penis with qi and blood and restoring the penile lifting function.

5. Liver Tendons into Penis

“Lingshu · Meridians” records that the liver meridian of foot Jueyin “follows the thigh Yin, enters the hair and passes through the Yin organ”, indicating that the liver meridian follows the anterior Yin. According to “the passage of the meridian and the indications”, it can be known that the liver meridian is closely related to the diseases related to the penis. However, the penis is not directly composed of the liver meridian, but composed of the meridians attached to the liver meridian. The so-called meridians are the system of the twelve meridians conveying qi to the muscles and joints, and the meridians attached to the twelve meridians. According to the description of “Huang Di Nei Jing Tai Su · Jing Jin”, the Jing Jin almost accompanies the namesake meridian in the whole course. Although some of them are different, they still accompany the branches of the namesake meridian. As it is written in “Lei jing · Jing Jin”, “The one with different size is its branch”. Yang Shangshan proposed that the meridian tendon is “nourished by Yin and Yang Qi”, according to “Yang Qi people... Softness nourishes the liver “and” the essence of health... Make tendons soft also “speculated, here Yang Qi is Wei Qi, and Yin qi generally refers to Ying Qi. Therefore, the sinew is nourished by the qi of Ying Wei. However, the meridians are the structures of “there is no space in the middle, and the qi of Yin and Yang cannot pass up and down”, so they cannot be like the meridians. The qi of camp and guard can enter the meridians through the lung meridians to reach the twelve meridians, so the qi of camp and guard needed to form the meridians of Yin must be provided by the accompanying liver meridians. Therefore, it can be seen that the penis is directly composed of the meridians attached to the liver meridian and is nourished by the qi of camp and guard transmitted by the liver meridian. In the physiological state, the meridians and tendons of the liver, which constitute the Yin organ, are nourished by the qi of camp and guard from the liver meridian, so they can be strengthened freely. If the meridians are damaged or the qi of camp and guard of the liver is not reached, the penis is not nourished, and it is sure to be firm. The deficiency of sinew has been gradually recognized by doctors^[12-13]. In clinical practice, impotence can be treated by acupuncture and moxibustion method of “guiding sinew qi according to meridians”, which is used to treat meridian sinew diseases^[18].

Ye Tian said: “The liver, dare also, in the blood of the viscera”, believed that the liver is the birthplace of gasification of blood, in the liver for the synthesis and exchange of blood-like substances^[14]; Modern medical research also shows that the body needs the substances from the liver. In the view of traditional Chinese medicine, “Qi is the handsome blood, blood is the mother of qi”, Qi comes from blood, blood reaches qi from itself, liver Qi and liver blood complement each other. Zong tendon erection one needs strong can make; Both need something to fill; The three need to have the body available, force by the liver Yang Qi; Things decorated by Yin and blood of the liver; The body by the liver of the tendon, the three complement each other, the strength is strong, the blood is full, the tendon strength is strong, so the penis is long. This is consistent with the point of view mentioned in the Outline of Syndrome and Treatment that “the penis is based on tendons, and depends on the flow of qi and blood, and then becomes strong and powerful”. Professor Wang Qi, a master of Chinese medicine, also believes that the erection of the penis is closely related to the liver meridian, and depends on the drainage of the liver and the filling of blood. Based on this, he developed Shugan Yiyang Capsule^[15].

6. Liver Helps the Emotions

Emotion is the emotional expression of an individual's mental state. In traditional Chinese medicine, emotion is divided into joy, anger, worry, thinking, sadness, fear and surprise, collectively known as the “seven emotions”. “Plain ask · Yin and Yang should be like big theory” contains: “people have five viscera five Qi, to produce anger, sorrow and fear”, visible emotion is the physiological expression of the body's five viscera. Physiological emotion is beneficial to the function of zang Fu organs, but too intense or long-term emotional stimulation, will lead to or aggravate diseases, as recorded in “Huangdi Neijing · Su Wen” : “anger hurts the liver, happy sad, thinking of spleen, sad lung, fear of kidney.” Chinese medicine master Professor Wang Qi also believes that impotence and emotion related, often manifested as emotional disorders, liver depression. Among them, worry is the main cause of impotence.

Worry, “Shuowen Jiezi” interpretation: “worry, is a nervous performance of things and the degree of concern, is a state of anxiety. Surveys show that our people suffer the most stress in the world. Long-term under pressure is prone to anxiety, depression and other bad mood. While good mood is the premise of successful sex, bad mood can lead to or aggravate ED. Studies have also shown that depression and decreased libido have a high comorbidity, and libido is a prerequisite for erection. Massachusetts male aging study MMAS shows that the prevalence of moderate ED in depressed patients is 35%. The prevalence of severe ED was 16%. Some scholars have pointed out that depression is the manifestation of liver drainage disorder^[16], which is consistent with the record in Suwen · Xuanming Five Qi “Five essence in parallel..... And with the liver for concern “this view happens to coincide. Liver deficiency is easy to be invaded, produce sad psychology. Traditional Chinese medicine believes that the liver is crooked, only the liver qi regulation, not restricted, one of the body qi can be freely accessible, thus erectile without worry; If the liver deficiency is disturbed into sorrow, and the mind is restless all the time and numb all the day, then the qi machinery is not smooth, the essence and blood are stagnant and astringent, and the Yang qi is not reached while the Yin and blood are not reached, so the Bo can not be lifted. Shen Jinao recorded in “Gynecology jade Chi · Volume 1” that “Qi depression, liver qi stagnation, can not produce the fire in the cell, then the bosom of sorrow, and Yang things because of the depression” also shows that liver qi stagnation, depression psychology, Yang things do not rise, and Yang things do not rise and further increase sorrow psychology, so vicious reciprocation. In the treatment, the method of channeling the liver and moving the qi is often used to channel the qi, to soothe the heart, to generate cellular fire and to vibrate the penis.

7. Conclusion

To sum up, the liver and penile erection does have a close relationship, the penis is directly composed of the liver meridian tendon, and the liver meridian provides the qi of camp and guard to nourish, the liver qi is regulated, the liver blood is sufficient for the erection of the material premise, and through the liver of the regulation of sexual desire and emotion. In the germination of sexual desire, the liver of the Yang qi regulation, liver of the Yin blood abundant, the liver of the sinew strong, without fear, the penis can be strong for a long time. Erection is the beginning of sex life, based on the liver to explore the mechanism of erection, is an important theoretical supplement for treating impotence from the liver, has a certain guiding value for clinical theory and drug use.

References

[1] Zhang Minjian., Chang Degui., He Zhanju., et al. “Diagnosis and treatment guidelines of erectile dysfunction with integrated Traditional Chinese and Western medicine”. *Chinese Journal of Male Sciences*, vol.12, no. 8, pp. 751-757,

2011.

- [2] Ayta I A., McKinlay J B., Krane R J. "The likely worldwide increase in erectile dysfunction between 1995 and 2025 and some possible policy consequences". *BJU international*, vol.84, no. 1, pp. 50-6, 1999.
- [3] Zhang Z., Li Z., Yu Q., et al. "The prevalence of and risk factors for prostatitis-like symptoms and its relation to erectile dysfunction in Chinese men". *Andrology*, vol.3, no. 6, pp. 1119-24, 2015.
- [4] Tan Zhigao., Zhong Feng., Shi Wenying., et al. "Prescription analysis of ancient acupuncture treatment of impotence based on data mining". *Chinese acupuncture*, vol.41, no. 36 pp. 685-689, 2021.
- [5] Zhang Chunhe. "Theoretical basis of treating impotence from the liver". *Yunnan Journal of Traditional Chinese Medicine and Traditional Chinese Medicine*, vol.30, no. 8 pp. 69, 2009.
- [6] Li Bo., Deng Jinchao., WANG Guangjian., et al. "Ejaculation physiology and treatment of premature ejaculation based on the surface and inside of the heart and small intestine". *Chinese Sexual Science*, vol.30, no. 6 pp. 120-122, 2021.
- [7] Yu Ning., Zhai Shuangqing. "Liver control and genesis" in *Huangdi Neijing*". *Chin J TCM*, vol.29, no. 4 pp. 1291-1293, 2014.
- [8] Gao Hedan., Li Honghai., Ma Yuexiang. "Empirical analysis on the theory of treating kidney from the liver based on the liver leading to dispersion". *Journal of Beijing University of Chinese Medicine*, vol.44, no. 4 pp.302-307, 2021.
- [9] Wen Quhua., Yang Rongchao., Ao Yongheng., et al. "Diagnosis and treatment of erectile dysfunction based on liver main tendon theory". *Chinese Journal of Male Sciences*, vol.34, no. 5 pp. 62-64+69, 2019.
- [10] Gratzke Christian., Angulo Javier., Chitaley Kanchan., et al. "Anatomy, physiology, and pathophysiology of erectile dysfunction". *The journal of sexual medicine*, vol.7, no. 1 pp.445-75, 2010.
- [11] Li Yueqing., Li Haisong., Wang Bin. "Expert consensus on treating impotence based on penile apoplexy theory". *Chinese Journal of Male Science*, vol.34, no. 6 pp. 3-5+23, 2020
- [12] Sun Jie., Zhi Yi-hui., LI Qiu-fen., et al. "Treatment of impotence based on the pneumatization of five organs". *Chinese Journal of Traditional Chinese Medicine*, vol.59, no. 17 pp.1520-1522, 2018.
- [13] Sun Jie., Li Qiufen., Lin Youbao., et al. "Preliminary discussion on the experience of treating impotence with "gasification" theory". *Chinese Journal of Traditional Chinese Medicine*, vol.32, no. 1 pp.174-177, 2017.
- [14] XING Jinli., Zhang Qiuyun., WANG Tianfang., et al. "Study on the theory of liver storing blood". *Chinese Medicine Guide*, vol.20, no. 4 pp.1-4, 2014.
- [15] Wang Qi., Ni Ping., Wu Wei-ping., et al. "Effect of Shugan Yiyang capsule on erectile dysfunction". *Chin J Materia Medica*, vol.2005, no. 1 pp.59-64, 2019.
- [16] Guan XuTao., Zhan Xianghong., Yu Hualin., et al. "Clinical epidemiological investigation and analysis of 38 cases of liver qi depression". *Chinese Journal of Traditional Chinese Medicine*, vol.30, no. 6 pp.2058-2061, 2015.