

Study on Prevention and Treatment of Autophagy and Cervical HPV Infection by Traditional Chinese Medicine Based on Pathogenesis of "Syndrome of Dampness-heat Diffusing Downward"

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Abstract: Autophagy is a self-protection mechanism of the body, and also an important physiological process for cells to maintain internal environment stability. Studies have shown that the degree of autophagy damage is positively correlated with the expression of oncogenes, and the expression of oncogenes is closely related to cervical HPV infection, so the control of autophagy ability can interfere with cervical HPV virus infection. Traditional Chinese medicine believes that dampness-heat evil down, can damage and Chong Ren cell. The author believes that autophagy damage and the theory of dampness-heat injection in cervical HPV infection have similar pathogenic mechanism, and explores the prevention and treatment of autophagy and cervical HPV infection based on the theory of traditional Chinese medicine dampness-heat injection, in attempt to provide a new treatment for clinical prevention and treatment.

Key words: Hot and humid betting; Autophagy; Cervical HPV infection

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1 "Syndrome of dampness-heat diffusing downward" is the main mechanism of cervical HPV infection

Damp and heat to damp evil as the basis, disease more delay difficult to heal, or long polymerization heat, or with heat evil and disease, although there is no inside and outside points, but there are three Jiao discernible. The main woman through the birth of the fetus in the cell under the lower coke, exogenous or endogenous damp and heat attack and cell, gather and poison, damage and Chong Ren.

Traditional Chinese medicine does not have the corresponding disease named cervical HPV infection, according to the clinical symptoms such as excessive amount of cervical contact bleeding, it is classified as "lower cervical disease". Many doctors believe that the disease is

mainly caused by heat and humidity. Evil spirit, the guest in the cell palace, damage ChongRen, any pulse is not solid, with pulse break, hair for the next disease. The persistent infection of HP-HPV is mainly due to the invasion of dampness and heat evil spirit, which injures the second veins and uteri of any zone^[1].

2 Abnormal autophagy mechanism -- an important influencing factor of cervical HPV infection

Autophagy refers to the formation of autophagosomes by damaged cells and abnormally polymerized molecules, which then fuse with lysosomes and degrade the contents of the autophagosomes, and then recycle the degraded substances^[2]. In response to a variety of exogenous stimuli (such as hypoxia, metabolic stress, infection and so on), this

mechanism can regulate the expression of related genes and the activity of signal pathways to change the level of autophagy, so as to adapt to the surrounding conditions and survive.

Some scholars observed samples of clinical cervical cancer and found that the expression levels of autophagy-related proteins Beclin-1 and LC3 in cervical cancer tissues were significantly lower than that in normal cervical tissues, and were negatively correlated with HPV infection. In addition, when the expression of E6 and E7 genes of HPV were deleted, the expression of autophagy-related genes in the host cells was up-regulated, and autophagosomes appeared in the cells. LC3-II was up-regulated and clustered, and the level of autophagy substrate P62 was decreased^[3]. This suggests that E6 /E7 gene expression may be an important reason for the decrease of autophagy level in HPV(+) cervical cancer cells. HPV can activate PI3K/Akt /mTOR pathway after invading basal layer cells, which hinders autophagy degradation of virus particles and prolonging the life cycle of HPV virus in infected cells^[4]. In conclusion, HPV infection can induce autophagy to play a scavenging role and produce antiviral ability, so the impaired autophagy is one of the important influencing factors of HPV virus infection.

3 Discussion on autophagy among TCM "syndrome of dampness-heat diffusing downward"

Moderate autophagy maintains body balance. When autophagy is inhibited, the body will accumulate products that cannot be degraded. Once too much, it will affect normal physiological activities.

Huang Guihua *et al*^[5] believed that the products that could not be decomposed could be attributed to the endogenous evil of traditional Chinese medicine, which was the specific manifestation of "deficiency of healthy qi, endogenous dampness, turbidity, toxic blood stasis" on the microscopic level of cells^[6].

If Pingsu body is healthy, healthy qi is full, autophagy can quickly and powerfully remove the virus, and the body can conquer evil as before; If the body is weak and the healthy qi is insufficient, the virus is retained and infested or the autophagy is overexpressed, which degrades the normal cells, aggravates the pathological state, and presents the clinical symptoms of virus infection.

3.1 Liver meridian dampness and heat and autophagy

Damp and heat block the body and damage liver function. Damp and heat can rise through the liver, disturb the Yuan Fu, can follow down, and hurt the Chong Ren cell palace. Liver Qi adjusts to reach, unimpeded emotion, if the damp heat accumulates in the liver, disturbs emotion. Sun Qi *et al*^[7] experimentally proved that mental and psychological stress would release a large number of excitatory amino acids, resulting in intracellular calcium ion overload and cell excitatory poisoning. The two processes have something in common with the over-degradation of autophagy.

3.2 Dampness and heat of spleen and stomach and autophagy

Of damp heat evil and spleen injury, cannot transport water temperature raising in kidney, kidney essence deficiency, metabolic disorders, water fluid appears stagnant water wet Sheng. Tan turbidity, hinder the blood running, wet deposition knot, Qing Zhuo mixed, the process and autophagy function disorder, "waste" accumulation, there is a certain correlation, intracellular pathological product can be considered a spleen deficiency, phlegm and blood stasis caused by poly, damage, and spleen and stomach is evil to resist evil, part of the abnormal changes of function, concrete on the microscopic cells that show the autophagy levels drop^[8].

4 Clearing heat and reducing humidity -- an important way to regulate autophagy and prevent and cure cervical HPV infection

For cervical cancer, western medicine to take surgery, put, chemotherapy measures, for cervical HPV infection, no effective methods. Traditional Chinese medicine for cervical HPV infection from the liver, spleen, kidney regulation. The method of clearing heat and dampness, reinforcing deficiency and strengthening, supplemented by detoxification and removing stasis. By regulating autophagy, the antiviral ability of human body can be enhanced to prevent and control HPV infection.

Clinical syndrome differentiation and treatment. Sun Jianming^[9] prepared Qinglin prescription combined with Sophora flavescens ointment to treat female human papillomavirus infection, and the combined application of the two improved the vaginal environment and achieved good results.

Zhu Fangpei^[10] conducted a clinical study on the treatment of high-risk cervical human papillomavirus infection with modified Sanmiao pill. The treatment lasted for 3 months, and the negative conversion rate was as high as over 90%. Wang Zhuanhong *et al*^[11] found that the treatment of chronic cervicitis with HPV infection by the combination of Kunfuxin fluid and Baofukang suppository has a significant effect. The combination of the two can not only promote the negative HPV conversion, but also effectively block cervical intraepithelial neoplasia and cancer. Xu kai *et al*^[12] used purple cypressing gel to treat 85 patients with high risk HPV infection, which can significantly reduce the load of high risk HPV in the cervix, and make some patients with high risk turn negative after infection, and no recurrence was found after follow-up for half a year, with significant curative effect.

5 Conclusion

Early cervical cancer screening can effectively control and prevent disease development, but to solve the lack of effective treatments recognized HPV infection, have unique advantages of Chinese medicine and the treatment effect, and the related research is increasing, but the lack of mechanisms to clarify research, based on the theory of treating by been regulate autophagy, achieve the purpose of prevention and treatment of cervical HPV infection, is willing to provide a new research idea for traditional Chinese medicine treatment of HPV infection.

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