

# **Are you a patient afflicted by long COVID brain fog? How to treat long-term COVID-19 brain fog?**

## **Summary**

Through reading related medical papers on long COVID brain fog so far, the author systematically summarized the clinical manifestations of long-term COVID-19 brain fog, and provide an in-house self assessment form to help people judge whether they are suffering from long covid brain fog.

Then, the author analyzed the mainstream pathogenesis of the long-term COVID brain fog, and listed the approaches of western medicine treatment against long-term COVID brain fog. Due to the limitation of western medicine treatment against long COVID brain fog, this paper also recommended some traditional Chinese medicine in the treatment of this symptoms.

In addition, the paper also gives advice on taking health products for patients with long COVID brain fog, as well as advice on exercise, diet, and sleep.

In the end, we hope that the treatment program for long COVID brain fog suggested in this paper could benefit patients by improving their symptoms as soon as possible, and even eradicate their long COVID brain fog symptoms.

Keywords: Long Covid, Post-Covid Conditions, Long COVID brain fog, long-term COVID brain fog symptoms, long COVID headache, long COVID dizziness.

## **1.What are the manifestations of long COVID brain fog?**

According to the published medical papers on long COVID brain fog, we concluded the clinical manifestations of brain fog as follows:

(1) Brain fog and dizziness: feel that the brain is often in a state of confusion; feel drowsy without energy; slowness of thought when thinking about things; respond slowly when doing things; lose creativity when working, and feel neurasthenic.

(2) Brain fatigue: feel that it is easy for the brain to be tired; feel listless; it is easy to feel tired when thinking and pondering; feel easily sleepy when reading, and feel sleepy easily during the day.

(3) Memory loss: feel that one has a cognitive impairment; often unable to remember something; memory loss, forgetfulness; appear symptoms similar to senile dementia, Parkinson's disease.

(4) Attention disorder: feel that the brain is not in a state and mental trance; feel it is easy to distract and difficult to concentrate.

(5) Get lost: feel the brain often is in the state of dizziness; feel dull in discerning spatial directions.

(6) Language disorders: feel that it is not fluent and smooth when speaking; often forget to choose which words to express meaning.

(7) Chronic headache: feel of symmetrical chronic headache bilaterally on the head; often feel hot on the head and tightness on the head.

(8) Blurry vision: blurred vision is presented in the morning, feel that the vision is in a trance and eyes are tired when staring at the computer screen and mobile phone screen for a longer time.

## 2. How to judge whether people suffered the long COVID brain fog?

What are Post-COVID Conditions? According to the definition of the World Health Organization, Post-COVID Conditions, also known as Long Covid, long-haul COVID, post-acute COVID-19, It refers to the patient who is infected with the new coronavirus, the first PCR test is positive, and after 3 months, there are still symptoms of physical discomfort. For more detailed information on the latest statistics on the incidence of long covid according to the time axis, please refer to the following figure.

长期新冠后遗症 = 新冠病毒后综合症: 是指被新冠病毒感染 (首次检测阳性) 后, 过了3个月还存在的症状。  
 Long Covid = Post-COVID 19 Syndrome



Post Covid-19 Symptoms mainly concentrated in five aspects, including respiratory syndrome, cognitive system syndrome, chronic fatigue syndrome, chronic pain syndrome, and mental syndrome. Long-term COVID-19 brain fog is belonging to the cognitive system syndrome.

If you have a history of COVID-19, which means your previous result of PCR test showed positive, and before infection with the novel coronavirus, you didn't suffer from the long COVID brain fog, but now you are presenting these symptoms mentioned in the above section, you are likely to afflict by Long Covid brain fog.

### 3.What are the causes of the long COVID brain fog?

According to the published medical papers on the long COVID brain fog, we concluded that there are six conditions in the pathogenesis of the long COVID brain fog as follows:

(1) Patients infected with novel coronavirus would develop vascular inflammation and micro-coagulation, which allows some people to experience local hypoxemia, that is, virus-infected organs in the human body have experienced low blood oxygen concentrations. If this occurs in the brain, it would trigger a slight lack of oxygen in the brain, which in turn damages the nerves in the brain. The research paper confirmed that acute hypoxemia could cause post COVID-19 symptoms in cognitive impairment, namely, brain fog symptoms.

(2) When infected with novel coronavirus, some people would experience novel coronavirus breaking through the blood-brain barrier and invading the brain. The paper confirmed that the virus could break through the blood-brain barrier of the human body, infect cells of the brain, cause neurodegeneration and neuroinflammation in the brain, and produce brain damage similar to Parkinson's disease patients. This kind of innate immune cells secondary to blood-brain barrier dysfunction may also prolong neuroinflammation and cause brain fog symptoms when entering the brain.

(3) For patients with novel coronavirus, sometimes the novel coronavirus in the body may not be cleared completely, with a small amount of the virus remaining. In this situation, when the virus was only temporarily suppressed by the immune system, and the remaining site was not in the nasopharyngeal region, PCR tests would show negative. The remaining virus would persistently infect endothelial cells of multiple organs of the human body, forming tiny thrombi between cells, which in turn produce a wide range of inflammatory responses. Inflammatory responses cause a rise in pro-inflammatory markers, including the increase of ferritin, coagulation protein VIII, and C-reactive protein (CRP), as well as the elevation of D-dimer. D-dimer levels are associated with acute ischemic stroke, especially cryptogenic stroke, and its increased level can easily cause nerve injury in the brain. This nerve injury causes post COVID-19 in terms of cognitive impairment, namely brain fog symptoms.

(4) For patients infected with novel coronavirus, there are still many novel coronavirus antigen fragments left in their bodies. Such antigen fragments makes people in a sub-health state and may induce variety of chronic diseases in body, such as hypertension, hyperlipidemia, and diabetes. These chronic diseases can also cause chronic inflammation throughout the body, and some of the symptoms of these chronic diseases are similar to those in brain fog, such as dizziness and chronic headache.

(5) Some research papers have confirmed that the novel coronavirus can not only directly invade the brain nerves to damage neuronal pathways but also damage nerve cells in the nasal cavity, causing anosmia. In some cases, the coronavirus will also invade into eyes, causing damage to visual nerve cells, and then symptoms of eye fatigue and eye pain will appear.

(6) According to a study published this month in the Journal of Psychiatry of the American Medical Association, people who believed they were suffering anxiety, depression, or loneliness, or often feel extremely stressed or worried about coronavirus, are more likely to develop long COVID brain fog, having a 50% higher risk of long-term infection with the novel coronavirus. Another study showed that patients who presented with chronic headache during infection with novel coronavirus were also more likely to have long-term novel coronavirus anxiety and depressive symptoms. This suggests that psychological stress and health are associated with long COVID brain fog and long COVID-19 chronic headache.

## 4. How to treat the long COVID brain fog?

At first, we need to take a thorough physical examination of our bodies, and besides taking routine examinations, we need to do another four examinations.

The first item: do several more PCR tests, nasal and throat secretions should be dipped enough to test whether the result shows positive. If it shows positive, it means there is still some active novel coronavirus in the body.

The second item: perform a CT image of the brain to check where there is imaging evidence of Parkinson's symptoms in the brain.

The third item: specifically for people who present chronic inflammatory, do relevant tests to check the pro-inflammatory markers.

The fourth item: specifically check the body's immune system to check whether the antibody response to SARS-CoV-2 is poor and whether there is autoimmunity. Of

course, the above examination will be made after the the result of PCR test of novel coronavirus shows negative.

Secondly, the results of the above comprehensive physical examination and four special examinations should be handed over to the doctor, and then the patient should communicate with the doctor to describe one's own long COVID brain fog symptoms in detail.

Then, the doctor can design the best treatment for you. Because the situation varied from person to person, after the interview the treatment plan given by the doctor is also different, so we cannot give a general treatment plan in this article.

The rough ideas for designing the treatment plan are as follows:

(1) According to the results of the patient's comprehensive physical examination and four special examinations as well as communication with the patient, find out the most likely pathogenesis of the patient's long COVID brain fog.

(2) Prescriptions are prescribed for treatment according to the pathogenesis and the patient's physical condition.

(3) For the main direction of medication are: if novel coronavirus still remains in the body, antiviral drugs such as Paxlovid should be used as a priority. If there is no virus in the body, the drug is used from the perspective of reducing or eliminating the chronic inflammation of the patient, reducing the autoimmune phenomenon of the patient, eliminating microclots to improve the capillary microcirculation of the patient, improving the metabolic circulation of the patient, protecting the patient's brain nerves and repairing the patient's nerves.

(4) For the symptoms that seriously affect the patient's work and life, some drugs for improving the experience of symptoms can also be used according to the specific symptoms, such as drugs for relieving pain, refreshing the brain, stimulating the nerves.

(5) Oxygen therapy and brain physical massage can also be tried, and studies have shown that these two methods are also beneficial in removing brain fog.

(6) If patients suffer from psychiatric symptoms such as insomnia, anxiety, and depression, they should seek help from psychologists and TCM to eliminate these psychological symptoms. This method is also helpful in removing long COVID brain fog.

## 5.How to treat Long Covid brain fog from a traditional Chinese medicine(TCM) perspective?

From the theory of syndrome differentiation and treatment of TCM, the treatment of long COVID brain fog can obtain more accurate TCM syndrome differentiation and more suitable TCM formulas from the following three steps.

(1) Perform the observation, smelling, hearing, and inquiring of traditional Chinese medicine diagnosis, and consult the comprehensive physical examination report and four special examination reports of western medicine in the previous section at the same time. Only in this way can TCM doctors obtain the most detailed disease information of patients to support them to make the most accurate syndrome differentiation and treatment of patients' conditions.

(2) TCM doctors will classify and summarize the main symptoms, accompanying secondary symptoms, physical condition, and sick parts of the internal organs of the patients according to the most comprehensive disease information of the patients.

First, the main symptoms are the most unbearable symptoms of patients at present, such as chronic headache of long COVID brain fog, or memory loss of long COVID brain fog, and dizziness of long COVID brain fog.

Second, accompanying secondary symptoms are that suffered from the main symptoms, the patient is experiencing other uncomfortable symptoms, such as

feeling fatigued in a short time when using the brain, suffering from insomnia, anxiety, depression, and so on.

Third, to find out the physical condition of the patient, which means the patient's current physical health status, belongs to which category in the TCM constitution. For example, yang-deficiency constitution, phlegm-dampness constitution, qi-deficiency constitution, blood stasis constitution, etc.

(3) TCM doctors, according to the above summary, combined with the internal organs and meridians related to symptoms, comprehensively use the theory and practical experience of TCM to make TCM prescriptions for patients. If acupuncture and moxibustion are required, these programs will also be prescribed.

Traditional Chinese medicine (TCM) theory is mainly based on: Zhang Zhongjing's "Treatise on Febrile Diseases", "Synopsis of Golden Chamber", Huang Yuanyu's "Four Sacred Hearts Source", "Typhoid Fever Suspension", "Jinkui Suspension", "Changsha Yao Jie", Li Dongyuan's "Treatise on the Spleen & Stomach", and Zhang Jingyue's "Jingyue Quanshu".

Practical experience, which can be found in Google Scholar (<https://scholar.google.com/>), and search for keywords for TCM treatment of long COVID symptoms. For example, COVID-19 Traditional Chinese Medicine, Long Covid Traditional Chinese Medicine. A large number of academic papers on medical research on the treatment of Long Covid by traditional Chinese medicine can be found in this way.

In order to make it easier for everyone to understand the treatment process of TCM, the following is a TCM treatment case of a patient with long COVID brain fog:

Case 1:

Name: Li, aged 45 years, height 170CM, weight 90 kg.

MEDICAL HISTORY: PCR was positive for COVID-19 on 15Aug 2021, followed by typical symptoms of novel coronavirus infection: fever, cough, sore throat, sputum with



blood streaks, taste loss, and anosmia. Two weeks later, the symptoms of novel coronavirus infection gradually relieved and disappeared. Later, long COVID brain fog appeared successively.

Physical examination report of western medicine: (1) high blood glucose, there are early symptoms of type 2 diabetes. (2) PCR testing again showed negative. (3) Brain CT imaging revealed no abnormalities. (4) Proinflammatory markers are high and there is slight systemic chronic inflammation. (5) Immune system tests revealed no abnormalities.

Main symptoms: brain fog and dizziness, occasional mild headache, sleepiness when reading, easy feeling fatigued when using the brain.

Accompanying secondary symptoms: asthma with slight exercise, profuse sweating with slight exercise, diarrhea in the morning, chest and abdomen with slow swelling, anxiety and insomnia.

TCM constitution: the body presents a phlegm-dampness constitution and qi-deficiency constitution.

TCM diagnosis evaluation: before being infected with novel coronavirus, the person was in a sub-health state with obesity; after being infected with novel coronavirus, the patient's sub-health state deteriorated, presenting phlegm-dampness congestion, qi-deficiency and yin-deficiency symptoms.

Prescription is given by the TCM:

(1) Qingtan Yizhi Tang is used to remove phlegm and dampness and refresh the brain.

(2) Mailuotong capsules are used to dredge meridian vascular congestion.

(3) Chaihu plus Longgu oyster Tang are used to improve insomnia anxiety.

(4) Renshen Jianpi Wan are used to replenish energy and improve diarrhea.

Acupuncture program given by the TCM: Using an electronic moxibustion device, moxibustion on the following acupoints.

(1) Baihui, Neiguan, Taixi and Yongquan points are stimulated by moxibustion to improve cerebral blood circulation and metabolism, remove brain fog and relieve chronic headache.

(2) Danzhong, Zhongwan, Guanyuan, Tianshu and Zusanli points are stimulated by moxibustion to regulate the spleen and stomach and relieve diarrhea.

## 6. Which kind of health products are beneficial to improving long COVID brain fog?

Taking the patient above as an example, we give the following health product recommendations based on his condition:

(1) Omega 3 ( $\Omega$ 3) fatty acids, containing high amounts of DHA and EPA, are used to improve brain function and protect against cardiovascular and cerebrovascular diseases.

(2) Comprehensive vitamins, mainly VC, VD, and VB, are used to scavenge free radicals, anti-oxidation, and reduce systemic chronic inflammation.

(3) Curcumin is used to scavenge free radicals, anti-oxidation, activate NRF2, and reduce systemic chronic inflammation.

(4) Allicin is used to be antibacterial, and improve immunity, gastrointestinal function, and diarrhea.

(5) Sulforaphane is used to scavenge free radicals, anti-oxidation, activate NRF2, and reduce systemic chronic inflammation.

(6) Melatonin is used to improve sleep quality.

(7) American ginseng is sliced for making tea or taken American ginseng capsules to replenish energy.

## 7. What exercises are beneficial to improving long COVID brain fog?

Taking the patient above as an example, we give the following exercise advice based on his condition:

(1) Take moderate aerobic exercise at least three times a week, such as running, rope skipping, and swimming to remove phlegm-dampness.

(2) With the utility of gym equipment, strength training is performed for the major muscle group to improve insulin activity and lower blood glucose.

(3) Assist head massage and eye massage.

## 8. What is beneficial to improving long COVID brain fog in terms of diet and sleep?

Taking the patient above as an example, we give the following diet and sleep advice based on his condition:

(1) Control carbohydrate intake, which means reducing the amount of staple food such as rice and noodle, to decrease fat intake while increasing vegetable and cellulose intake.

(2) Do not take any food after lunch, and have breakfast and lunch only a day. Losing weight at least more than 10% of body weight, which means losing 9 kg, reducing the degree of obesity.

(3) Bubble bathing until slightly sweating before sleeping, and lie in bed to do general muscle tightness and relaxation training, improving sleep quality.

## 9. Patients with long COVID brain fog are welcome to contact with our Long Covid Care Center

If there are similar symptoms among readers, contact our Long Covid Care

Center for assistance.

Whatsapp: +85265568387

WeChat: longcovidcarecenter

Phone: +852 6556 8387

Email: [support@longcovidcarecenter.org](mailto:support@longcovidcarecenter.org)

【Disclaimer: The treatment of diseases is a very complex and professional affair. Due to the limitation, Long Covid Care Center can only carry out remote simple interviews, unable to face-to-face offline interviews and obtain comprehensive physical examination results. Therefore, the suggestions, guidance, protocols, and documents conveyed by our Long Covid Care Center to patients can only be used as a reference for patients to understand their diseases in many aspects, but cannot be directly used as a treatment plan. Patients must discuss their symptoms with doctors in local hospitals through face-to-face communication. After the patients completed the physical examination required by doctors, they would get a prescription issued by doctors and get the treatment under the guidance of doctors. Therefore, Long Covid Care Center hereby declares that our center is completely exempted from liability when any adverse consequences are caused by self-treatment of the patient

for applying any contents conveyed by the center, that is, we do not bear any responsibilities.】