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Research progress of new coronavirus (covid-19): Theoretical study

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Abstract: Objective: Provide a holistic perspective the new coronavirus (covid-19) to assist researchers and improving areas for future response plans to deal with these diseases, and to provide a summary of the factors that help stop their development.

Methods: This is a theoretical study conducted through a comprehensive review of the literature and research in the research engines (PubMed), (Read) and (ELSEVIER) and other new studies published in Chinese.

Results: Until now no effective drug for the treatment of new coronavirus pneumonia (covid-19) has been found. The development of vaccines is still in animal experiments. Recommendations and measures to control the spread of infection are still the only way to prevent the spread of covid-19 virus. However, some drugs have been proven effective. Effectively alleviates virus-associated infections (Covid-19) and also used certain factors during the SARS and MERS epidemics. For example, lopinavir (LPV) is an effective drug to inhibit protease activity of coronavirus. Significant progress has been made in diagnosis, as some studies have found that CT scans may show certain abnormalities in the chest even before symptoms appear.

Discussion: The Covid-19 virus remains a global concern and more research is needed to control it. It needs to find all sources of infection, especially those that are still mysterious, and still need to develop precautions, especially for hospitals staff and those who need direct contact with patients.

Keywords: covid-19, Prevention, Treatment, Diagnosis.

تقدم البحوث المتعلقة بفيروس كورونا الجديد (كوفيد-19): دراسة نظرية

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الملخص: الأهداف: توفير منظور شمولي عن فيروس كورونا الجديد (كوفيد-19) لمساعدة الباحثين وتحسين مجالات خطط الاستجابة المستقبلية للتعامل مع هذا الوباء، وتقديم ملخص للعوامل التي تساعد على إيقاف تطوره.

الطرق والوسائل: هذه دراسة نظرية تم إجراؤها من خلال مراجعة شاملة للأدبيات والبحوث في المحركات البحثية (PubMed) و(Read) و(ELSEVIER) والدراسات الجديدة الأخرى المنشورة باللغة الصينية، حيث تم الحصول على معلومات حول التشخيص والعلاج والوقاية وطرق العدوى، ومن أجل تحديد الخصائص للفيروس (كوفيد-19) التي تتشابه مع الفيروسات الأخرى تم الرجوع إلى بعض الأبحاث المتعلقة بالفيروسات من نفس العائلة مثل متلازمة الشرق الأوسط التنفسية (MERS) والمتلازمة التنفسية الحادة الوخيمة (SARS).

النتائج: حتى الآن لم يتم العثور على دواء فعال لعلاج الالتهاب الرئوي التاجي الناجم عن فيروس كورونا الجديد (كوفيد-19) ، وتطوير اللقاحات لا يزال قيد التجريب على الحيوانات ولا تزال التوصيات والإجراءات الوقائية للسيطرة على انتشار العدوى هي الطريقة الوحيدة لمنع انتشار فيروس كوفيد-19. ومع ذلك، فقد ثبت أن بعض الأدوية تخفف بشكل فعال من الالتهابات المصاحبة لفيروس (كوفيد-19) كما ثبت أيضًا أن استخدام بعض الأدوية التي كان لها أثر أثناء وباء فيروسات (MERS) و(SARS) على سبيل المثال: لوبينافير(LPV) هو دواء فعال لتثبيط نشاط البروتياز من للفيروس الجديد. تم إحراز تقدم في التشخيص، حيث وجدت بعض الدراسات أن الأشعة المقطعية قد تظهر بعض التشوهات في الصدر حتى قبل ظهور الأعراض.

أهم التوصيات: لا يزال فيروس كوفيد -19 مصدر قلق عالمي وهناك حاجة إلى مزيد من البحث للسيطرة عليه، وهناك حاجة إلى البحث عن جميع مصادر العدوى خاصة تلك التي لا تزال غامضة، ولا تزال هناك حاجة إلى تطوير الاحتياطات وإجراءات الوقاية، خاصة لموظفي المستشفيات وأولئك الذين يحتاجون إلى اتصال مباشر مع المرضى.

الكلمات المفتاحية: كوفيد-19 ، الوقاية ، العلاج ، التشخيص

Introduction

1- Problem Statement

The outbreak caused by the new coronavirus (covid-19) is very serious, as of March10, 2020, the World Health Organization (WHO) reported a cumulative number of confirmed cases in China 80924 cases, 3140 deaths, a total of 32778 confirmed cases in other countries, 872 deaths, more than100 countries have new coronavirus (covid-19) infections Figure1, Figure2 and Table1 [1]. Covid-19 is a new strain of the virus that has not yet been found in humans and belongs to the coronavirus family, which can cause diseases ranging from the common cold to more serious diseases, such as Middle East respiratory syndrome (MERS)[2] and Severe Acute Respiratory Syndrome (SARS)[3].

According to report epidemic center Guangxi, China has been the center of new virus infections for the past two decades, the most recent of which is the new Corona virus (Covid-19), which has caused a global crisis and anxiety. Wuhan appeared for unknown reasons. On December 12, 2019, the Wuhan Municipal Health Commission reported 27 cases of viral pneumonia Covid-19. Most of them have been linked to the virus in the Hunan seafood market, where poultry, bats, snakes and other wildlife are also sold.

Figure (1) Countries, territories or areas with reported confirmed cases of COVID-19, 10 March 2020

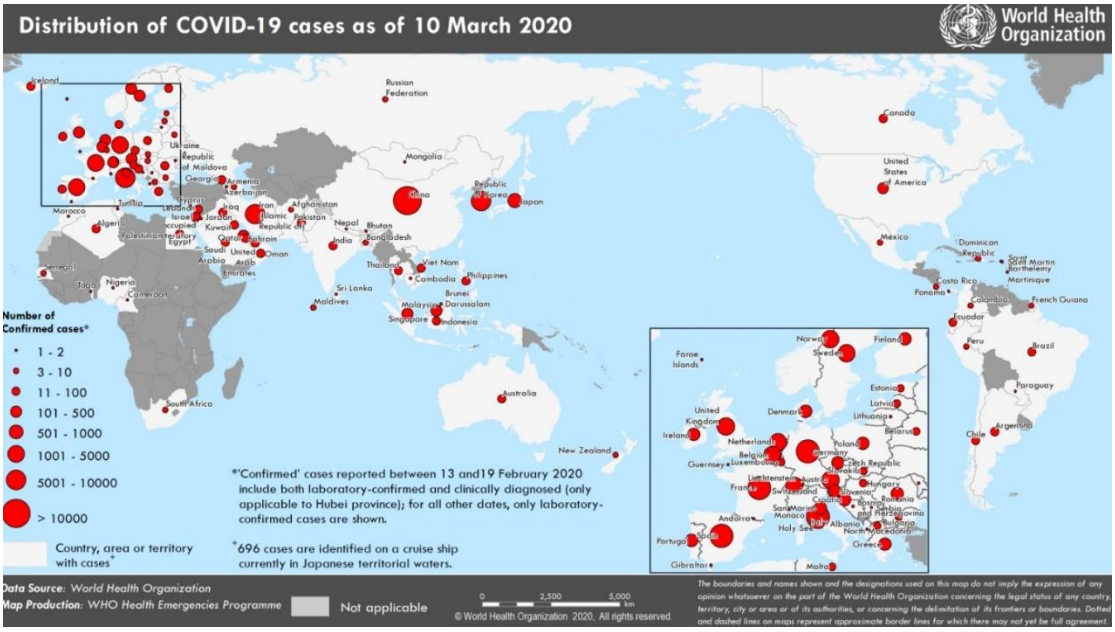

Figure (2) Epidemic curve of confirmed COVID-19 cases reported outside of China (n=32778), by date of report and WHO region through 10 March 2020

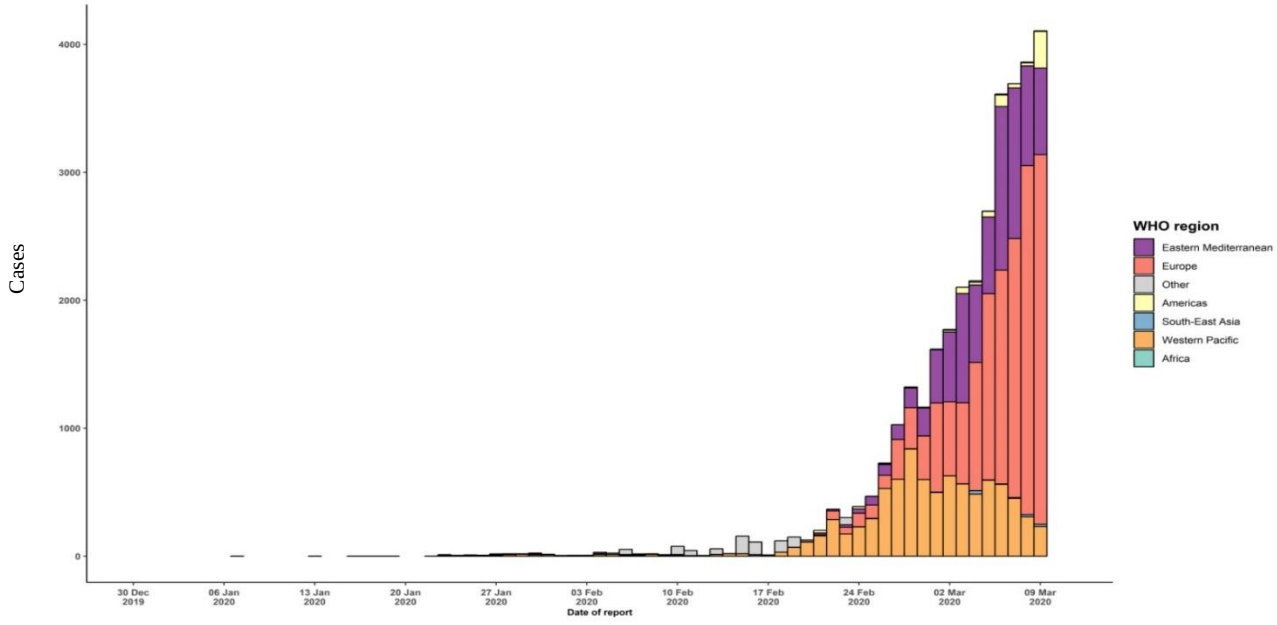

Table (1) Countries, territories or areas outside China with reported laboratory-confirmed COVID-19 cases and deaths. Data as of 10 March 2020

Reporting Country/ Territory/Area	Total confirmed cases	Total deaths
Western Pacific Region		
Republic of Korea	7513	45
Japan	514	9
Singapore	160	0
Malaysia	117	0
Australia	92	3
Philippines	33	1
Viet Nam	31	1
New Zealand	5	0
Cambodia	2	0
Brunei Darussalam	1	0
Mongolia	1	0
European Region		
Italy	9172	463
France	1402	30
Germany	1139	2
Spain	1024	28
Switzerland	332	3
The United Kingdom	323	3
Netherlands	321	0
Sweden	248	0
Belgium	239	0
Norway	192	0
Austria	131	0
Denmark	90	0
Greece	73	0
Iceland	55	0
San Marino	49	2
Finland	40	0
Israel	39	0
Czechia	38	0
Portugal	30	0
Ireland	24	0
Slovenia	23	0
Poland	16	0

Reporting Country/ Territory/Area	Total confirmed cases	Total deaths
Georgia	15	0
Romania	15	0
Croatia	12	0
Estonia	10	0
Azerbaijan	9	0
Hungary	9	0
North Macedonia	7	0
Russian Federation	7	0
Slovakia	7	0
Belarus	6	0
Latvia	6	0
Luxembourg	5	0
Bulgaria	4	0
Malta	4	0
Albania	2	0
Bosnia and Herzegovina	2	0
Cyprus	2	0
Andorra	1	0
Armenia	1	0
Holy See	1	0
Liechtenstein	1	0
Lithuania	1	0
Monaco	1	0
Republic of Moldova	1	0
Serbia	1	0
Ukraine	1	0
Faroe Islands	2	0
Gibraltar	1	0
Guernsey	1	0
South-East Asia Region		
China	80924	3140
Thailand	53	1
India	44	0
Indonesia	19	0
Maldives	4	0
Bangladesh	3	0
Bhutan	1	0
Nepal	1	

Reporting Country/ Territory/Area	Total confirmed cases	Total deaths
Sri Lanka	1	0
Eastern Mediterranean Region		
Iran (Islamic Republic of)	7161	43
Bahrain	109	0
Kuwait	65	0
Iraq	61	0
Egypt	59	0
United Arab Emirates	59	0
Lebanon	41	0
Oman	18	0
Qatar	18	0
Pakistan	16	0
Saudi Arabia	15	0
Afghanistan	4	0
Morocco	2	0
Tunisia	2	0
Jordan	1	0
occupied Palestinian territory	26	0
Region of the Americas of the Americas		
United States of America	472	19
Canada	77	0
Brazil	25	0
Ecuador	15	0
Chile	13	0
Argentina	12	0
Costa Rica	9	0
Peru	9	0
Mexico	7	0
Dominican Republic	5	0
Colombia	3	0
Panama	1	0
Paraguay	1	0
French Guiana	5	0
Martinique	2	0
Saint Martin	2	0
Saint Barthelemy	1	0
African Region		

Reporting Country/ Territory/Area	Total confirmed cases	Total deaths
Algeria	20	0
South Africa	7	0
Senegal	4	0
Cameroon	2	0
Nigeria	2	0
Togo	1	0
Subtotal for all regions	32082	186
International conveyance (Diamond Princess)	696	0
Grand total	113702	4012

2- Research questions:

1. What is the Covid-19 virus, and how is it transmitted?
2. What is the relationship of Covid-19 virus to the viruses that preceded it and from the same family?
3. What are the research findings of research on him so far?
4. What mechanisms can be taken to reduce infection?
5. How can the Chinese experience be used to combat infection?
6. How can medical personnel be protected from infection?

3- Research Objectives:

1. Provide a holistic view of the Covid-19 virus to help researchers.
2. Improve the areas of action plans and the response to the outbreak.
3. Benefiting from the research results conducted in China and applying them in the areas of the outbreak.
4. Provide suggestions for the necessary protection for the medical staff.
5. Find appropriate measures to limit and prevent the outbreak.

4- Research Importance:

The importance of the research lies in providing a comprehensive and brief description describing the results achieved on Covid-19 virus in terms of infection methods, diagnosis, treatment or vaccine methods, and appropriate prevention mechanisms by transferring the results of the experiment from field studies and Researchs who conducted at the Virus Spread Center (China), and monitoring The recipes in traditional Chinese medicine.

5- Research Methodology:

This is a theoretical study conducted through a comprehensive review of the literature and research in research engines (PubMed), (Read) and (ELSEVIER) and other new studies published in Chinese, where information was obtained about the diagnosis, treatment, prevention and methods of infection, and in order to determine the same characteristics of the virus (Covid-19), Some studies related to a viruses have been reviewed Middle East respiratory syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).

Literature Review

1. Covid-19 overview

1.1 New coronavirus (covid-19):

Coronaviruses are enveloped viruses that are positive for single-stranded large RNA viruses and can infect humans as well as a variety of animals. In 1966, Tyrell and Bino first discovered the coronavirus, a family of mammalian origin, in people infected with a flu pandemic. Can infect humans has found seven coronavirus is HCoV-229E, HCoV- OC43, SARS-COV, HCo V-NL63 and HCo V - HKU1, MERS - Co V and newly discovered 2019 - nCoV (SARS - HCoV - 2), coronavirus subfamily of α, β, γ, and δ [4], beta coronavirus can lead to severe diease and death, and alpha coronavirus can result in asymptomatic or mild symptoms of infection, 2019 new coronavirus is caused by SARS - CoV - 2 virus, Sarscov-2 belongs to the b-line of da-coronavirus, which is closely related to sars-cov virus. It is characterized by strong infectivity and high morbidity. The whole-genome level is 96% the same as that of the bat coronavirus, and bats are likely to be the host of the new coronavirus [5].

1.2 Ways to spread

The structural analysis of the receptor-binding domain (RBD) of the spike glycoprotein entering the host cell of the coronavirus found that the RBDs of the two viruses 2019-nCoV and SARS-CoV had 72% homologous properties in the amino acid sequence, and the molecular simulation showed a highly similar three-way structure. However, 2019-nCoV has a unique ring, and molecular simulations show that the RBD of 2019-nCoV interacts more strongly with angiotensin-converting enzyme 2 (ACE2). ACE2 is widely expressed in the entire animal world, from fish, amphibians, reptiles, birds to mammals, and has a conservative level of structure. Structural analysis suggests that ACE2 from these animals may bind to RBD from 2019-nCoV, making them possible natural hosts for the virus. 2019-nCoV is thought to be transmitted through respiratory droplets. However, since ACE2 is expressed mainly in the intestines, testes and kidneys, feces-mouth and other routes of transmission are also possible [6].

Previous studies have suggested that the main route of transmission of the virus is the virus droplets in an infected person's cough, which can be transmitted by frequently touching contaminated

hands and surfaces. For example, contact with the doorknobs that the patient has come into contact with, as well as the fixed telephone keyboards, bed tables and frames, and other items in the patient's environment, can be transmitted [7]. However, in early cases, the researchers said, they focused on patients with respiratory symptoms and may have overlooked symptoms associated with the digestive tract. A total of 14 patients (10%) of the 138 patients in a hospital in Wuhan city initially developed diarrhea and nausea fever and breathing difficulties the day or two before the onset of the disease [8].

The first United States U.S. patient to be diagnosed with 2019-nCoV (COVID-19) also experienced two days of poor defecation, followed by the discovery of the virus in his feces, and other such cases have been recorded on the Lancet, although this is rare, and researchers say feces may be a secondary route of transmission. Recent studies have also found the virus in a patient's urine.

In 2019nCoV, the transmission route can be mainly through contact, droplets, and feces transmission, and researchers are stepping up efforts to study other possible routes of transmission. Observations to date indicate that the incubation period of infection is 0-24 days, with an average incubation period of 5 days and reports indicating an average incubation period of 6.4 days, and that the proportion of people infected with 2019-nCoV remaining asymptomatic throughout the infection process has not been clearly assessed[9].

Mother-to-child transmission ： there have been reports of mothers who have been diagnosed with SARS-CoV-2 pneumonia, and cases of pharyngeal swab virus nucleic acid positive after 30 hours of birth [10]. The Zhongnan Hospital of Wuhan University conducted a retrospective analysis of 9 pregnant women with SARS-CoV-2 pneumonia diagnosed in the late pregnancy. SARS-, amniotic fluid, umbilical cord blood, neonatal throat swabs, and breast milk samples were collected from 9 patients CoV-2, no SARS-CoV-2 was found in the test results, and no intrauterine vertical transmission caused fetal infection was observed. Therefore, more research is needed to prove whether SARS-CoV-2 can pass vertical Transmission of infants [11]

1.3 Biological properties of viruses.

In previous studies, reviewing the latest 22 studies, the researchers found [12] that coronaviruses (e.g. SARS and MERS) remained active and contagious on infected metal, glass, or plastic surfaces for an average of nine days at room temperature (with an average temperature of between 15 and 20 degrees Celsius). Effective control of 2019-nCoV must be done by using virus-killing chemical disinfectants for disinfection, especially in medical institutions, on the other hand, studies have found that if the contaminated surface temperature drops to 4 degrees C, the virus can remain active for up to 28 days, and if the surface temperature is in the range of 30 to 40 degrees C, The activity time is reduced.

Some experts point out that coronaviruses are easily eliminated with disinfectants such as water, soap, alcohol, ethanol, and other disinfectants, each of which reduces its attachment to the surface, but it

is recommended that it be best at the appropriate concentration until the virus is completely eliminated. Keep home sanitation clean and tidy, try to disinfect daily, wipe the surface of the object with 75% ethanol or diluted 84 disinfectant at once. When storing, 75% ethanol and 84 disinfectant spouts should be stored separately, the two should not be mixed, conditional household daily timing should be turned on air purifiers, ultraviolet disinfection, etc., conditions restricted the family every room every day to take turns ventilation 2-3 times, each window ventilation 30 min to 1 hour [13].

2. Diagnosis

2.1 Clinical performance:

Patients with the new coronavirus pneumonia (Covid-19) have the following clinical manifestations: fever, cough, shortness of breath, muscle pain, headache, sore throat, chest pain, diarrhea, nausea, vomiting fever, cough, shortness of breath, most of which have one or more of the above clinical manifestations, in patients with symptoms, the clinical manifestations of the disease usually begin within a week, To fever, cough, chest tightness, shortness of breath mainly[14].

2.2 Imaging Performance

A retrospective analysis of 99 patients with the new coronavirus (covid-19) in a study of chest CT imaging found that CT images showed polyplaques and frosted glass turbidity in 14 patients, and 1 patient had gas chest[15]. At the same time, Xi'an Jiaotong University Hospital and Wuhan University Zhongnan Hospital research found that the new coronavirus pneumonia （covid-19 lesions are located in the double lung, mainly manifested in the single-sided lung or double-sided lung with hollow lung field or grinding glass shadow and real change, serious patients are more prone to lung real change, lesions in dynamic change, with diversity, multi-cooker characteristics [16,17].

According to a new study in the analysis of diagnostic CT scan, researchers in Wuhan found that pneumonia caused by COVID-19 virus manifests itself with abnormalities of chest tomography, even in patients without symptoms, with a rapid development of diffuse bilateral terrestrial foci that progress to Or coexist with mergers within 1-3 weeks. Combining assessment of imaging features with clinical and Laboratory results can facilitate early diagnosis of COVID-19 [18].

2.3 Laboratory examination:

Blood routine examination white blood cell count softens usually normal or decreased, accompanied by a decrease in lymphocyte count, severe progressive lymphocytic reduction, C-reactive protein (CRP) normal or elevated, and primary calcium (PCT) normal in most cases. PCT - level 0.5 ng/mL prompt stomps with bacteria. In severe cases, levels of hepatic enzymes, myoseses and myoglobin selevate, D-dipolymer levels rise [19].

2.4 Etiological examination:

Novel coronavirus is an RNA virus. The detection method mainly adopts nucleic acid detection. The collected samples are mainly throat swabs, nasal swabs, alveolar lavage fluid, sputum samples, feces samples, etc. Suspected cases can only be excluded if their respiratory pathogenic nucleic acid tests are negative for two consecutive times (sampling time interval is at least 1 day)[20]. Generally, 140 μL sample extraction is used for nucleic acid detection. At the beginning of the epidemic, the next generation sequencing was carried out from the bronchoalveolar lavage fluid samples and culture isolates of 9 hospitalized patients, 8 complete and 2 partial genome sequences of 2019-nCoV were obtained [21], and a PCR detection kit was developed according to the gene sequence of the virus. Nucleic acid sequencing by double extraction of sputum samples and throat swabs from different patients showed that the virus content in sputum samples was higher than that in throat swabs. Compared with throat swabs, sputum samples had better detection effect. If a liquefaction method more conducive to sputum samples could be found, the virus content in sputum samples would be higher and more conducive to laboratory detection [22]. Some studies have compared the detection results of six domestic reagents on nucleic acid samples of patients with weakly positive new crown pneumonia at different periods. It is found that the detection effect of Shuoshi biological novel coronavirus (2019) nucleic acid detection kit (double fluorescence PCR method, batch number: 20200108) and Beijing Zhuocheng Huisheng novel coronavirus (covid-19)ORF1ab/N gene double real-time fluorescence PCR detection kit (batch number: 2020123) is better than the other four[23], but it is still necessary to further compare different batch numbers for detection and analysis of large samples. In order to reduce false negative results in the kit test and improve its sensitivity, the Zhong Nanshan team has newly developed the novel coronavirus IgM antibody rapid detection kit. Through blood testing, the kit has been found to be able to detect a considerable number of patients with negative PCR nucleic acid detection, and has completed preliminary evaluation in laboratory and clinic. It can complement nucleic acid detection and has been sent to Hubei Province in large quantities.

3. Treatment

3.1 Nutritional therapy:

Researchers believe that immune response is impaired due to lack of specific nutritional elements [24]. It is suggested that before routine treatment, the nutritional status of each infected patient should be evaluated, and the uninfected population and medical personnel should be vaccinated with existing RNA virus vaccines, including influenza vaccines.

3.1.1 Vitamin A:

Infectious bronchitis virus (IBV) is a coronavirus. Chickens that consume a small amount of vitamin A are more susceptible to this virus than chickens that consume sufficient vitamin A. Vitamin A supplementation can reduce measles, diarrhea and measles Incidence and mortality of different infectious diseases such as pneumonia, human immunodeficiency virus (HIV) infection and malaria [25,26].

3.1.2 Vitamin B:

Vitamin B3 treatment can significantly inhibit neutrophil infiltration into the lung, and has a strong anti-inflammatory effect in ventilator-induced lung injury. However, it also causes severe hypoxemia [27]. Lack of B vitamins may weaken the host's immune response, so supplementation to patients infected with the virus may be considered to strengthen their immune systems.

3.1.3 Vitamin C:

VC can prevent lower respiratory tract infections under certain conditions [28], and can be used as a weak antihistamine to relieve flu symptoms to a certain extent.

3.1.4 Vitamin D:

In addition to its role in maintaining bone integrity, it can stimulate the maturation of many cells, including immune cells. Vitamin D is reported to be low in many healthy adults, especially at the end of winter[29].

3.1.5 Polyunsaturated fatty acids:

Long-chain polyunsaturated fatty acids are important mediators of inflammation and adaptive immune response. At the same time, protector D1 is a polyunsaturated fatty acid-derived lipid medium that can significantly reduce influenza virus replication through the RNA export mechanism[30].

3.1.6 Selenium:

Lack of selenium in the diet can cause oxidative stress in the host, thereby altering the virus genome, making normal benign or mildly pathogenic viruses highly toxic in the absence of the host under oxidative stress. Not only does selenium deficiency cause damage to the host's immune system, but it also rapidly changes benign mutations in RNA viruses to virulence mutations[31].

3.1.7 Zinc:

increased intracellular zinc concentration using zinc ion carriers such as pyridinone was found to be effective in disrupting replication of multiple RNA viruses, and the combination of low zinc and pyridinone inhibited replication of SARS coronavirus [32].

3.2 Western medicine treatment

There is no specific novel coronavirus pneumonia treatment. Studies have found that 2019-nCoV and SARS-CoV have high sequence consistency in their RdRp and 3CLpro proteins. However, some effective small molecule therapies based on these two proteins in SARS-CoV have been discovered previously. However, the drug is still in the stage of clinical trials, which may be applied to the treatment of 2019 ncov patients[33]. The fifth edition of novel coronavirus pneumonia diagnosis and treatment plan issued by China health and Health Commission [34] is that the interferon IFN- is mainly used for IFN- and IFN- beta. Add "or ribavirin" on the basis of lopinavir / ritonavir. Novel coronavirus pneumonia clinical guideline for WHO, published in [35] , has not been recommended for the use of corticosteroids in suspected patients. In February 7, 2020 [36] a article published in the lancet magazine also suggested that although corticosteroids were widely used in SARS and MERS treatment, there was not enough evidence that corticosteroids were beneficial to the treatment of respiratory tract infections. Although it can inhibit lung inflammation, it can also inhibit the immune response and prevent the elimination of pathogens. Due to the lack of sufficient evidence, corticosteroid treatment is still controversial and should be used carefully. The broad-spectrum antiviral activity of arbidol (ARB) in vitro and in vivo has been confirmed, but the current evidence only proves that ARB has anti CoVs activity in vitro, and its therapeutic effect on 2019 nCoV still needs the support of clinical experiments [37] . The sixth edition of novel coronavirus pneumonia treatment program released by China health and Health Commission [38] has been added to chloroquine and chloroquine phosphate as a therapeutic drug. The course of treatment is not more than 10 days. A novel coronavirus was introduced to analyze the structure of receptor binding domain (RBD) of spike glycoprotein in the host cells. The study found that the RBD of new coronavirus (covid-19)was mainly combined with ACE2 receptor. It is necessary to develop antibodies and small molecule inhibitors that can block the interaction between ACE2 and RBD to fight against the virus.

3.3 Treatment with traditional Chinese medicine (TCM):

This disease belongs to the category of epidemic disease in traditional Chinese medicine, and its basic pathogenesis is characterized by "dampness, heat, toxin and stasis". There are studies in China on the general treatment principle of "dispersing cold and dehumidification, avoiding pollution and turbidity", discussing the treatment and protective measures of TCM by stages, and giving corresponding prescriptions according to different disease stages of patients, the treatment drugs are mainly Atractylodes, Huoxiang, Houpu, Caocao, areca, tangerine peel, ephedra, Qiang Huo and other traditional Chinese medicines [39,40]. Luo Dan and other[41] novel coronavirus pneumoniae theory is combined with the new type of coronavirus pneumonia theory for high-risk groups. As mentioned above, the receptor binding domain (RBD) of spicule glycoprotein that coronaviruses enter host cells has been structurally analyzed. However, it was found that RBD of novel coronaviruses mainly binds ACE2 receptor, so

antibodies and small-molecule inhibitors capable of blocking ACE2's interaction with RBD should be developed to combat this virus(Yao kaitao, 2020) [42].

4. Methods of prevention

At present, no treatment for pneumonia caused by the new covid-19 virus has been found in China. The vaccine development is still in the animal testing phase, and suggestions and measures to control the spread of infection are still the only way to prevent the spread of the 2019-nCoV virus (covid-19). It should be noted that covid-19 infection is a new type of infectious disease, which is vulnerable to anyone. Legion ncov 2019 infection was legally classified as a category B infectious disease, but it was managed as a category A infectious disease. It is extremely important to implement infection control measures by controlling the source of the infection, obstructing the transmission route and protecting the vulnerable population.

4.1 Control of infectious sources

The main source of infection [43,44] is patients infected with 2019 ncov. The novel coronavirus infected healthy person should be isolated from the family according to the severity of the medical staff, or be sent to the designated hospital under the guidance of medical staff. And reduce contact with cohabitants. There is a huge demand for room ventilation, necessary cleaning and disinfection. It is also important to have equipment with disposable masks and to deal with them properly when taking care of patients after use.

4.2 Control of communication channels

4.2.1 Prevention of respiratory droplets and contact transmission:

Cover your nose and mouth with a napkin or towel when coughing or sneezing.

Wash your hands frequently and strictly follow the seven step washing method.

After coming back from public places, cover your mouth after coughing, do not touch your mouth, nose or eyes before eating or after going to the toilet, before thoroughly cleaning your hands, so as to reduce the chance of virus infection.

4.2.2 Avoid contact infection:

Avoid using public transport in popular areas.

Wear masks in crowded or poorly ventilated public places.

Avoid contact with or eating wild animals.

Avoid markets that sell live animals.

4.3 Protection of susceptible people

Protection of the general population, People with a history of close contact with infected patients need regular monitoring of body temperature and clinical characteristics. When suspicious symptoms appear, go to the hospital for screening.

4.4 Protection of medical staff

According to the China-WHO Joint report in February 24th, a total of 476 medical institutions, 3387 medical staff were infected with new crown pneumonia cases (2055 confirmed cases, 1070 clinical diagnosis cases and 157 suspected cases), and 90% of the medical personnel (3062 cases) were from Hubei. The results showed that there were 2055 cases of new crown pneumonia in Beijing. This is because there are a large number of high-risk operations for respiratory treatment of critical patients, aiming to reduce nosocomial infection and optimize the treatment of 2019-nCoV pneumonia patients. A novel coronavirus infection expert protection protocol for respiratory and surgical treatment of severe and critically ill patients has been released by the respiratory medicine unit of the Chinese society of respiratory medicine., this article is pre-published online.

The following recommendations are given[45]:

1. Standard prevention and protection, and patient isolation;
2. Measures to reduce aerosol diffusion are used during hfnc treatment, such as patients wearing medical surgical masks, etc.
3. During noninvasive ventilation, use a closed mask and a heat and moisture exchanger (HME) with virus filtering function, or use a double pipe ventilator with filters placed at the suction and exhalation ends; the mask fits the face tightly to avoid unintentional air leakage. Set the ventilator in standby mode before wearing and removing the mask
4. When using the simple respirator, it is necessary to ensure that the method and strength of fixing the mask are correct, and avoid respiratory asynchrony; the virus filter is connected in series between the mask and the simple respirator.
5. For patients with spontaneous breathing, wear masks during bronchoscopy; for patients receiving noninvasive ventilation, use a special mask with a bronchoscope port for bronchoscopy;
6. The pressure of cuff should be kept between 25-30 CMH (2) O when sedatives and paralytics are used during intubation;
7. It is recommended to use disposable double heating guide wire breathing circuit, and the breathing circuit does not need to be replaced regularly when there is no obvious pollution.
8. For patients who need respiratory support during transportation, place an HME between the ventilator and the patient;

9. It is recommended to use PSV for spontaneous respiration test (SBT) and avoid using T-piece for SBT. For ventilator, HME should be used and T-piece or tracheotomy mask should be avoided. The operator shall take three-level protective measures, and artificial nose is recommended after tracheotomy and mechanical ventilation
10. Avoid unnecessary bronchial hygiene therapy;
11. For patients who need atomization, it is recommended to select dry powder inhaler and pressure quantitative inhaler + mist storage tank; for mechanical ventilators, it is recommended to use vibrating screen atomizer, which is placed on the air inlet end of the humidification tank and does not need to be removed. The virus filter at the exhalation end should not be removed during atomization inhalation.

develop immunity from disease

Balanced diet, oral health, proper exercise, regular rest, avoiding excessive fatigue and enhancing immunity are effective measures to prevent infection and maintain emotional stability and mental health. Vaccination is an effective way to prevent virus infection. At present, China has carried out the research and development of antiviral vaccine.

Methods

This is a theoretical study conducted through a comprehensive review of the literature and research in the research engines (PubMed), (Read) and (ELSEVIER) and other new studies published in Chinese, we obtained information on diagnostic, treatment, prevention, and infection methods in order to identify the same novel coronavirus (covid-19) Common characteristics, we point out some research related to MARS virus and SARS virus because it belongs to the same family.

Results, Discussion and Recommendations

We reached a comprehensive conclusion in various areas related to treatments that reduce the symptoms of infection caused by the Covid-19 virus, as well as nutritional treatment, and the extracts of treatments through traditional Chinese medicine, and those results related to the formation of a protective fence, both for the general public and for the crew. Medical, as other results were addressed in the diagnostic and laboratory aspects and clinical symptoms, and with all of that it must be emphasized that there is an important gap that has not been resolved until now, there is no effective treatment for this disease so far, and vaccinations are still in the stage of experimenting with animals and need to Longer period, including The prevalence of COVID-19 has become a clinical threat to the general population and health care workers around the world, especially as its prevalence has escalated in many countries; therefore it is necessary to emphasize the implementation of possible options of using antiviral therapies that have been shown to be effective, as it is The necessity to implement measures to control transmission

and limit its spread, directly or indirectly, from person to person. The global public health authorities and ministries of health should continue to closely monitor the situation, and take advantage of the Chinese experience that has proven successful as cases in China are close to zero, and those who are interested and researchers should make more efforts. The more we know about this virus, new and associated outbreaks, we could have responded better.

Conclusion

Although less than 3 months have passed since the disease was discovered, there are many discoveries in scientific research, and these scientific discoveries have provided a strong scientific guarantee to guide the epidemic prevention and control in China and positive results have been achieved, however Covid-19 is still big problem, The problem will be more complex if you spread in the countries who have health systems weak, and don't experience in dealing with such viruses. Therefore, the effective option is continuous evaluation and development of vaccines based on previous information about similar viruses, and the adoption of infection control measures to prevent the spread of Covid-19 from one person to another through appropriate health behaviors, health authorities should continue to monitor the situation..

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