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Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Research Literatures

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Abstract: Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus is mainly spread during close contact and via respiratory droplets that are produced when a person talks, coughs, or sneezes. Respiratory droplets may be produced during breathing, however, current research indicates that the virus is not considered airborne. People may also contract COVID-19 by touching a contaminated surface (Fomite) and then inadvertently transfer the pathogen to a mucous membrane (such as the eyes, nose, or mouth). It is most contagious when people are symptomatic, although spread may be possible before symptoms appear. The virus can live on surfaces up to 72 hours. Time from exposure to onset of symptoms is generally between two and fourteen days, with an average of five days. The standard method of diagnosis is by reverse transcription polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab. The infection can also be diagnosed from a combination of symptoms, risk factors and a chest CT scan showing features of pneumonia. This article introduces recent research reports as references in the related studies.
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Key words: Severe Acute Respiratory Syndrome; Coronavirus; SARS-CoV-2; life; research; literature

Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus is mainly spread during close contact and via respiratory droplets that are produced when a person talks, coughs, or sneezes. Respiratory droplets may be produced during breathing, however, current research indicates that the virus is not considered airborne. People may also contract COVID-19 by touching a contaminated surface (Fomite) and then inadvertently transfer the pathogen to a mucous membrane (such as the eyes, nose, or mouth). It is most contagious when people are symptomatic, although spread may be possible before symptoms appear. The virus can live on surfaces up to 72 hours. Time from exposure to onset of symptoms is generally between two and fourteen days, with an average of five days. The standard method of diagnosis is by reverse transcription polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab. The infection can also be diagnosed from a combination of symptoms, risk factors and a chest CT scan showing features of pneumonia. This article introduces recent research reports as references in the related studies.

The following introduces recent reports as references in the related studies.

De Salazar, P. M., et al. (2020). "Identifying Locations with Possible Undetected Imported Severe Acute Respiratory Syndrome Coronavirus 2 Cases by Using Importation Predictions." Emerg Infect Dis **26**(7).

Cases of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection exported from mainland China could lead to self-sustained outbreaks in other countries. By February 2020, several countries were reporting imported SARS-CoV-2 cases. To contain the virus, early detection of imported SARS-CoV-2 cases is critical. We used air travel volume estimates from Wuhan, China, to international destinations and a generalized linear regression model to identify locations that could have undetected imported cases. Our model can be adjusted to account for exportation of cases from other locations as the virus spreads and more information on importations and transmission becomes available. Early detection and appropriate control measures can reduce the risk for transmission in all locations.

Frieden, T. R. and C. T. Lee (2020). "Identifying and Interrupting Superspreading Events-Implications for Control of Severe Acute Respiratory Syndrome Coronavirus 2." Emerg Infect Dis **26**(6).

It appears inevitable that severe acute respiratory syndrome coronavirus 2 will continue to spread.

Although we still have limited information on the epidemiology of this virus, there have been multiple reports of superspreading events (SSEs), which are associated with both explosive growth early in an outbreak and sustained transmission in later stages. Although SSEs appear to be difficult to predict and therefore difficult to prevent, core public health actions can prevent and reduce the number and impact of SSEs. To prevent and control of SSEs, speed is essential. Prevention and mitigation of SSEs depends, first and foremost, on quickly recognizing and understanding these events, particularly within healthcare settings. Better understanding transmission dynamics associated with SSEs, identifying and mitigating high-risk settings, strict adherence to healthcare infection prevention and control measures, and timely implementation of nonpharmaceutical interventions can help prevent and control severe acute respiratory syndrome coronavirus 2, as well as future infectious disease outbreaks.

Fung, S. Y., et al. (2020). "A tug-of-war between severe acute respiratory syndrome coronavirus 2 and host antiviral defence: lessons from other pathogenic viruses." Emerg Microbes Infect **9**(1): 558-570.

World Health Organization has declared the ongoing outbreak of coronavirus disease 2019 (COVID-19) a Public Health Emergency of International Concern. The virus was named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) by the International Committee on Taxonomy of Viruses. Human infection with SARS-CoV-2 leads to a wide range of clinical manifestations ranging from asymptomatic, mild, moderate to severe. The severe cases present with pneumonia, which can progress to acute respiratory distress syndrome. The outbreak provides an opportunity for real-time tracking of an animal coronavirus that has just crossed species barrier to infect humans. The outcome of SARS-CoV-2 infection is largely determined by virus-host interaction. Here, we review the discovery, zoonotic origin, animal hosts, transmissibility and pathogenicity of SARS-CoV-2 in relation to its interplay with host antiviral defense. A comparison with SARS-CoV, Middle East respiratory syndrome coronavirus, community-acquired human coronaviruses and other pathogenic viruses including human immunodeficiency viruses is made. We summarize current understanding of the induction of a proinflammatory cytokine storm by other highly pathogenic human coronaviruses, their adaptation to humans and their usurpation of the cell death programmes. Important questions concerning the interaction between SARS-CoV-2 and host antiviral defence, including asymptomatic and presymptomatic virus shedding, are also discussed.

Ghinai, I., et al. (2020). "First known person-to-person transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in the USA." Lancet.

BACKGROUND: Coronavirus disease 2019 (COVID-19) is a disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), first detected in China in December, 2019. In January, 2020, state, local, and federal public health agencies investigated the first case of COVID-19 in Illinois, USA. METHODS: Patients with confirmed COVID-19 were defined as those with a positive SARS-CoV-2 test. Contacts were people with exposure to a patient with COVID-19 on or after the patient's symptom onset date. Contacts underwent active symptom monitoring for 14 days following their last exposure. Contacts who developed fever, cough, or shortness of breath became persons under investigation and were tested for SARS-CoV-2. A convenience sample of 32 asymptomatic health-care personnel contacts were also tested. FINDINGS: Patient 1-a woman in her 60s-returned from China in mid-January, 2020. One week later, she was hospitalised with pneumonia and tested positive for SARS-CoV-2. Her husband (Patient 2) did not travel but had frequent close contact with his wife. He was admitted 8 days later and tested positive for SARS-CoV-2. Overall, 372 contacts of both cases were identified; 347 underwent active symptom monitoring, including 152 community contacts and 195 health-care personnel. Of monitored contacts, 43 became persons under investigation, in addition to Patient 2. These 43 persons under investigation and all 32 asymptomatic health-care personnel tested negative for SARS-CoV-2. INTERPRETATION: Person-to-person transmission of SARS-CoV-2 occurred between two people with prolonged, unprotected exposure while Patient 1 was symptomatic. Despite active symptom monitoring and testing of symptomatic and some asymptomatic contacts, no further transmission was detected. FUNDING: None.

Harcourt, J., et al. (2020). "Severe Acute Respiratory Syndrome Coronavirus 2 from Patient with 2019 Novel Coronavirus Disease, United States." Emerg Infect Dis **26**(6).

The etiologic agent of an outbreak of pneumonia in Wuhan, China, was identified as severe acute respiratory syndrome coronavirus 2 in January 2020. A patient in the United States was given a diagnosis of infection with this virus by the state of Washington and the US Centers for Disease Control and Prevention on January 20, 2020. We isolated virus from nasopharyngeal and oropharyngeal specimens from this patient and characterized the viral sequence, replication properties, and cell culture tropism. We

found that the virus replicates to high titer in Vero-CCL81 cells and Vero E6 cells in the absence of trypsin. We also deposited the virus into 2 virus repositories, making it broadly available to the public health and research communities. We hope that open access to this reagent will expedite development of medical countermeasures.

Kamel Boulos, M. N. and E. M. Geraghty (2020). "Geographical tracking and mapping of coronavirus disease COVID-19/severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic and associated events around the world: how 21st century GIS technologies are supporting the global fight against outbreaks and epidemics." Int J Health Geogr **19**(1): 8.

In December 2019, a new virus (initially called 'Novel Coronavirus 2019-nCoV' and later renamed to SARS-CoV-2) causing severe acute respiratory syndrome (coronavirus disease COVID-19) emerged in Wuhan, Hubei Province, China, and rapidly spread to other parts of China and other countries around the world, despite China's massive efforts to contain the disease within Hubei. As with the original SARS-CoV epidemic of 2002/2003 and with seasonal influenza, geographic information systems and methods, including, among other application possibilities, online real-or near-real-time mapping of disease cases and of social media reactions to disease spread, predictive risk mapping using population travel data, and tracing and mapping super-spreader trajectories and contacts across space and time, are proving indispensable for timely and effective epidemic monitoring and response. This paper offers pointers to, and describes, a range of practical online/mobile GIS and mapping dashboards and applications for tracking the 2019/2020 coronavirus epidemic and associated events as they unfold around the world. Some of these dashboards and applications are receiving data updates in near-real-time (at the time of writing), and one of them is meant for individual users (in China) to check if the app user has had any close contact with a person confirmed or suspected to have been infected with SARS-CoV-2 in the recent past. We also discuss additional ways GIS can support the fight against infectious disease outbreaks and epidemics.

Lai, C. C., et al. (2020). "Asymptomatic carrier state, acute respiratory disease, and pneumonia due to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): Facts and myths." J Microbiol Immunol Infect.

Since the emergence of coronavirus disease 2019 (COVID-19) (formerly known as the 2019 novel coronavirus [2019-nCoV]) in Wuhan, China in December 2019, which is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), more than 75,000 cases have been reported in 32 countries/regions, resulting in more than 2000 deaths worldwide. Despite the fact that most COVID-19 cases and mortalities were reported in China, the WHO has declared this outbreak as the sixth public health emergency of international concern. The COVID-19 can present as an asymptomatic carrier state, acute respiratory disease, and pneumonia. Adults represent the population with the highest infection rate; however, neonates, children, and elderly patients can also be infected by SARS-CoV-2. In addition, nosocomial infection of hospitalized patients and healthcare workers, and viral transmission from asymptomatic carriers are possible. The most common finding on chest imaging among patients with pneumonia was ground-glass opacity with bilateral involvement. Severe cases are more likely to be older patients with underlying comorbidities compared to mild cases. Indeed, age and disease severity may be correlated with the outcomes of COVID-19. To date, effective treatment is lacking; however, clinical trials investigating the efficacy of several agents, including remdesivir and chloroquine, are underway in China. Currently, effective infection control intervention is the only way to prevent the spread of SARS-CoV-2.

Lai, C. C., et al. (2020). "Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges." Int J Antimicrob Agents **55**(3): 105924.

The emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; previously provisionally named 2019 novel coronavirus or 2019-nCoV) disease (COVID-19) in China at the end of 2019 has caused a large global outbreak and is a major public health issue. As of 11 February 2020, data from the World Health Organization (WHO) have shown that more than 43 000 confirmed cases have been identified in 28 countries/regions, with >99% of cases being detected in China. On 30 January 2020, the WHO declared COVID-19 as the sixth public health emergency of international concern. SARS-CoV-2 is closely related to two bat-derived severe acute respiratory syndrome-like coronaviruses, bat-SL-CoVZC45 and bat-SL-CoVZXC21. It is spread by human-to-human transmission via droplets or direct contact, and infection has been estimated to have mean incubation period of 6.4 days and a basic reproduction number of 2.24-3.58. Among patients with pneumonia caused by SARS-CoV-2 (novel coronavirus pneumonia or Wuhan pneumonia), fever was the most common symptom, followed by cough. Bilateral lung involvement with ground-glass opacity was the most common finding from computed tomography images of the chest. The one case of SARS-CoV-2 pneumonia

in the USA is responding well to remdesivir, which is now undergoing a clinical trial in China. Currently, controlling infection to prevent the spread of SARS-CoV-2 is the primary intervention being used. However, public health authorities should keep monitoring the situation closely, as the more we can learn about this novel virus and its associated outbreak, the better we can respond.

Li, D., et al. (2020). "False-Negative Results of Real-Time Reverse-Transcriptase Polymerase Chain Reaction for Severe Acute Respiratory Syndrome Coronavirus 2: Role of Deep-Learning-Based CT Diagnosis and Insights from Two Cases." Korean J Radiol **21**(4): 505-508.

The epidemic of 2019 novel coronavirus, later named as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is still gradually spreading worldwide. The nucleic acid test or genetic sequencing serves as the gold standard method for confirmation of infection, yet several recent studies have reported false-negative results of real-time reverse-transcriptase polymerase chain reaction (rRT-PCR). Here, we report two representative false-negative cases and discuss the supplementary role of clinical data with rRT-PCR, including laboratory examination results and computed tomography features. Coinfection with SARS-COV-2 and other viruses has been discussed as well.

Li, T. (2020). "Diagnosis and clinical management of severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) infection: an operational recommendation of Peking Union Medical College Hospital (V2.0)." Emerg Microbes Infect **9**(1): 582-585.

Since December 2019, China has been experiencing an outbreak of a new infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The clinical features include fever, coughing, shortness of breath, and inflammatory lung infiltration. China rapidly listed SARS-CoV-2-related pneumonia as a statutory infectious disease. To standardize the diagnosis and treatment of this new infectious disease, an operational recommendation for the diagnosis and management of SARS-CoV-2 infection is developed by Peking Union Medical College Hospital.

Li, Y., et al. (2020). "Lack of Vertical Transmission of Severe Acute Respiratory Syndrome Coronavirus 2, China." Emerg Infect Dis **26**(6).

A woman with 2019 novel coronavirus disease in her 35th week of pregnancy delivered an infant by cesarean section in a negative-pressure operating room. The infant was negative for severe acute respiratory coronavirus 2. This case suggests that mother-to-child transmission is unlikely for this virus.

Liu, J., et al. (2020). "Community Transmission of Severe Acute Respiratory Syndrome Coronavirus 2, Shenzhen, China, 2020." Emerg Infect Dis **26**(6).

Since early January 2020, after the outbreak of 2019 novel coronavirus infection in Wuhan, China, approximately 365 confirmed cases have been reported in Shenzhen, China. The mode of community and intrafamily transmission is threatening residents in Shenzhen. Strategies to strengthen prevention and interruption of these transmissions should be urgently addressed.

Olsen, S. J., et al. (2020). "Early Introduction of Severe Acute Respiratory Syndrome Coronavirus 2 into Europe." Emerg Infect Dis **26**(7).

Early infections with severe acute respiratory syndrome coronavirus 2 in Europe were detected in travelers from Wuhan, China, in January 2020. In 1 tour group, 5 of 30 members were ill; 3 cases were laboratory confirmed. In addition, a healthcare worker was infected. This event documents early importation and subsequent spread of the virus in Europe.

Ren, S. Y., et al. (2020). "Fear can be more harmful than the severe acute respiratory syndrome coronavirus 2 in controlling the corona virus disease 2019 epidemic." World J Clin Cases **8**(4): 652-657.

The current corona virus disease 2019 outbreak caused by severe acute respiratory syndrome coronavirus 2 started in Wuhan, China in December 2019 and has put the world on alert. To safeguard Chinese citizens and to strengthen global health security, China has made great efforts to control the epidemic. Many in the global community have joined China to limit the epidemic. However, discrimination and prejudice driven by fear or misinformation have been flowing globally, superseding evidence and jeopardizing the anti-severe acute respiratory syndrome coronavirus 2 efforts. We analyze this phenomenon and its underlying causes and suggest practical solutions.

Wang, X., et al. (2020). "Challenges to the system of reserve medical supplies for public health emergencies: reflections on the outbreak of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic in China." Biosci Trends **14**(1): 3-8.

On December 31, 2019, the Wuhan Municipal Health Commission announced an outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), China is now at a critical period in the control of the epidemic. The Chinese Government has been taking a series of rapid, comprehensive, and effective

prevention and control measures. As the pandemic has developed, a fact has become apparent: there is a serious dearth of emergency medical supplies, and especially an extreme shortage of personal protective equipment such as masks and medical protective clothing. This is one of the major factors affecting the progress of epidemic prevention and control. Although China has made great efforts to strengthen the ability to quickly respond to public health emergencies since the SARS outbreak in 2003 and it has clarified requirements for emergency supplies through legislation, the emergency reserve supplies program has not been effectively implemented, and there are also deficiencies in the types, quantity, and availability of emergency medical supplies. A sound system of emergency reserve supplies is crucial to the management of public health emergencies. Based on international experiences with pandemic control, the world should emphasize improving the system of emergency reserve medical supplies in the process of establishing and improving public health emergency response systems, and it should promote the establishment of international cooperative programs to jointly deal with public health emergencies of international concern in the future.

Yao, X., et al. (2020). "In Vitro Antiviral Activity and Projection of Optimized Dosing Design of Hydroxychloroquine for the Treatment of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)." Clin Infect Dis.

BACKGROUND: The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) first broke out in Wuhan (China) and subsequently spread worldwide. Chloroquine has been sporadically used in treating SARS-CoV-2 infection. Hydroxychloroquine shares the same mechanism of action as chloroquine, but its more tolerable safety profile makes it the preferred drug to treat malaria and autoimmune conditions. We propose that the immunomodulatory effect of hydroxychloroquine also may be useful in controlling the cytokine storm that occurs late-phase in critically ill SARS-CoV-2 infected patients. Currently, there is no evidence to support the use of hydroxychloroquine in SARS-CoV-2 infection. METHODS: The pharmacological activity of chloroquine and hydroxychloroquine was tested using SARS-CoV-2 infected Vero cells. Physiologically-based pharmacokinetic models (PBPK) were implemented for both drugs separately by integrating their in vitro data. Using the PBPK models, hydroxychloroquine concentrations in lung fluid were simulated under 5 different dosing regimens to explore the most effective regimen whilst considering the drug's safety profile. RESULTS: Hydroxychloroquine (EC50=0.72 muM) was found to be more potent than chloroquine (EC50=5.47 muM) in vitro. Based on PBPK models results, a loading dose of 400 mg twice daily of hydroxychloroquine sulfate given orally, followed by a maintenance dose of 200 mg given twice daily for 4 days is recommended for SARS-CoV-2 infection, as it reached three times the potency of chloroquine phosphate when given 500 mg twice daily 5 days in advance. CONCLUSIONS: Hydroxychloroquine was found to be more potent than chloroquine to inhibit SARS-CoV-2 in vitro.

Ye, G., et al. (2020). "Clinical characteristics of severe acute respiratory syndrome coronavirus 2 reactivation." J Infect.

OBJECTIVES: Previous studies on the pneumonia outbreak caused by the 2019 novel coronavirus disease (COVID-19) were based on information from the general population. However, limited data was available for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) reactivation. This study aimed to evaluate the clinical characteristics of the SARS-CoV-2 reactivation. METHODS: Clinical records, laboratory results, and chest CT scans were retrospectively reviewed for 55 patients with laboratory-confirmed COVID-19 pneumonia (i.e., with throat swab samples that were positive for SARS-CoV-2) who were admitted to Zhongnan Hospital of Wuhan University, Wuhan, China, from Jan. 8 to Feb. 10, 2020. RESULTS: All 55 patients had a history of epidemiological exposure to COVID-19, and 5 (9%) patients who discharged from hospital presented with SARS-CoV-2 reactivation. Among the 5 reactivated patients, other symptoms were also observed, including fever, cough, sore throat, and fatigue. One of the 5 patients had progressive lymphopenia (from 1.3 to 0.56x10(9) cells per L) and progressive neutrophilia (from 4.5 to 18.28x10(9) cells per L). All 5 reactivated patients presented normal aminotransferase levels. Throat swab samples from the 5 reactivated patients were tested for SARS-CoV-2, indicating all positive for the virus. CONCLUSIONS: Findings from this small group of cases suggested that there was currently evidence for reactivation of SARS-CoV-2 and there might be no specific clinical characteristics to distinguish them.

The above contents are the collected information from Internet and public resources to offer to the people for the convenient reading and information disseminating and sharing.

References

1. Baidu. http://www.baidu.com. 2020.
2. Cancer Biology. http://www.cancerbio.net. 2020.
3. De Salazar, P. M., et al. (2020). "Identifying Locations with Possible Undetected Imported

Severe Acute Respiratory Syndrome Coronavirus 2 Cases by Using Importation Predictions." Emerg Infect Dis 26(7).
4. Frieden, T. R. and C. T. Lee (2020). "Identifying and Interrupting Superspreading Events-Implications for Control of Severe Acute Respiratory Syndrome Coronavirus 2." Emerg Infect Dis 26(6).
5. Fung, S. Y., et al. (2020). "A tug-of-war between severe acute respiratory syndrome coronavirus 2 and host antiviral defence: lessons from other pathogenic viruses." Emerg Microbes Infect 9(1): 558-570.
6. Ghinai, I., et al. (2020). "First known person-to-person transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in the USA." Lancet.
7. Google. http://www.google.com. 2020.
8. Harcourt, J., et al. (2020). "Severe Acute Respiratory Syndrome Coronavirus 2 from Patient with 2019 Novel Coronavirus Disease, United States." Emerg Infect Dis 26(6).
9. Journal of American Science. http://www.jofamericanscience.org. 2020.
10. Kamel Boulos, M. N. and E. M. Geraghty (2020). "Geographical tracking and mapping of coronavirus disease COVID-19/severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic and associated events around the world: how 21st century GIS technologies are supporting the global fight against outbreaks and epidemics." Int J Health Geogr 19(1): 8.
11. Lai, C. C., et al. (2020). "Asymptomatic carrier state, acute respiratory disease, and pneumonia due to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): Facts and myths." J Microbiol Immunol Infect.
12. Lai, C. C., et al. (2020). "Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges." Int J Antimicrob Agents 55(3): 105924.
13. Li, D., et al. (2020). "False-Negative Results of Real-Time Reverse-Transcriptase Polymerase Chain Reaction for Severe Acute Respiratory Syndrome Coronavirus 2: Role of Deep-Learning-Based CT Diagnosis and Insights from Two Cases." Korean J Radiol 21(4): 505-508.
14. Li, T. (2020). "Diagnosis and clinical management of severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) infection: an operational recommendation of Peking Union Medical College Hospital (V2.0)." Emerg Microbes Infect 9(1): 582-585.
15. Li, Y., et al. (2020). "Lack of Vertical Transmission of Severe Acute Respiratory Syndrome Coronavirus 2, China." Emerg Infect Dis 26(6).
16. Life Science Journal. http://www.lifesciencesite.com. 2020.
17. Liu, J., et al. (2020). "Community Transmission of Severe Acute Respiratory Syndrome Coronavirus 2, Shenzhen, China, 2020." Emerg Infect Dis 26(6).
18. Lombardi, A., et al. (2020). "Duration of quarantine in hospitalized patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection: a question needing an answer." J Hosp Infect.
19. Ma H, Chen G. Stem cell. The Journal of American Science 2005;1(2):90-92. doi:10.7537/marsjas010205.14. http://www.jofamericanscience.org/journals/am-sci/0102/14-mahongbao.pdf.
20. Ma H, Cherng S. Eternal Life and Stem Cell. Nature and Science. 2007;5(1):81-96. doi:10.7537/marsnsj050107.10. http://www.sciencepub.net/nature/0501/10-0247-mahongbao-eternal-ns.pdf.
21. Ma H, Cherng S. Nature of Life. Life Science Journal 2005;2(1):7-15. doi:10.7537/marslsj020105.03. http://www.lifesciencesite.com/lsj/life0201/life-0201-03.pdf.
22. Ma H, Yang Y. Turritopsis nutricula. Nature and Science 2010;8(2):15-20. doi:10.7537/marsnsj080210.03. http://www.sciencepub.net/nature/ns0802/03_1279_hongbao_turritopsis_ns0802_15_20.pdf.
23. Ma H. The Nature of Time and Space. Nature and science 2003;1(1):1-11. doi:10.7537/marsnsj010103.01. http://www.sciencepub.net/nature/0101/01-ma.pdf.
24. Marsland Press. http://www.sciencepub.net. 2020.
25. Marsland Press. http://www.sciencepub.org. 2020.
26. National Center for Biotechnology Information, U.S. National Library of Medicine. http://www.ncbi.nlm.nih.gov/pubmed. 2020.
27. Nature and Science. http://www.sciencepub.net/nature. 2020.
28. Olsen, S. J., et al. (2020). "Early Introduction of Severe Acute Respiratory Syndrome Coronavirus 2 into Europe." Emerg Infect Dis 26(7).
29. Ren, S. Y., et al. (2020). "Fear can be more harmful than the severe acute respiratory syndrome coronavirus 2 in controlling the corona virus disease 2019 epidemic." World J Clin Cases 8(4): 652-657.
30. Stem Cell. http://www.sciencepub.net/stem. 2020.

31. unities. We hope that open access to this reagent will expedite development of medical countermeasures.
32. Wang, X., et al. (2020). "Challenges to the system of reserve medical supplies for public health emergencies: reflections on the outbreak of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic in China." Biosci Trends 14(1): 3-8.
33. Wikipedia. The free encyclopedia. http://en.wikipedia.org. 2020.
34. Yao, X., et al. (2020). "In Vitro Antiviral Activity and Projection of Optimized Dosing Design of Hydroxychloroquine for the Treatment of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)." Clin Infect Dis.
35. Ye, G., et al. (2020). "Clinical characteristics of severe acute respiratory syndrome coronavirus 2 reactivation." J Infect.

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