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Review Article

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SARS-COV-2 Control: Evaluating Current Strategies and Future Prospects

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ABSTRACT
For many individuals around the world, the coronavirus, a pandemic, and the fetal illness brought on by SARS-CoV-2 infection are now major worries. The beta Covid that makes up the Sarbecovirus subgenus is called SARS-CoV-2. The World Health Organization declared a pandemic on March 12, 2020, in response to the hundreds of deaths brought on by COVID-19 and the widespread spread of SARS-CoV-2. As of right now, the pandemic has resulted in a substantial loss of life worldwide, a rise in destitution, and a financial loss.

This study aims to investigate the public's issues created by this epidemic and to find answers for this critical medical issue. Furthermore, this deadly illness's history, genesis, clinical characteristics, prognosis, and treatment were examined. Next, a few quick talks cover issues including groundwork, readily available COVID-19 prescriptions, vaccine development, the role of public awareness in stopping the spread of the sickness and containing the pandemic, and the impact of the disease on daily life.

Keywords: COVID-19, SARS-CoV-2, Pandemic, Origin, Etiology, Transmission, Diagnosis, Prevention

Introduction

Since the most current update in January 2022, international measures have been made to stop the novel coronavirus, or COVID-19, from spreading. The start of SARS-CoV-2 Wuhan, in the Hubei province of China, reported five cases of idiopathic pathogenic primary and moderate respiratory system-related disorders on December 29, 2019. The "Wet Market," or seafood market, is linked to the people [1]. The distinct corona virus's mode of transmission, peak severity, and other crucial characteristics are being determined by researchers with increasing success (COVID-19). The coronavirus, commonly known as SARS-CoV-2, or severe acute respiratory syndrome coronavirus 2, is spread by direct contact with the seafood market. It is the main cause of this deadly virus's dissemination and is transferred from person to person through prior contacts [2].

Many of the affected people reportedly had never been to Wuhan or interacted with wildlife before. Furthermore, it has been noted that numerous incidences have been recorded by medical professionals, including doctors, nurses, and paramedics [3].

People between the ages of 18 and 64 accounted for the bulk of instances that were reported, with children under the age of 1 to 8 publishing the fewest cases. A very early study found that the dynamic spread of the corona-virus that causes severe acute respiratory syndrome (SARS) begins at age 59. between the ages of 16 and 89, with men constituting the bulk of those impacted (59%). It has been proposed that diseases that compromise immune systems put most members of the community in jeopardy.

Hepatobiliary dysfunction or renal failure could be the cause. Moreover, it has been noted that those who have cardiac issues or diabetes are particularly vulnerable to the spread of this deadly infection [4].

Reports dated January 31, 2020, state that 12,000 cases were initially detected in the Chinese Republic and that an additional 18,000 cases have since been documented in four major suspicious provinces. Most studies show that the Severe Acute

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Respiratory Syndrome Corona Virus-2 spread swiftly and is now present in different countries across the globe. This is a worrying issue because examples from Wuhan, China, have been reported [5].

Reports arose on January 31, 2020, stating that 213 deaths had taken place worldwide. Most of the real and verifiable spread ratios were documented in a matter of days or a month in 19 countries other than China, such as Cambodia, the Philippines, Canada, Australia, Singapore, Sri Lanka, Thailand, and so on [6].

Causes of Spreadness

The RNA single-strand enveloped microbe known as SARS-CoV-2 is a member of the zoonotic region family. After the coronavirus has had a few days to incubate in our respiratory system, its symptoms resemble the common cold before developing into a more serious respiratory collapse. Additionally, it was stated that the neurological, enteric, and hepatic systems' reactions and symptoms were significant [7]. There are roughly seven common coronavirus strains that are prevalent in people at the same time, aside from SARS-CoV-2, but they are not pandemic in nature.

The world has seen the fastest global spread of the Severe Acute Respiratory Syndrome Corona Virus-2 (MERS-CoV) within the past twenty years. Every pandemic is extremely deadly and largely affects the people [8].

SARS-CoV-2 Detection

Thirty-three samples were found to possess virulent elements of the Severe Acute Respiratory Syndrome Corona Virus-2. It has been reported that the animals that live in the forest habitat and are sold in Wuhan, China's seafood markets are the main source of these factors. Therefore, for additional investigation and analysis in the diagnostic laboratory, researchers collected and used the blood, lung fluid, and fluid from the fifteen patients' throats using swabs. The majority of samples that are gathered are utilized in laboratory testing to determine the most crucial and precise sequences of the Severe Acute Respiratory Syndrome Corona Virus-2 [9]. Ultimately, investigations reveal that the sequence of the Severe Acute Respiratory Syndrome Corona Virus-2 differs greatly from these species, which are widely recognized to humans and have distinct modes of infection. The enhanced testing capabilities now include fast antigen testing to enable prompt case detection. Laboratory diagnostic studies further revealed that the beta () SARS-CoV-2 species, which is associated with SARS/SARS-like SARS-CoV-2, is similar to the pattern seen in bats with severe acute respiratory syndrome [10]. Based on the variations in its sequence homology with SARS-CoV-2, the research studies also revealed that the coronavirus is composed of extremely potent surface (S)-binding proteins that sustain the force within the human body with angiotensin-converting enzyme (ACE) receptor molecules. SARS-CoV-2 sequencing is the most significant in the upcoming generation. It is located further away from the sequence of SARS-CoV. Its most extreme virulence can induce respiratory collapses and mimic the symptoms of pneumonia [11].

Pattern of Transmission

Bats are among the many domesticated and wild animals, including dogs, cats, camels, and cows, that serve as coronavirus reservoir hosts. It has been observed that coronavirus-carrying animals typically do not infect humans [12]. Certain outliers, such as MERS and SARS, are frequently transmitted via very close contact between individuals infected with the diseases by respiratory aerosol from symptoms similar to the flu. The primary means of transmission are coughing and sneezing [13].

According to the reference coronavirus, the majority of cases were linked to the Hunan seafood market in Wuhan, China, at an early stage. It was suggested that this was the primary means of animal-to-human transmission [14].

Three main pathways of coronavirus transmission were described in the updated guidelines provided by Chinese health professionals and health care officials [15]:

- Air Droplets Transmissions
- Direct Contact Transmissions
- Aerosol Transmissions

Air Droplets Transmissions

According to reports, there was an increased risk of contracting corona by ingesting and inhalation by those in close proximity to an infected individual, as well as respiratory drops (as a result of an already ill patient's coughing and sneezing) [16].

Direct Contact Transmissions

Tropical contact with the infected person's skin surface or any material that has previously been contaminated with viruses—most commonly from hands, noses, phlegm, spitting mouth, and flu-like symptoms like coughing and sneezing—may cause it to happen [17].

Transmission through Air Droplets

It is transmitted through aerosol mixed with the contaminated oxygen present in the air. After contamination with air aerosols, formation takes place when a person inhales these contaminated aerosols. They enter the lungs and cause infection inside the pleural cavity of the lungs. Symptoms that appear similar to pneumonia also affect the whole environment of the lungs' associated cavity [18].

Gastrointestinal Tract Transmissions

The study suggests that there may be another way for SARS-CoV-2 infections to spread through the gastrointestinal system. Angiotensin-converting enzyme 2 (ACE2) molecules were found to actively and significantly increase the absorption of entrecotes from the main parts of the small intestine. This was discovered after research scientists further analyzed four to five complete sets of data using RNA single-cell enveloped transcriptomes of the gastrointestinal tract (GIT). This implies that the primary coronavirus reservoir is the whole small intestine [19].

Symptoms and Diagnosis of Severe Acute Respiratory Syndrome Corona Virus-2

Since current research studies only reveal the most prevalent symptoms that are directly related to the influenza virus and in certain circumstances endanger the lives of patients, the full signs and symptoms of COVID-19 are yet unknown. Some people have already experienced immunocompromised disorders in their advanced years [20].

Symptoms Commonly Reported

Severe dyspnea, fever, myalgia, cough, exhaustion, pneumonia, diarrhea, hemoptysis, and less severe but closely associated symptoms include headache, sneezing, abdominal pain, and coughing up phlegm. After the prodromal phase of COVID-19 lasted seven days, some people with minor symptoms recovered. However, the intensity of the symptoms may result in dyspnea and a collapse of the respiratory system. Additionally, it is stated that these patients' lives are at risk of serious lung alveolar damage and that their mortality rates are rising [1-21].

More Critical Cases

The most significant symptoms are listed in case studies reported in the guidelines for more severe and advanced cases as well as middle-aged and elderly patients with diseases (hypertension, coronary heart condition, tumor surgery, Parkinson's disease, liver cirrhosis, diabetes, cardiac diseases, etc.). When the severity of respiratory symptoms due to lung consolidation is evident on radiography, high grade fever is also reported when symptoms do not improve after three days of antibiotic therapy. A complete blood count reveals extremely low levels of white blood cells and lymphocytes, as well as extreme nasal congestion, a sore throat, a vigorous cough, and dyspnea [22].

Preventions and Control

Antiviral medications and monoclonal antibodies are examples of therapeutic interventions that have been discovered and are being utilized to lessen the severity of COVID-19 instances, particularly in patients who are high-risk. Three formats are available for publication of the majority of control and preventative methods and measures: 1. Spread the national form; 2. Cases pertaining to the population; and 3. The population as a whole, By publishing the "No. 1 announcement" on January 20, 2020, the National Health Control and Command of China officially included the coronavirus into the standard care of sophisticated infectious diseases, allowing for sophistication in communicable disease prevention and the implementation of necessary actions [23].

By following these rules, medical authorities and institutions can limit and halt the coronavirus's further spread by implementing treatment isolation, learning about the procedures, and taking preventive actions. On January 22, 2020, the National Health Commission (NHH) issued a directive for medical facilities to cease air droplet transmission of SARS-CoV-2 in order to minimize infection and implement preventive measures [24].

In order to significantly stop the spread of the epidemic, NCH, the direct control and command, released guidelines for quick acting care and control measures. These included "avoidance of any type of direct contact with an infected person and use the methods of hygiene and proper isolation required for patients" during the Chinese new year's festivals. In addition, targeted precautions for China's city regions have been reported at the national level by the public sector (published on January 28, 2020). These recommendations also include preventive measures to stop the spread of the Severe Acute Respiratory Syndrome Corona Virus-2 among China's elderly population [25,26].

Health authorities with national control and command mainly directed precautions that will limit or stop the spread of coronaviruses; these include isolating cases, caring for numerous contacts, such as medical professionals, identifying and disinfecting the environment, and donning personal or public protective gear to prevent the virus from spreading [27].

As of right now, there isn't a best COVID-19 therapy that has been shown to be helpful in treating Corona Virus-2 infection-induced severe acute respiratory syndrome. In order to prevent future spread and maintain control, it is crucial to provide appropriate supportive care and treatment of choice to Corona Virus Disease 2019 patients who have already experienced SARS-CoV-2. More than six clinical trials have been registered in the clinical testing registered directory at both the Chinese and international levels. This has been done to ensure that the medicine is effective and safe for the intended treatment and to lessen the likelihood that Corona Virus Disease 2019 will be diagnosed later [28]. It has been recommended that patients with Severe Acute Respiratory Syndrome Corona Virus-2 receive effective treatment and appropriate supportive care. The COVID-19-related aerosol infection and mental health precautions have also been described by researchers. To reduce nosocomial infections, a number of recommendations are made. These include minimizing the degree of infection in various areas, minimizing the exposure of positive cases, and providing effective knowledge and training regarding the prevention and treatment of infections [29].

Generally broad directives for the entire nation. As of right now, there are no vaccines to treat the corona virus. The control of COVID-19 has been greatly aided by vaccination campaigns. Globally, a large number of vaccines have been created and implemented, greatly lowering the frequency of severe disease, hospital admissions, and fatalities among vaccinated populations. In order to address new variations and enhance immunity, booster doses have also been added. Steer clear of viruses as a fairly easy preventive and therapeutic measure. Publications and recommendations for prevention include further precautions and airborne preventive actions. Guidelines for infection prevention and control (IPC) will highlight the risky circumstance of direct viral exposure. Use hand sanitizers, wear appropriate face masks, and stay at home to protect your health [30].

Though they vary depending on local rates of transmission and vaccination coverage, mask wearing, hand washing, and physical separation are still regarded as crucial preventive measures. When you cough and sneeze, cover your entire face with tissues and face masks. They are safely and appropriately disposed away after use. (If face masks and tissues are not available, cover up your coughing or sneezing with your elbow; properly and prioritized, wash your hands with antiseptic and use hand sanitizer that has at least a small amount of alcohol or spirit (if soap and water are not practical); or properly wash your hands with soap and water [31].

Take preventive measures to expose COVID-19 patients and keep a proper distance from the exposure of the virus at the maximum amount available; and avoid contact with the mouth, eyes, hands, and nose.

The WHO has released comprehensive guidelines on how to prevent direct contact with infected patients and how to distribute and use surgical masks in the community. Receiving care is crucial, and it should be done in accordance with COVID-19 preventive guidelines. During this recording, medical professionals are advised to use medical face masks when treating confirmed or suspected cases of SARS-CoV-2, as well as appropriate respirators or surgical masks, such as those genuine Filtering Facepiece Respirator Grade 2 (FFP2) or N95 [32].

People with respiratory abnormalities are directly advised to use proper surgical masks, which are bilaterally used by medical professionals and residential care professionals, to set the proper criteria for avoiding any type of exposure to viruses.

For any type of avoidance of direct contact with viruses, follow the proper instructions made by authorities and health care professionals on the proper usage of face masks, hand sanitizers, and soaps. Safe methods are used to dispose of the already used face masks and tissues to avoid any harmful transmissions to other people in the community [33].

Along with research findings that have been published in numerous international research journals, the Chinese CDC publication has provided helpful recommendations for raising public awareness, preventing the spread of the Severe Acute Respiratory Syndrome Corona Virus-2 disease, and properly managing the illness. Take important preventive precautions in various areas (e.g., at home, in public spaces, on public transportation, disinfectant methodologies are implemented in medical observation and receptions in hospitals and other health care centers). The important messages of the rules include the main causes, the reported suggestions to choose and wear proper medical face masks, and daily or properly adopted hand washing routines [34]. By adding the knowledge domains on progress in handling the pandemic outbreak, by adopting the proper rules and regulations, are the important ways to reduce panic situations among the total population.

Conclusion

The COVID-19 pandemic has significantly strained our medical care systems, particularly the vital role that laboratory medicine plays in halting the spread of new infectious diseases. Worldwide coronavirus research facilities have been established to address the unique needs of patients and residents, and they will remain fundamental when social and professional activities resume. The COVID-19 pandemic exposed the flaws in our health care systems, which were ill-prepared to handle a large number of patients who needed breathing assistance quickly. Make progress in wellness-related initiatives to overcome the present shortcomings and to set up a better framework for local medical services.

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