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A REVIEW ON COVID-19

Ms. Layana Roy, Ms. Fphamin.P.Philipose, Dr Abel Abraham Thomas*

Department of Pharmacy Practice. Nazareth college of Pharmacy, Kerala, India.

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ABSTRACT

Coronaviruses (CoV) are a large family of viruses that can lead to diseases ranging from the common cold to more severe illness such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV).[3] Novel coronavirus (nCoV) is a found to be a new strain of virus which is not previously isolated in humans. These diseases presume to zoonotic, meaning they are transmitted between animals and people.[1]. Studies states, civet cats, which is easily seen in tropical as well as temperate regions could be the vector for SARS-CoV which would have eventually lead to the transmission to humans and MERS-CoV would have transmitted from dromedary camels to humans. Majority of the people who are infected with Covid-19 shows many clinical manifestations which include respiratory symptoms, fever, and cough, shortness of breath and breathing difficulties. [5] Pneumonia, severe acute respiratory syndrome, kidney failure can be seen in patients who are severely ill and even can lead to death of an individual. As the virus undergoes constant mutation, it is practically impossible to find an optimum treatment regimen in a short span of time. [7] Therefore optimal measures are adopted by WHO to reduce person-to-person transmission of COVID-19, to control the current outbreak. Active precaution and efforts must be taken to protect or reduce transmission in susceptible populations which includes children, health care providers, and elderly people. This review, intents to have a general outlook about the present pandemic disease by gathering information on genetic composition of SARS CoV, signs and symptoms, transmission, pathogenesis and treatment modalities.[10].

Corresponding author

Dr Abel Abraham Thomas

Assistant Professor

Department of Pharmacy Practice.

Nazareth College of Pharmacy, Othera P.O Thiruvalla

Ph no- 8086807812

abelthomas119@gmail.com

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INTRODUCTION

The expressing of the current pandemic goes back to late December 2019, when an instance of unidentified pneumonia was accounted for in Wuhan, Hubei Province, People's Republic of China. Its clinical qualities are somewhat similar to those of pneumonia. After investigation on respiratory examples, China's Centre for Disease Control (CDC) specialists proclaimed that the pneumonia to be novel coronavirus pneumonia, which was brought about by novel coronavirus [1].

Infections are normally named dependent on their hereditary structure in order to make it simple for the advancement of indicative tests, immunizations and medications. The infections are typically named by the International Committee on Taxonomy of Viruses (ICTV), which makes out of Virologists and other more extensive academic network [10].

Sicknesses are named to permit examination on avoidance, spread, transmissibility, seriousness and treatment of a specific illness.[4] The sole obligation of WHO is to empower Human infection readiness and reaction, so the official announcement of a malady name is finished by WHO in the International Classification of Diseases (ICD)[1].

ICTV declared "extreme intense respiratory condition coronavirus 2 (SARS-CoV-2)" as the name of the new infection on 11 February 2020, as the infection is hereditarily identified with the coronavirus which was answerable for SARS episode of 2003. In spite of the fact that they are connected, yet the two infections were extraordinary [4]. The name "COVID-19" was reported by WHO on 11 February 2020, based on recently created rules alongside the World Organization for Animal Health (OIE) and The United Nations' Food and Agriculture Organization (FAO) [1].

Investigating the hereditary constitution, Coronaviruses have an envelope structure and are non-divided positive-sense RNA infections having a place with the family Coronaviridae and request Nidovirales which are generally found in people and different well evolved creatures. Lion's share of human coronavirus diseases will in general be mellow, the scourges of the beta coronaviruses, serious intense respiratory disorder coronavirus (SARS-CoV) and geographic territory respiratory condition coronavirus (MERS-CoV) have caused a serious huge number of cases which roughly comes to around 10,000 total cases inside 20 years of episode[4]. About 10% of death rates were recorded for SARS-CoV and about 37% for MERS-CoV. The coronaviruses directly separated can't be viewed as minor, as possibly progressively novel and extreme zoonotic occasions uncovered the section of days as more up to date cases are accounted for everywhere throughout the world inside a range of days which makes the current circumstance to be stunning. Assignment of a legitimate name for the novel coronavirus and furthermore the infection it caused is helpful for interchanges in clinical and research. The infection having a place with β – coronavirus, an outsized class of infections common in nature [10]. Sort of like different infections, SARS-CoV-2 has numerous expected regular hosts, middle hosts and last. This postures results in incredible difficulties to avoidance and treatment of disease. Contrasted and SARS and MERS, this infection has high transmissibility and infectivity, regardless of low rate. Examination of the genome of novel coronavirus arrangements asserted that the total genome succession acknowledgment paces of SARS-CoV and bat SARS coronavirus (SARSr-CoV-RaTG13) were 79.5% and 96% separately. Consequently, from the reports it very well may be accepted that the present coronavirus malady may have started from bat, making this infection a zoonotic inception [10]. . It represented a decent danger to worldwide general wellbeing. This report audits the hereditary structure, contamination source, transmission course, pathogenesis, clinical qualities, and treatment and counteraction of the SARS-CoV-2, all together that it can give references to catch up exploration, anticipation and treatment, and will assist perusers with possessing the latest comprehension of this new transferable malady. Dominant part of the patients had a past filled with direct introduction to the Huanan fish showcase. All patients had bunches of deadly pneumonia with clinical introduction extraordinarily taking after SARS-CoV. Patients tainted with 2019-nCoV, is bound to influence more established men with co morbidities, and will end in extreme and even deadly respiratory illnesses like intense respiratory misery disorder who have a high probability of admission to clinical guide, and may bite the dust. The cytokine tempest can be identified with illness seriousness. The convergences of cytokines were recorded to be high in plasma of seriously unwell patients tainted with 2019-nCoV [6].

In the present days of pandemic there exist an urgent need for research to understand the potential impacts of COVID-19 in certain human species, the transmissibility of infection between humans , and the impact infection could have on organs,mortality rate,prognosis and identification of the best therapy for COVID-19.

Genetic structure and pathogenic mechanism of SARS-CoV-2

Coronaviruses have a place with the family Coronaviridae in the request Nidovirales and are single strand RNA infection with a width of 80-120nm. It is separated into four kinds: α -coronavirus (α -COV), β -coronavirus (β -COV), δ -coronavirus (δ -COV) and γ - coronavirus (γ -COV) .Among them, alpha-and betacoronaviruses taint vertebrates, gammacoronaviruses contaminate avian species, and deltacoronaviruses contaminate both mammalian and avian species [10].

By social event data from past studies, it is apparent that 6 coronaviruses can cause disease in people, SARS-CoV-2 is that the seventh individual from the coronavirus family that contaminates humanity after SARS-CoV and MERS-CoV. SARS-CoV-2, similar to SARS-CoV and MERS-CoV, has a place with β -coronavirus. The requesting arrangement comparability of SARS-CoV-2 and SARS is roughly 79%; the 2019-nCoV is like the SARS-like bat CoVs than the SARS-CoV that is dropped from SARS-like bat CoVs [10]. Clearly, for raised likeness of receptor-binding area (RBD) in Spike-protein, numerous investigations shows that SARS-CoV-2 uses angiotensin-changing over compound 2 (ACE2) as receptor, which resembles SARS-CoV. Coronavirus can recognize the relating receptor on the objective cell through the S protein on its surface and goes into the cell, at that point dispensing the pervasiveness of disease. A structure model investigation shows that SARS-CoV-2 ties ACE2 with on head of 10 folds higher liking than SARS-CoV, anyway on head of the edge required for disease [6].

Coronaviruses are essentially huge, wrapped, positive-abandoned RNA infections that have the greatest requesting as far as hereditary perspective among all RNA infections, for the most part beginning from 27 to 32 kb [10]. The requesting inside a turbinate capsid formed structure made by a nucleocapsid protein (N) and progressively encompassed by an envelope. Related with the envelope of the current infection, there are right around 3 auxiliary proteins: The film macromolecule protein (M) and the envelope protein (E) which includes in infection gathering, though the spike macromolecule protein (S) intercedes infection passage into have cells. Some coronaviruses can likewise code for an envelope based hemagglutinin-esterase protein (HE). Among these auxiliary proteins, the spike structures monster projections from the infection surface, subsequently giving the coronaviruses a shape taking after a crowns (crown in Latin implies that crown). Additionally in clearing approach to infection section, the spike could be an essential determinant of the scope of infection towards its host and particular tropism towards tissue and a prominent inducer of host insusceptible reactions [10]. The coronavirus spike contains three sections: a larger than usual ectodomain, a stay comprised of single-pass transmembrane and a little intracellular tail. The ectodomain is shaped by a receptor-restricting subunit S1 and a layer combination subunit S2. The examinations done by electron microscopy shows that the spike could be a clove-formed polymer with 3 S1 heads and a trimetric S2 tail [15]. At the hour of infection section, S1 sticks to a receptor on the host cell surface for connection of viral molecule, and S2 wires the host just as viral films, in this manner permitting the viral genomes' simple passage to have cells. Receptor authoritative and layer combination can be considered to be the most imperative strides within the coronavirus disease cycle; they additionally work starting focuses for human developments. Coronaviruses makes genuine wellbeing dangers to the two people just as creatures [15]. During the time span from 2002 to 2003, Severe intense respiratory disorder coronavirus (SARS-CoV) roughly tainted around 8,000 individuals causing demise pace of around 10% (1–4) and Middle East respiratory condition coronavirus (MERS-CoV) which happened during 2012 time, infected in excess of 1,700 individuals, with a death pace of roughly 36% .

The intricate component with respect to whether the SARS-CoV-2 would taint people by the connection of S-protein to ACE2, how ground-breaking the cooperation is for danger of human transmission, and by what way SARS-CoV-2 displays obsessive systems of making hurt organs stays unanswered thus it requires a plenty of clinical investigations to deliver results[10] . These outcomes further more clarifies the quick transmission capacity of the SARS-CoV-2 in people which is better than SARS-CoV, and addresses the expansion commonness of affirmed COVID-19 which is progressively higher than individuals with SARS-CoV contamination. The higher partiality of SARS-CoV-2 to tie to ACE2 and solubility of ACE2 could be a significant device in the administration of COVID-19[15].

Prevalence of SARS-CoV-2

All data acquired with respect to SARS-CoV-2 records to the numbers: cases, incubation periods, attack rates, passing rates, fundamental reproduction number. All individuals who are associated with the administration of ailment, for example, the social insurance professionals, requires better information about what the numbers truly mean, it is important to see how these numbers fit in with different irresistible maladies that are typically observed and its significance, how they can be misestimate—on the grounds that the impulses in these assessments can have the effect between an insignificant blip on a few people's radar alarm and all out overall frenzy[9].

Fundamental Reproduction Number (R0) can be disclosed as to be the normal measure of optional contamination that patients may groups in a totally helpless populace without intercession [6]. (fig:1)

There are two significant contributors of R0: the quantity of connections tainted individuals have during the period they are irresistible and the assault rate (the rate chance a given contact will secure the illness).

Scientifically, if the R0 is < 1, a sickness flare-up should diminish in degree after some time, and if its > 1, cases should keep on climbing. For instance, Seasonal influenza has a R0 of around 1.5. The Spanish flu of 1918-1919 had a R0 as high as 2. Chickenpox, which can be considered genuinely irresistible, has a R0 of 5[6].

Basic Reproduction Number (R0) = Attack Rate x Contacts

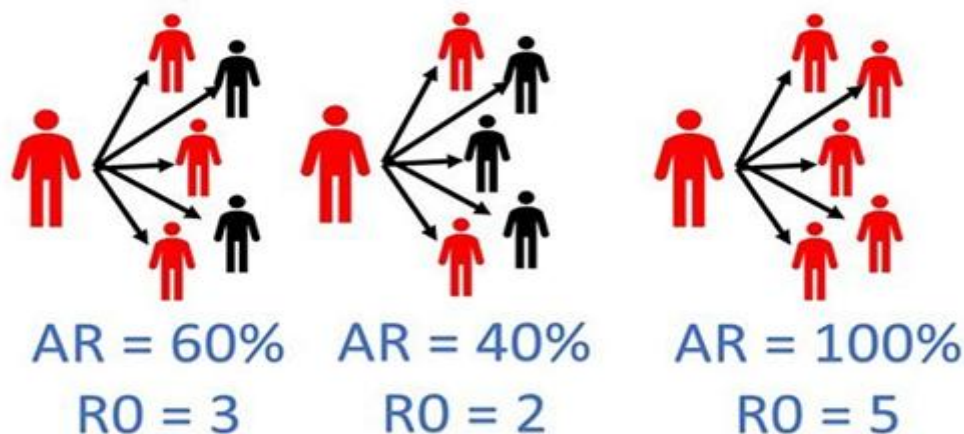


Fig. 1: Basic Reproduction Number.

The R_0 isn't actually the proportion of seriousness of another disease. By entering the case casualty rate, and the level of tainted people who kick the bucket from the illness, this procedure can direct approaches to foreseen the seriousness of another infection and can likewise enables the wellbeing to mind experts to examine both the essential generation number and the case casualty rate [4].

Fundamental Reproduction Number (R_0) can likewise be utilized to evaluate the pervasiveness of ailment in various population just as various age gatherings, Many analysts utilize numerous models to clarify the Basic Reproduction Number (R_0). Most contemplates done at various territories of China and different nations influenced with Covid - 19 found that older male residents are progressively powerless against the coronavirus when contrasted and different gatherings, and the infection is bound to influence old male residents with incessant comorbidities such as diabetes, hypertension, coronary illness, and so on.[4] In this way it very well may be assumed that COVID-19 is increasingly common in older population is one must understand that COVID-19 spread from a solitary Wuhan city to the whole nation just occurred in 30 days thus that brief measures ought to be embraced to control the spread of the malady.

Transmission of SARS-CoV-2

Past epidemiological examinations have demonstrated that there are three conditions for wide spread of infection i.e. the source of infection, route of transmission, and susceptibility there is no special case for SARS-CoV-2[6].

From the point of view of irresistible sources

Bats are viewed as the regular hosts of SARS-CoV-2, while pangolins and snakes are believed to be intermediate host. Investigations of Institute Pasteur of Shanghai indicated that bats may be the regular hosts of SARS-CoV-2. Besides, investigations of Peking University recommend that SARS-CoV-2 contamination is most likely brought about by snakes. Be that as it may, later examinations found that no proof demonstrated that snakes are the hosts of SARS-CoV-2. Study from Wuhan organization of virology demonstrated that the comparability of quality succession between SARS-CoV-2 and bat coronavirus is as high as 96.2% by sequencing innovation. These additionally inferred bats are the conceivable wellspring of SARS-CoV-2[6]. Aside from those, Xu. et al. demonstrated that the likeness of SARS-CoV-2 secluded from pangolin and the infection strains as of now tainting people is as high as 99% utilizing macrogenomic sequencing, atomic organic recognition and electron tiny examination. The group likewise watched the run of the mill novel coronavirus granules and uncovered that pangolin is the expected halfway host of the SARS-CoV-2[2]. Despite the fact that the consequences of ebb and flow research have not yet completely explained the likely characteristic host and the middle of the road host of the SARS-CoV-2, satisfactory proof has demonstrated that this infection may be sourced from wild creatures. At present, it is viewed as that the principle irresistible wellspring of sars-cov-2 is COVID-19 patients in the populace. Be that as it may, there is as yet a discussion about whether SARS-CoV-2 patients in the brooding time frame are irresistible, which needs further examination [7].

From the point of view of course of transmission

Transmission and close contact are the most well-known methods of transmission for SARS-CoV-2. Airborne transmission may likewise be a method of transmission. Furthermore, analysts likewise identified SARS-CoV-2 in the examples of stool, gastrointestinal tract, spit and pee. In light of bioinformatics proof showed that stomach related tract may be a likely course of SARS-CoV-2 contamination. Reliably, SARS-CoV-2 RNA was additionally detected in gastrointestinal tissues from COVID-19 patients [8]. In addition, SARS-CoV-2 was recognized in the tears and conjunctival discharges of covid-19 patients. Then, a review study based nine pregnant ladies with COVID-19 had just because shown that the chance of intrauterine vertical transmission among moms and babies in the late pregnancy was briefly avoided [9]. Be that as it may, accessible information on pregnant ladies contaminated with SARS-CoV-2 were deficient, and thus further investigations are required to check the likely vertical transmission of SARS-CoV-2 in pregnant ladies.

From the viewpoint of viral latency.

From the epidemiological examination report, old residents are defenceless gatherings for SARS-CoV-2, the middle time of death was 75 years, and the majority of them had co morbidities or a background marked by medical procedure before affirmation [11]. The principal manifestation to death was 14 days. For SARS, the middle inactivity of SARS is 4 days, the normal span of first side effects to medical clinic affirmation was 3.8 days, and admission to death was 17.4 days for losses, and the middle idleness of MERS is 7 days. From the middle brooding time frame, COVID-19 is shorter than SARS and MERS. Be that as it may, the greatest inactivity of SARS-CoV-2 right now watched is as high as 24 days, which may expand the danger of infection transmission [9]. Additionally, it likewise found that individuals 70 years or more established had shorter middle days (11.5 days) from the primary side effect to death than those with ages under 70 years (20 days), exhibiting that old individuals have quicker sickness movement than more youthful individuals. From the above mentioned, general society should give more consideration to older individuals who may be increasingly powerless against the SARS-CoV-2.

Clinical attributes of SARS-CoV-2 disease

COVID-19 creates an intense viral disease in people with middle incubation period was 3.0 days, which is like the SRAS with a incubation period running from 2–10 days. The introducing highlights of COVID-19 contamination in grown-ups are articulated. The introducing highlights in grown-ups are articulated [7]. The most widely recognized clinical indications of SARS-CoV-2 disease were fever (87.9%), cough (67.7%), fatigue (38.1%), while looseness of the bowels (3.7%) and retching (5.0%) were uncommon, which were like others coronavirus. Most patients had some level of dyspnoea at introduction, in light of the fact that the time from beginning of indications to the improvement of intense respiratory trouble disorder (ARDS) was just 9 days among the underlying patients with COVID-19 contamination [4]. Additionally, extreme patients are inclined to an assortment of confusions, including intense respiratory misery condition, intense heart injury and optional disease. There are as of now a few confirmations that COVID-19 can make harm tissues and organs other than the lung. In an investigation of 214 COVID-19 patients, 78 (36.4%) patients had neurological indications. Also, there is as of now proof of visual surface disease in patients with COVID-19, and SARS-CoV-2 RNA was distinguished in eye emissions of patient. Some COVID-19 patients have arrhythmia, intense heart injury, hindered renal capacity, and strange liver capacity (50.7%) at confirmation. A case report of the obsessive appearances of a patient with pneumonia indicated moderate microvesicular steatosis in his liver tissue. In addition, tissue tests of stomach, duodenum, and rectal mucosa were affirmed positive for SARS-CoV-2 RNA [7].

All general, the radiographical highlights of coronavirus are like those found in network gained pneumonia brought about by different life forms. Chest CT examination is significant instrument to analyze this pneumonia. By and by, a few normal imaging highlights are often seen in COVID-19 pneumonia, including the transcendent ground glass darkness (65%), unions (half), smooth or unpredictable interlobular septal thickening (35%), air bronchogram (47%), and thickening of the contiguous pleura (32%), with dominantly fringe and lower flap association. An ongoing report detailed that most patients (90%) had two-sided chest CT discoveries and the affectability of chest CT to recommend COVID-19 was 97%. Joining chest CT imaging highlights with clinical indication and lab test could encourage early analysis of COVID-19 pneumonia [7].

Research facility assessment uncovered that 82.1% of patients was lymphopenia and 36.2% of patients was thrombocytopenia. Most patients had typical leukocytes, yet leucopenia was seen in 33.7% of patients. Furthermore, most patients showed raised degrees of C-responsive protein (CRP), lactate dehydrogenase (LDH) and creatinine kinase (CK); however minority of patients had raised transaminase, strange myocardial catalyst range, or raised serum creatinine. As contrasted and bacterial pneumonia, patients with SARS-CoV-2 demonstrated lower oxygenation list. Cytokine discharge disorder is an imperative factor that bothers illness movement. A more significant levels of IL-6 and IL-10, and lower levels of CD4+T and CD8+T are seen in COVID-19 patients corresponding with the seriousness of the ailment [2].

Diagnosis

COVID-19 ought to be viewed as a possibility in patients with respiratory tract side effects and recently beginning fever or in patients with serious lower respiratory tract manifestations with no reasonable reason [8].

Doubt is expanded if such patients have been in a zone with network transmission of SARS-CoV-2 or have been in close contact with a person with affirmed or suspected COVID-19 in the first 14 days. Microbiologic testing is required for conclusive finding. At present, such testing is of constrained accessibility. As per the IDSA, the accompanying patients ought to be viewed as most noteworthy need for testing. Patients who are fundamentally sick or who have unexplained viral pneumonia or respiratory distress.

- Individuals with fever or signs/side effects of lower respiratory tract disease who have had close contact with a person with research facility affirmed COVID-19 inside 14 long periods of indication beginning
- Individuals with fever or signs/side effects of lower respiratory tract disease who have gone inside 14 days of side effect beginning to zones where supported network transmission has been accounted for
- Persons with fever or signs/side effects of lower respiratory tract disease who are immunosuppressed, are more established, or have basic interminable medical problems

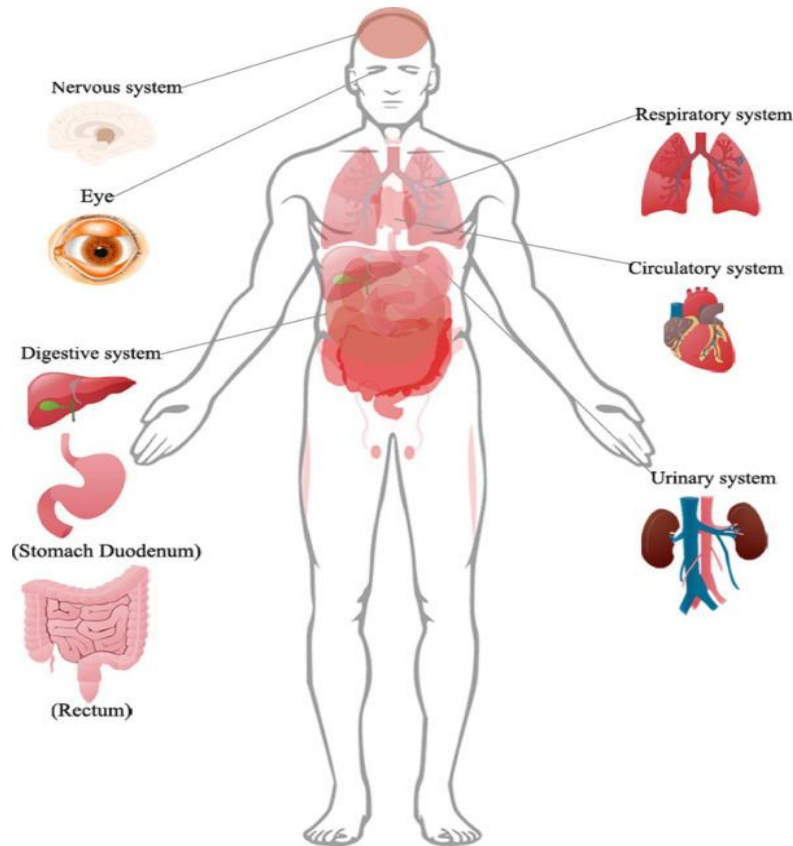


Fig. 2: - Common organs affected with coronavirus.

- Persons with fever or signs/side effects of lower respiratory tract disease that are basic for the pandemic reaction, including human services labourers, general wellbeing authorities, and other basic pioneers Research centre Studies.

Laboratory studies

The CDC has built up an indicative test for location of the infection and got exceptional Crisis Use Authorization (EUA) from the FDA on February 4, 2020, for its utilization. The test is a constant opposite interpretation polymerase chain response (rRT-PCR) measure that can be utilized to analyze the infection in respiratory and serum tests from clinical examples.

The FDA has given EUAs for a few different tests, as follows:

- New York SARS-CoV-2 Real-time Reverse Transcriptase (RT) - PCR Diagnostic Board (Wadsworth Centre, NYSDOH)
- Cobas SARS-CoV-2 (Roche Molecular Systems, Inc.)
- TaqPath COVID-19 Combo Kit (Thermo Fisher Scientific, Inc.)
- Panther Fusion SARS-CoV-2 (Hologic, Inc.)
- COVID-19 RT-PCR Test (Laboratory Corporation of America)
- Lyra SARS-CoV-2 Assay (Quidel Corporation) [8]

Phylogenetic investigation.

World Health Organization (WHO) has classified COVID-19 as a β CoV of gathering 2B .COVID-19 speaks to the seventh individual from the coronavirus family that contaminates people and has been classified under the orthocoronavirinae subfamily. The COVID-19 structures a clade inside the subgenus sarbecovirus [14] . In view of the hereditary succession character and the phylogenetic reports, COVID-19 is adequately not quite the same as SARS-CoV and it would thus be able to be considered as another betacoronavirus that contaminates people. The COVID-19 in all likelihood created from bat source coronaviruses. Another bit of proof that bolsters the COVID-19 is of bat starting point is the presence of a serious extent of homology of the ACE2 receptor from an assorted variety of creature species, in this way ensnaring these creature species as conceivable middle of the road hosts or creature models for COVID-19 diseases . Besides, these infections have a solitary flawless open perusing outline on quality 8, which is a further marker of bat-root CoVs. Be that as it may, the amino corrosive grouping of the conditional receptor-restricting space takes after that of SARS-CoV, demonstrating that these infections might utilize a similar receptor [2].

Sample collection

Tests are gathered from pharyngeal swabs were gathered 1-3 days after confirmation. Other sorts of tests were additionally gathered all through sickness—sputum, blood, pee, excrement, nasal swabs, and bronchial brush or bronchoalveolar lavage (BAL) liquid.

CT Scanning

Chest CT examining in patients with COVID-19-related pneumonia generally shows ground-glass opacification, potentially with union[8]. A few examinations have revealed that anomalies on chest CT filters are typically respective, include the lower projections, and have a fringe appropriation. Pleural radiation, pleural thickening, and lymphadenopathy have likewise been detailed, in spite of the fact that with less recurrence.

Bai et al revealed the accompanying regular chest CT filtering highlights among 201 patients with CT variations from the norm and positive RT-PCR results for COVID-19:

- Peripheral circulation (80%)
- Ground-glass darkness (91%)
- Fine reticular darkness (56%)
- vascular thickening (59%)

Less-normal highlights on chest CT examining incorporated the accompanying:

- Central and fringe conveyance (14%)
- Pleural emission (4.1%)
- Lymphadenopathy (2.7)

Movement of CT variations from the norm Mingzhi et al suggest high-goal CT examining and detailed the accompanying CT changes after some time in patients with COVID-19 among 3 Chinese medical clinics.

- early stage: Multiple little inconsistent shadows and interstitial changes start to rise in a dispersion starting close to the pleura or bronchi as opposed to the pneumonic parenchyma.

- Progressive stage: The sores broaden and increment, advancing to numerous

Ground-glass opacities and penetrating solidification in the two lungs.

- Severe stage: Massive pneumonic solidifications happen, while pleural radiation is uncommon.

- Dissipative stage: Ground-glass opacities and pneumonic solidifications are assimilated totally. The injuries start advancing into fibrosis [2].

Chest Radiography

In a review investigation of patients in Hong Kong with COVID-19, regular variations from the norm on chest radiography, when present, included solidification (30 of 64 patients; 47%) and ground-glass opacities (33%). Solidification was generally two-sided and of lower zone circulation. Pleural emission was a phenomenal finding. Seriousness on chest radiography topped 10-12 days following framework beginning [7].

Prevention of SARS-CoV-2

So far, there are no specific antiviral treatments or vaccines for SARS-CoV-2. And the clinical treatment of COVID-19 has been limited to support and palliative care until now. Therefore, it is urgent to develop a safe and stable COVID-19 vaccine. Dr. Tedros, director-general of WHO, said that novel coronavirus vaccine was expected to be ready in 18 months. In addition, SARS-CoV-2 is an RNA virus[11]. RNA virus related vaccines, including measles, polio, encephalitis B virus and influenza virus, could be the most promising alternatives. And interpersonal transmission of the virus could be prevented by immunizing health care workers and non-infected population.

Prevention of infectious diseases by traditional Chinese medicine has been recorded for a long time in Chinese history, and there have been previous studies on the prevention of SARS by traditional Chinese medicine. The present principles on prevention of COVID-19 are to tonify body energy to protect outside body, dispel wind, dissipate heat, and dissipate dampness with aromatic agent. The six most commonly used Chinese herbal medicines are astragalus, liquorice, fangfeng, baizhu and honeysuckle [7]. However, the decoction is not suitable for long-term use, and the best period is one week only. Studies have shown that vitamin C may prevent the susceptibility of lower respiratory tract infection under certain conditions, while COVID-19 may cause lower respiratory tract infection. Therefore, a moderate amount of vitamin C supplementation may be a way to prevent COVID-19[11]. In addition, the decrease in vitamin D and vitamin E levels in cattle could lead to the infection of bovine coronavirus. This suggests that proper supplementation of vitamin D and vitamin E may enhance our resistance to SARS-CoV-2[7]. Patients with primary basic diseases, especially those with chronic diseases such as hypertension, diabetes, coronary heart disease and tumour, are more susceptible to SARS-CoV-2 and their risk of poor prognosis will increase significantly after infection, because they have low systemic immunity as a result of the disease itself and treatments. Therefore, it is particularly important to enhance self-resistance [8]. The main way to boost personal immunity is to maintain personal hygiene, a healthy lifestyle and adequate nutritional intake. For individuals, taking protective measures can effectively prevent SARS-CoV-2 infection, including improving personal hygiene, wearing medical masks, adequate rest and good ventilation.

Future directions to control the spread of the disease

Extensive measures to reduce person-to-person transmission of COVID-19 are required to control the current outbreak. Special attention and efforts to protect or reduce transmission should be applied in susceptible populations including children, health care providers, and elderly people [8]. A guideline was published for the medical staff, healthcare providers, and, public health individuals and researchers who are interested in the 2019-nCoV. The early death cases of COVID-19 outbreak occurred primarily in elderly people, possibly due to a weak immune system that permits faster progression of viral infection. The public services and facilities should provide contaminating reagents for cleaning hands on a routine basis. Physical contact with wet and contaminated objects should be considered in dealing with the virus, especially agents such as faecal and urine samples that can potentially serve as an alternative route of transmission.

China and other countries including the US have implemented major prevention and control measures including travel screenings to control further spread of the virus. Epidemiological changes in COVID-19 infection should be monitored taking into account potential routes of transmission and subclinical infections, in addition to the adaptation, evolution, and virus spread among humans and possible intermediate animals and reservoirs [2]. There remain a considerable number of questions that need to be addressed. These include, but are not limited to, details about who and how many have been tested, what proportion of these turned positive and whether this rate remains constant or variable. Very few paediatric cases have so far been reported is this due to lack of testing or a true lack of infection/susceptibility. Of the ones that have so far been tested, how many have developed severe disease and how many were tested positive but showed no clinical sign of disease. There are some basic questions that would provide a framework for which more specific and detailed public health measures can be implemented [7].

General treatment

A confirmed patient of COVID 19 needs total bed rest and strong treatment, guaranteeing sufficient calorie also, water admission to decrease the danger of lack of hydration. Water electrolyte equalization and homeostasis need to keep up alongside the of checking essential signs and oxygen immersion; keeping respiratory tract unhampered and breathing in oxygen in increasingly extreme cases; estimating blood check, C Reactive Protein, pee test, and other blood biochemical files including liver and kidney work, myocardial chemical range, and coagulation work as indicated by patient's conditions. Chest imaging ought to be persistently rethought and blood gas examination ought to be performed at the point when required [9].

Indicative Treatment

Control measures are required for patients with a high fever. Antipyretic medication treatment ought to be acted on the off chance that the temperature surpasses 38.5 °C. Warm water shower and antipyretic patches are favoured as a preventive measure to bring down the temperature. Basic medications incorporate ibuprofen orally, 5–10 mg/kg unflinching; acetaminophen orally, 10– 15 mg/kg unflinching. Need to manage narcotic emerges in case the youngster experiences spasms or seizure [8].

Oxygen Therapy

The odds of hypoxia are expanded as the infection targets the lungs. Nasal catheter, veil oxygen ought to be promptly given to the patient. In crisis conditions, Non-intrusive or obtrusive mechanical ventilation ought to be given to the patient.

Antiviral Drugs

Gathering of antiviral medications including interferon α (IFN- α), lopinavir/ ritonavir, chloroquine phosphate, ribavirin, and arbidol are restoratively valuable for the Prevention, Diagnosis, and Treatment of Novel Coronavirus-initiated Pneumonia by the National Health Commission (NHC) of the People's Republic of China for conditional treatment of COVID-19 [8]. IFN- α is directed as fume inward breath at a portion of 5 million U (and 2 mL of sterile water for infusion) for grown-ups, multiple times/day. The measurement of lopinavir/ritonavir is 400 mg/100 mg for grown-ups, multiple times/day. Ribavirin ought to be directed by means of intravenous implantation at a portion of 500 mg for grown-ups, 2 to multiple times/day in blend with IFN- α or lopinavir/ritonavir[8]. Chloroquine phosphate is orally regulated at a portion of 500 mg (300 mg for chloroquine) for grown-ups, multiple times/day. Arbidol is orally regulated at a portion of 200 mg for grown-ups, multiple times/day. The term of treatment is close to 10 days.

Favipiravir is another medication that is under clinical preliminary for rewarding COVID-19. On February 15, 2020, China endorsed it to be a valuable medication for rewarding Novel Influenza. It acts by restraining the compound RNA subordinate RNA polymerase [7]. Aside from being powerful for hostile to flu infection, the medication is equipped for hindering the replication of flavi-, alpha-, filo-, bunya-, field, noro-, and other RNA infections. Favipiravir is changed over into a functioning phosphoribosylated structure (favipiravir-RTP) in cells and is perceived as a substrate by viral RNA polymerase, subsequently restraining RNA polymerase action; favipiravir may have expected antiviral activity on SARS-CoV-2, which is a RNA infection. Remdesivir is another investigational tranquilize under clinical preliminary for the treatment of COVID-19. Remdesivir is a nucleoside simple and a wide range antiviral. Creature tests demonstrated that remdesivir can adequately lessen the viral burden in lung tissue of mice tainted with MERS-CoV, improve lung work, and ease neurotic harm to lung tissue.

A group of scientists from Shanghai Institute of Materia Medica and Shanghai Tech University performed medicate screening in silicon and a chemical movement test, and they detailed 30 operators with possible antiviral movement against SARS-CoV-2 on January 25, 2020. These specialists are indinavir, saquinavir, lopinavir, carfilzomib, ritonavir, remdesivir, atazanavir, darunavir, tipranavir, fosamprenavir, enzaplatovir, presatovir, abacavir, bortezomib, elvitegravir, maribavir, raltegravir, montelukast, deoxyrhapontin, polydatin, chalcone, disulfiram, carmofur, shikonin, ebselen, tideglusib[8].

As of late, Wang and partners assessed in vitro five FDA-endorsed medications and two wide range antivirals against a clinical disconnect of SARS-CoV-2. One of their decisions was that "chloroquine is profoundly powerful in the control of 2019-nCoV contamination in vitro"

Vaccines investigation

The CDC outlines the six stages of vaccine development as:

1. Exploratory stage
2. Preclinical stage
3. Clinical development
4. Regulatory review and approval
5. Manufacturing 6. Quality control

Current Therapeutic Developments for COVID-19

Because of fast activity by administrative specialists, scholarly foundations, and pharmaceutical organizations, numerous COVID-19 immunization and remedial competitors have as of now developed [16]. These endeavours keep on including innumerable specialists, bolster staff, and others eagerly attempting to comprehend the infection and to create approaches to battle it. Current methodologies incorporate everything from customary antibodies to front line nucleic corrosive based treatments and in any event, repurposing certain current medications that may demonstrate valuable. While the advancement of COVID-19 immunizations and therapeutics is still in its early stages, here we feature the endeavours of 3 organizations chasing creative answers for the current emergency. If you don't mind note, this data depends on freely accessible data what's more, doesn't uncover any private data from Nuventra customers or different organizations [17].

MODERNA

Working intimately with the U.S. National Institutes of Wellbeing, Moderna's foundation based treatment (mRNA1273) has risen as a promising choice, and the organization has started enrolling for a Phase I clinical preliminary. Moderna's methodology is one of a kind in that, rather than utilizing dead or debilitated infections like conventional antibodies, they are utilizing courier RNAs (mRNAs). [17] Once directed, these mRNAs will guide an immunization beneficiary's cells to produce proteins that imitate a "spike protein" that SARSCoV-2 uses to pick up section into have cells. The expectation is that these proteins will evoke a safe reaction that will shield the beneficiary from future disease with the COVID-19 infection.

INOVIO

Inovio's investigational coronavirus vaccine (INO-4800) seeks to harness the body's ability to produce proteins mimicking the SARSCoV-2 spike protein from a nucleic-acid-based template. Inovio is using DNA as the basis of its vaccine. [16]

India's 1st COVID-19 Vaccine - COVAXIN

Developed by Bharat Biotech gets DCGI approval for Phase I & II Human Clinical Trials [18]. The Central Drugs Standard Control Organisation (CDSCO) has granted approval to Bharat Biotech to conduct human clinical trials for 'Covaxin', making it the first indigenous Covid-19 vaccine candidate to receive this approval. Covaxin has been developed by the company Bharat Biotech in collaboration with the Indian Council of Medical Research (ICMR). It is an inactivated vaccine manufactured in the company's Bio-Safety Level 3 (BSL-3) High Containment facility. Phase I and II clinical trials will start across India in July 2020[18].

To protect yourself

- Wash your hands routinely and completely with cleanser water for at any rate 20 seconds or with an alcohol based hand rub (hand sanitizer that contains at any rate 60% Alcohol) totally spread your hands and rub them together until they don't dry particularly after you have been visited an open spot, or in the wake of blowing your nose, sniffing or hacking.
- Hands clean numerous surfaces and get infections and these debased hands, can move the infection to your nose, eyes or mouth so, abstain from contacting these organs with unwashed hands. Since from that point, the infection can enter the body and may make people wiped out.
- Maintain social removing (keep up in any event 1 meter or 3 feet separation among you and anybody) and keep away from close contact with individuals who are debilitated (who is hacking or sniffing). At the point when contaminated people hack or wheeze, they splash little beads from their nose or mouth which may contain COVID-19 infection. The individual can take in these droplets.
- Avoid enormous occasions and mass social affairs

Ways to secure others

- Stay home in the event that you are feeling unwell, except if you're going to get clinical consideration.
- If you have a hack, fever and trouble breathing, look for clinical consideration counsel online to your PCP.
- If you're debilitated abstain from taking open transportation.
- Whenever you hack or sniffle spread your mouth and nose with a tissue paper. • Throw utilized tissues in the waste and wash your hands promptly with disinfectant cleanser and water.
- If conceivable, remain secluded in a different room from family and pets and wear a facemask when you are near others (e.g., sharing a room or vehicle). On the off chance that you are incapable to wear a facemask (because of its causes inconvenience breathing or other explanation) at that point you should cover your hacks and wheezes, and however when the individuals who are thinking about you go into your room they should wear a facemask (Facemasks might be hard to find and they ought to be put something aside for parental figures).
- Stay home for a length of time and adhere to your primary care physician's directions.
- If you're debilitated, abstain from sharing sheet material, dishes, glasses and other family unit things
- If conceivable, utilize a different washroom and latrines from the family.
- If surfaces are messy, clean them, and utilize cleanser or germicide cleanser and water before sanitization apply,
- Apply disinfectant day by day on every now and again contacted surfaces.

This incorporates work areas, telephones, consoles, latrines, fixtures, tables, door handles, light switches, ledges, handles, furthermore, and sink.

Identify and Isolate Suspected Cases

- Before clinical consideration is begun, identify the expected cases at the earliest opportunity and confine the speculated individuals independently from the individuals who affirmed instances of the infection .COVID-19, to prevent the likely transmission of contamination to different patients and human services staff.
- Avoid direct physical contact (counting physical assessment and presentation) to respiratory and other body emissions. For example, move conceivably irresistible individuals to seclusion rooms and close the entryways. In a working place, make the separation in labourers, clients, and different guests, particularly from conceivably irresistible people's area
- Most patients introducing in network drug stores are far-fetched to have COVID-19. On the off chance that they have hacks, colds or influenza like side effects however not pertinent to COVID-19, travel or then again contact history, drug stores ought to continue in line with their best practice and routine administration of the cross-disease dangers to staff and different patients.
- Restrict the quantity of people entering separation regions, including the room of a patient with suspected and affirmed COVID-19.

DISCUSSION

Patients tainted with COVID-19 demonstrated higher leukocyte numbers, irregular respiratory findings, and expanded degrees of plasma star inflammatory cytokines. One of the COVID-19 case reports demonstrated a patient at 5 days of fever gave a hack, coarse breathing hints of the two lungs, and an internal heat level of 39.0 °C. The patient's sputum demonstrated positive constant polymerase chain response results that confirmed COVID-19 infection. The laboratory investigations demonstrated leucopenia with leukocyte tallies of 2.91×10^9 cells/L of which 70.0% were neutrophils [8].

Moreover, an estimation of 16.16 mg/L of blood C-responsive protein was noted which is over the ordinary range (0–10 mg/L). High erythrocyte sedimentation rate and D-dimer were likewise watched.

The principle pathogenesis of COVID-19 contamination as a respiratory framework focusing on infection was serious pneumonia, Anaemia, joined with the rate of ground-glass opacities, and intense heart injury. Significantly high blood levels of cytokines and chemokines were noted in patients with COVID-19 disease that included IL1- β , IL1RA, IL7,IL8, IL9, IL10, essential FGF2, GCSF, GMCSF,IFN γ ,IP10, MCP1, MIP1 α , MIP1 β , PDGFB, TNF α , and VEGFA. A portion of the serious cases that were admitted to the emergency unit elevated levels of star inflammatory cytokines counting IL2, IL7, IL10, GCSF, IP10, MCP1, MIP1 α , and TNF α that are contemplated to advance malady seriousness.[6].

CONCLUSION

Emerging scenario of rapid spread of COVID 19, emergency possibility of RT-PCR packs may likewise be expanded. This has prompted chest CT being used to help conclusion in the nonattendance of RT-PCR, as showed in an ongoing case revealed from China and all over world. The movement of the lung changes of COVID-19 on CT imaging is likewise comparable to SARS, with the ground-glass and solidification getting more awful or better more than a few days[12]. This would be normal, as the two irresistible specialists are a piece of the coronavirus family. SARS had a death pace of 9.5%, while the current novel coronavirus seems to have a death rate around 2%, in light of the quantity of affirmed cases and passings. Our study has a few constraints; such restrictions block the plausibility of any profound examination about likely prognostic imaging factors that could help in the expectation of more awful results. In addition, it doesn't address the job of imaging in controlling or checking clinical treatment in the tainted people. In any case, our investigation proceeds to include information about the malady in a developing number of focuses separated from the focal point of the episode in Wuhan [13]. All in all, COVID 19 vastly affects society, where legitimate drug, purification and social separating will support us.

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ABBREVIATION

2019 Novel Coronavirus	(2019-nCoV)
Acute Respiratory Distress Syndrome	(ARDS)
Acute Respiratory Infection	(ARI)
Centers for Disease Control and Prevention	(CDC)
COVID-19	(Coronavirus Disease 2019)
Hydroxychloroquine	(HCQ)
Reproductive number	(reproductive ratio; R0)
Reverse Transcription Polymerase Chain Reaction -(RT-PCR)	
World Health Organization	(WHO)
PaO ₂	partial pressure of oxygen
PEEP	positive end-expiratory pressure

CONFLICT OF INTEREST

There is no conflict of interest in our study.

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