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LITERATURE REVIEW OF CORONA VIRUS

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ABSTRACT

Coronavirus are goes under an expansive group of infection that can cause respiratory sicknesses, for example, the normal chilly, as per the Centres for Disease Control and Prevention (CDC). They are normal in various types of creatures, including camels and bats. Surprisingly, these crown infections can develop and taint people and afterward spread between people. Ongoing instances of this incorporate SARS-COV and MERS-COV. 2019 Novel Corona infection (2019-nCoV) is an infection recognized as the reason for a flare-up of respiratory ailment initially identified in Wuhan, China. This infection causes respiratory diseases in people, which are hourly gentle however are possibly deadly. Now and again, the infections can cause lower-respiratory tract ailments, for example, pneumonia and bronchitis. In human crown infections are right now characterized into seven sorts that are HCoV-229E, HCoV-OC43, HCoV-NL63, SARS-COV, HKU1, MERS-COV and 2019-nCoV. These two kinds of crown infection (MERS-COV and SARS-COV) are progressively risky. The Novel crown infection (2019-nCoV) is newfound, or recently started, and is a placeholder name and furthermore known as Wuhan pneumonia or Wuhan crown infection. Some of crown infections like HCoV-229E, HCoV-OC43, HCoV-NL63 and HKU1 that are constantly course in the number of inhabitants in human and cause respiratory contaminations in human either may youngsters and grown-ups around the world. They are commonly transmitted among creatures and people through wheezing, hacking, contacting or shaking hands and reaching a surface or article. The side effects of crown infection are wheezing, hack, weakness, runny nose, sore throat, breathing trouble and exacerbated. In progressively serious cases SARS, kidney disappointment, pneumonia and even passing. Conclusion can be completed by social insurance supplier in research center test on respiratory examples and serum to recognize human crown infection. To counteraction of crown infection by covering mouth and nose when sniffing and hacking, maintain a strategic distance from unprotected contact with live creatures and furthermore washing hand with cleanser and water. For this infection no particular treatment like immunizations and antiviral medications however manifestations can be dealt with.

KEYWORDS

Coronaviruses, Virus, 2019-nCoV, MERS-COV, SARS-COV and Respiratory symptoms.

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INTRODUCTION

The first cases of corona virus infection in 2003, a novel corona virus emerged from China and swept across the globe, second time 2012 corona virus continued to Spread Saudi Arabia overseas to many countries in Asia, Africa, Europe, and America¹⁻⁴. During this outbreak, Most cases happened in centre eastern nations, including Those in the bay district (Saudi Arabia, United Middle Easterner emirates,

some gulf countries, and Iraq), These countries were considered to be at high Risk for corona virus infection according to the European Centre for disease prevention and control (ECDC) the first known cases in December were followed to a creature advertise in the Chinese city of Wuhan and are accepted to have originated from contact with live creatures that were contaminated. The market has since been closed. Wuhan is a major logistics and transportation hub.

In this review, we discuss the history, epidemiology, and molecular mechanisms of this The name for this kind of virus comes from the crown like spikes it has on its surface - "corona" is Latin for "crown." This strain of the virus is called 2019-nCoV for now, which is short for "2019 novel corona virus." It's only the third strain of corona virus known to frequently cause severe symptoms in humans. The other two are MERS and SARS.

HISTORY OF THE CORONA VIRUS

Corona virus was first identified as a cause of the common cold in 1960. In one study carried out in Canada in 2001, more than 900 patients presented with flu-like symptoms. Virological analyses showed that 3.6% of these cases were positive for the HCoV-NL63 strain by polymerase chain reaction (PCR). Until 2002, corona virus was considered a relatively simple, nonfatal virus; however, an outbreak in 2002-2003 in Guangdong province in China, which resulted in spread to many other countries, including Thailand, Vietnam, Taiwan, Hong Kong Singapore, and the United States of America, caused severe acute respiratory syndrome (SARS) and high mortality rates in over 1000 patients. After this outbreak, microbiologists and infectious disease experts focused on the understanding the pathogenesis of the disease and discovered that this infection was caused by a new form of corona virus. A total of 8096 individuals were infected with this virus, resulting in 774 deaths; thus, in 2004, the Centre for Disease Control and Prevention (CDC) and World Health Organization (WHO) declared a state of emergency⁵⁻⁷. In another report from Hong Kong,

50 patients presented with SARS, and more than 60% of these patients were positive for corona virus⁸. The evolution of this virus demonstrated that corona virus is not a stable virus and can adapt to become more virulent, even lethal, to humans. Indeed, another outbreak in Saudi Arabia in 2012 resulted in many deaths and spread first to other countries in the Middle East and then worldwide, the first known cases in December 2019 were followed to a creature advertise in the Chinese city of Wuhan and are accepted to have originated from contact with live creatures that were tainted. The market has since been closed. Wuhan is a major logistics and transportation hub. News conference that nearly three-quarters of cases have been in people over age 40 and that "cases who died - many had significant underlying conditions" like cardiovascular disease and diabetes. But there are confirmed cases in otherwise healthy, young individuals to date, 18 countries or places have confirmed cases. At least 106 other cases have been identified in 17 other places, including the U.S., Canada, Australia, France, Germany, Hong Kong, Japan, Macao, Malaysia, Nepal, Singapore, South Korea, Taiwan, Thailand, and Vietnam .Five U.S. cases have been reported to date. The first U.S. case was reported on Jan. 21, in a man who traveled to China and began experiencing symptoms a few days after returning home to Seattle on Jan. 15. The second case, a woman in Chicago, was confirmed Jan. 24. Two cases have been confirmed in California and one in Arizona. Resulting in renewed interest in studies of this new form of corona virus.

MICROBIOLOGY

Corona virus is a single-stranded, enveloped RNA virus¹ that is spherical or pleomorphic in shape with bear's club -shaped glycoprotein projections. For example, OC43-like and 229E-like have been shown to affect humans, where as the other types mainly affect animals Health officials believe the virus can be passed from person to person via exchange of fluids from the respiratory tract, but they still don't know precisely how. The respiratory course appears to be likely in light of the fact that bunches of cases

have been seen inside families, whose individuals have had drawn out close contact with a contaminated individual. There is developing proof in Wuhan that the infection can spread starting with one individual then onto the next to another on numerous occasions - the way that an ailment like seasonal influenza spreads. That is something that worldwide wellbeing authorities are looking for in global cases. Corona viruses are transmitted via airborne zootoxic droplets, and viral replication occurs in the ciliated epithelium, resulting in cellular damage and inflammatory, reactions at the site of infection. In addition to humans, corona viruses are also found in bats, whales, pigs, birds, cats, dogs, and mice snakes. There are no virus-specific treatments for 2019-nCoV. The CDC suggests supportive care to manage and relieve symptoms.

SYMPTOM OF CORONAVIRUS

The infection causes fever just as respiratory manifestations: dry hack, trouble relaxing. It can also cause diarrhoea and body aches. Symptoms in severe cases include pneumonia, kidney failure and even death, according to the World Health Organization. The symptoms of this infection might appear the same as those for a cold or flu, but at this time the Centre for Disease Control and Prevention's suggest screening only people who have recently travelled to Wuhan or who have had close prolonged contact with a 2019-n Coronavirus -infected person. The CDC can affirm the infection with an indicative test that it created dependent on the hereditary succession of the infection that Chinese wellbeing authorities acquired and made openly available on Jan. 12. The World Health Organization's Emergency Committee on the corona virus said in a Jan. 22 news meeting that almost seventy five percent of cases have been in individuals over age 40 and that "cases who passed on - many had huge hidden conditions" like cardiovascular malady and diabetes. In any case, there are affirmed cases in any case sound, youthful people

Types

The human corona viruses are currently six recognized types that can infect humans.

They are;

1. 229E (alpha corona virus)
2. NL63 (alpha corona virus)
3. OC43 (beta corona virus)
4. HKU1 (beta corona virus)
5. MERS-Coronavirus (Middle East Respiratory Syndrome-Corona virus)
6. SARS-Coronavirus (Severe Acute Respiratory Syndrome-Corona virus)

MERS and SARS this two are more dangerous types

MERS

MERS-Coronavirus, which causes Middle East Respiratory Syndrome (MERS), was first recognized in 2012. This serious respiratory disease previously surfaced in Saudi Arabia and, from that point forward, has spread to different nations. Side effects incorporate fever, windedness, and hacking. The ailment spreads through close contact with individuals who have just been tainted. Be that as it may, all instances of MERS are connected to people who have as of late came back from movement to the Arabian Peninsula. MERS is lethal in 30 to 40 percent of individuals who contract it.

SARS

SARS-Coronavirus which causes Severe Acute Respiratory Syndrome (SARS), It normally prompted a dangerous type of pneumonia. SARS-Coronavirus is one of a kind. It can taint both the upper and lower respiratory tract and can likewise cause gastroenteritis. The side effects of SARS create through the span of a week and start with a fever. At an early stage in the condition, individuals create influenza like manifestations, for example,

- Dry coughing
- Chills
- Diarrhoea
- Breathlessness
- Aches

Pneumonia, a serious lung contamination, may grow a short time later. At its most progressive
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stage, SARS causes disappointment of the lungs, heart, or liver. During the pandemic, there were 8,098 affirmed instances of SARS with 774 fatalities. This is equivalent to a death pace of 9.6 percent.

HUMAN CORONAVIRUSES

There are seven known strains of human crown infections;

1. Human corona virus OC43 (HCoV-OC43)
2. Human corona virus 229E (HCoV-229E)
3. Human corona virus HKU1
4. SARS-COV
5. Human corona virus NL63 (HCoV-NL63, New Haven corona virus)
6. Middle East respiratory disorder corona virus (MERS-COV), recently known as novel corona virus 2012 and HCoV-EMC.
7. Novel corona virus (2019-nCoV), otherwise called Wuhan pneumonia or Wuhan corona virus, (Novel right now newfound, or recently started, and is a placeholder name).

Transmission

Crown infections are zootoxic, which implies they are transmitted among animals and people. They are circling in creatures and a portion of these corona viruses have the ability of transmitting among creatures and people. It is no doubt transmitted through hacking and sniffing, just like the case with flu and other respiratory infections, Corona viruses can spread in the accompanying manners: Coughing and sniffing Crown diseases are zootoxic, which infers they are transmitted among creatures and individuals. Contacting or warmly greeting an individual that has the infection can pass the infection starting with one individual then onto the next. Reaching a surface or item that has the infection and afterward contacting your nose, eyes or mouth. Analysts found that 22 percent had direct introduction to the meat showcase, and 32 percent had contact with individuals who had a fever or respiratory illness.

Diagnosis

Medicinal services supplier may arrange research centre tests on respiratory examples and serum

(some portion of your blood) to recognize human crown infections. Research facility testing is bound to be utilized on the off chance that you have serious sickness or are associated with having MERS.

In the event that you are encountering indications, you should educate your medicinal services supplier concerning any ongoing travel or contact with creatures. Most MERS- Coronavirus contaminations have been accounted for from nations in the Arabian Peninsula. In this way, revealing a movement history or contact with camels or camel items is significant when attempting to analyze MERS.

Prevention

For the crown infection to forestall covering mouth and nose when hacking and wheezing, disease spread incorporates standard hand washing and furthermore manifestations of respiratory ailment. The World Health Organization has exhorted individuals to keep away from "unprotected" contact with live creatures, altogether cook meat and eggs, and evade close contact with anybody with cold or influenza like side effects.

Standard prescribe a fundamental hand cleanliness, for example, washing your hands with cleanser and water and respiratory cleanliness, for example, when you wheeze, sniffing into your elbow. Approaches to secure yourself against a potential creature source is stay away from superfluous unprotected contact with live creatures and to ensure that you wash your hands altogether in the wake of associating with animal.

Treatment

There are no antibodies or antiviral medications that are affirmed for avoidance or treatment and no particular medicines for crown infections, yet indications can be dealt with. The principle treatment is strong consideration, including ensuring the patient is getting enough oxygen, and utilizing a ventilator to drive air into the lungs if essential,

Patients should rest and drink a lot of liquids "while the safe framework carries out its responsibilities and recuperates itself," she said. No medications

have been affirmed for any crown infection sicknesses; however an antiviral medicine called remdesivir gives off an impression of being compelling in animals

Novel Coronavirus (2019-Ncov)

On 31 December 2019, WHO was educated regarding a group of instances of pneumonia of obscure reason identified in Wuhan City, Hubei Province of China? Notwithstanding giving consideration to patients and separating new cases as they are distinguished, Chinese general wellbeing authorities have detailed that they stay concentrated on proceeded with contact following, directing ecological appraisals at the discount market, and examinations to recognize the pathogen causing the flare-up.

WHO is intently observing this occasion and is in dynamic correspondence with partners in China. In accordance with standard conventions for any general wellbeing occasion, an occurrence the board framework has been enacted over the three degrees of WHO (nation office, provincial office and base camp) and the Organization is set up to mount a more extensive reaction, if necessary.

How to avoid corona virus

There is no vaccine for corona virus. To help prior steamy shower can also help ease a sore and scratchy throat. Even when a corona virus causes MERS or SARS in other countries, the kind of corona virus infection common in the U.S. is certifiably not a genuine risk for an in any case sound grown-up. On the off chance that you become ill, treat your manifestations and contact a specialist on the off chance that they deteriorate or don't leave.

Where did the infection originate from?

Since the infection previously sprung up in Wuhan in individuals who had visited nearby fish and creature showcase, authorities could just say it likely bounced from a creature to people. In another investigation, in any case, specialists sequenced the qualities of 2019-n Coronavirus (as the infection is presently called), and afterward they contrasted it and the hereditary groupings of in excess of 200 crown infections that contaminate different

creatures around the globe. Their outcomes, point by point in the *Journal of Medical Virology*, recommended that 2019-n Coronavirus likely began in snakes.

How far has the virus spread?

The primary instances of the pneumonia-like infection were accounted for in Wuhan, China on Dec. 31, 2019. Washington State was affirmed to have the infection in the wake of coming back to the U.S. from Wuhan on Jan. 15, turning into the primary case in the U.S., authorities reported on Jan. 21).

Prevention

If travelling to Wuhan, you should avoid contact with sick people; avoid dead or alive animals, animal markets or products that come from animals such as uncooked meat, according to the CDC. You should often wash hands with soap and water for at least 20 seconds, they wrote. If you are infected by the virus you can take steps to help avoid transmitting it to others such as isolating yourself at home, separating yourself from other people in the house, wearing a face veil, covering your hacks and sniffles and washing your hands, as per the CDC

CONCLUSION

In the course of recent years the rise of a wide range of corona viruses that cause a wide assortment of human and veterinary infections has happened. Almost certainly, these infections will proceed to develop and to advance and cause both human and veterinary episodes attributable to their capacity to recombine, transform, and contaminate different species and cell types. Future research on corona viruses will keep on exploring numerous parts of viral replication and pathogenesis. In the first place, understanding the penchant of these infections to hop between species, to build up contamination in another host, and to recognize critical supplies of corona viruses will drastically help in our capacity to foresee when and where potential scourges may happen. As bats appear to be a huge store for these infections, it will be fascinating to decide how they appear to maintain a strategic distance from clinically clear malady and become tenaciously

contaminated. Second, a large number of the non-auxiliary and frill proteins encoded by these infections remain uncharacterized with no known capacity, and it will be essential to recognize instruments of activity for these proteins just as characterizing their job in viral replication and pathogenesis. These examinations should prompt a huge increment in the quantity of reasonable helpful focuses to battle contaminations. Besides, a considerable lot of the one of a kind compounds encoded by coronaviruses, for example, ADP-ribose-1"-phosphatase, are additionally present in higher eukaryotes, making their examination pertinent to understanding general parts of sub-atomic science and organic chemistry. Third, increasing a total image of the complexities of the RTC will give a system to understanding the special RNA replication process utilized by these infections. At long last, characterizing the system of how coronaviruses cause sickness and understanding the host immune pathological reaction will essentially improve our capacity to plan immunizations and lessen malady trouble.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

REFERENCES

1. De Groot R J, Baker S C, Baric R, Enjuanes L, Gorbalenya A E, Holmes K V, Perlman S, Poon L, Rottier P J, Talbot P J, Woo P C, Ziebuhr J. Family Coronaviridae, In AMQ King, E Lefkowitz, M J Adams, EB Carstens (Eds.). *Ninth Report of the International Committee on Taxonomy of Viruses. Elsevier, Oxford.* 1st Edition, 2011, 806–828. ISBN 978-0-12-384684-6.
2. International Committee on Taxonomy of Viruses, ICTV Master Species List 2009 - v10 (xls), 2010.
3. Li F, Li W, Farzan M, Harrison S C. Structure of SARS coronavirus spike receptor-binding domain complexes with receptor, *Science*, 309(5742), 2005, 1864–1868.
4. Geller C, Varbanov M, Duval R E. Human coronaviruses: insights into environmental resistance and its influence on the development of new antiseptic strategies, *Viruses*, 4(11), 2012, 3044-3068.
5. China virus death toll mounts to 25, infections spread". Reuters. 24 January 2020. Retrieved 24 January 2020. <https://www.clinicalkey.com/#!/content/playContent/1-s2.0-S1201971220300114?returnurl=https:%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS1201971220300114%3Fshowall%3Dtrue&referrer=https:%2F%2Fwww.ncbi.nlm.nih.gov%2F>
6. Guangxiang (George) Luo, Shou-Jiang Gao. Global Health Concern Stirred by Emerging Viral Infections, *Journal of Medical Virology online library*, 92(4), 399-400, 2020.
7. Sexton N R, Smith E C, Blanc H, Vignuzzi M, Peersen O B, Denison M R. Homology-Based Identification of a Mutation in the Coronavirus RNA-Dependent RNA Polymerase That Confers Resistance to Multiple Mutagens, *Journal of Virology*, 90(16), 2016, 7415-7428.
8. Fehr A R, Perlman S. Coronaviruses: an overview of their replication and pathogenesis, *Methods in Molecular Biology*, 1282, 2015, 1-23. Doi:10.1007/978-1-4939-2438-7_1. ISBN 978-1-4939-2437-0. PMC 4369385. PMID 25720466.
9. 2019 Novel Coronavirus infection (Wuhan, China): Outbreak update, Canada.ca.

10. <https://edition.cnn.com/2020/01/22/asia/china-wuhan-coronavirus-deadly-intl-hnk/index.html>
11. Laboratory testing of human suspected cases of novel coronavirus (nCoV) infection, *Interim guidance, World Health Organization*, 2020.
12. Novel Coronavirus (nCoV-2019), *Wuhan, China*, 2019.
13. Pneumonia of unknown cause - China, *World Health Organization*, Retrieved 2020.
14. https://www.cdc.gov/coronavirus/2019ncov/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2Fnovel-coronavirus-2019.html
15. Van Der Hoek L, Pyrc K, Jebbink M F, Vermeulen-Oost W, Berkhout R J, Wolthers K C, Wertheim-Van Dillen P M, Kaandorp J, Spaargaren J, Berkhout B. Identification of a new human coronavirus, *Nature Medicine*, 10(4), 2004, 368-373.
16. WHO Statement Regarding Cluster of Pneumonia Cases in Wuhan, China, www.who.int. Retrieved 2020.
17. Doucleef M. Scientists Go Deep On Genes of SARS-Like Virus, *Associated Press*, Retrieved 2012.
18. Falco M. New SARS-like virus poses medical mystery, *CNN Health*, Retrieved 2013.
19. New SARS-like virus found in Middle East, *Al-Jazeera*, Retrieved 2013.
20. <https://www.medicalnewstoday.com/articles/256521.php#sars>
21. <https://en.wikipedia.org/wiki/Coronavirus>
22. <https://www.healthline.com/health-news/what-to-know-about-the-mysterious-coronavirus-detected-in-china>
23. Coronavirus disease (COVID-19) outbreak, *World Health Organization*, 2019. <https://www.who.int/westernpacific/emergencies/novel-coronavirus>.
24. <https://www.webmd.com/lung/coronavirus#1>
25. Yvonne Xinyi Lim, Yan Ling Ng, James P. Tam, and Ding Xiang Liu. Human Coronaviruses: A Review of Virus–Host Interactions, *Diseases*, 4(3), 2016, 26. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5456285/>
26. <https://www.cdc.gov/coronavirus/2019-ncov/about/index.html>

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