

A Review

Corona Virus (Covid -19) : Origin , History and Transmission

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Abstract

The novel human corona virus disease COVID-19 has become the fifth documented pandemic since the 1918 flu pandemic. The corona virus disease 19 (COVID-19) may be a highly transmittable and pathogenic virus infection caused severe acute respiratory syndrome. The corona virus is believed to be a spillover of an animal corona virus and later adapted the power of human-to-human transmission. Because the virus is very contagious, it rapidly spreads and continuously evolves within the human population. Corona viruses are a crowd of enveloped viruses with non-segmented, single-stranded, and positive-sense RNA genomes. Corona virus causes respiratory tract infection including pneumonia, cold, sneezing and coughing while in animal it causes diarrhea and upper respiratory diseases. Corona virus broadcast human to human or human to animal via airborne droplets. WHO and ECDC advised to avoid public place and shut contact to infected persons. Covid-19 disease was first identified in December 2019 in Wuhan, China. The planet Health Organization declared the outbreak a Public Health Emergency of International Concern on 30 January 2020 and an epidemic on 11 March.

Keywords- Corona viruses , Origine, History , Transmission , Epidemiology.

History and Origin

Corona virus was firstly notified as cold in 1960. As per to the Canadian study 2001, approximately 500 patients were identified as Flu-like system. 17-18 cases of them were confirmed as infected with corona virus strain by polymerase chain reaction. Corona virus was treated as basic non fatal virus till 2002. In 2003, various reports published with the proofs of spreading the corona to many countries such as United States America, Hong Kong, Singapore, Thailand, Vietnam and in Taiwan. Several case of severe acute respiratory syndrome caused by corona and their mortally more than 1000 patient was reported in 2003^[1]. This was the black year for microbiologist. When microbiologist was started focus to know these problems. After a deep exercise they conclude and understand the pathogenesis of disease and discovered as corona virus. But till total 5600000 patient was confirmed as infected with corona virus. So in 2004, World health organization and centers for disease control and prevention declared as “state emergency”. Another study report of Hong Kong was confirmed 50 patient of severe acute respiratory syndrome while 30 of them were confirmed as corona virus infected. In 2012, Saudi Arabian reports were presented several infected patient and deaths^[2-5]. COVID-19 was first identified and isolated from pneumonia patent belongs to Wuhan, china^[6-7]. A completely unique corona virus, designated as 2019-nCoV, emerged in Wuhan, China, at the top of 2019. As of January 24, 2020, a minimum of 830 cases had been diagnosed in nine countries: China, Thailand, Japan, South Korea , Singapore, Vietnam, Taiwan, Nepal, and therefore the us . Fatalities

occurred, mainly in patients who had serious underlying illness. In spite of the fact that many details of the emergence of this virus — like its origin and its ability to spread among humans remain unknown, an increasing number of cases appear to have resulted from human-to-human transmission. We already know tons about other viruses within the corona virus family and most of those sorts of viruses have an origin in animals. The COVID-19 virus (also called SARS-CoV-2) may be a new virus in humans. The possible animal source of COVID-19 has not yet been confirmed but research is ongoing^[8]. Given the severe acute respiratory syndrome corona virus (SARSCoV) outbreak in 2002 and therefore the Middle East respiratory syndrome corona virus (MERS-CoV) outbreak in 2012, 2019-nCoV is that the third corona virus to emerge within the human population within the past 20 years — an emergence that has put global public health institutions on high alert^[9,10]. The WHO replied quickly by coordinating diagnostics development; issuing guidance on patient monitoring, specimen collection, and treatment; and providing up-to date information on the outbreak^[11,12]. Several countries within the region also because they are screening travelers from Wuhan for fever, getting to detect 2019-nCoV cases before the virus spreads further. Updates from China, Thailand, Korea, and Japan indicate that the disease related to 2019-nCoV appears to be relatively mild as compared with SARS and MERS. Corona viruses structure an outsized family of viruses which will infect birds and mammals, including humans, consistent with world health organisation (WHO). These viruses are liable for several outbreaks round the world, including the severe acute respiratory syndrome (SARS) pandemic of 2002-2003 and therefore the Middle East respiratory syndrome (MERS) outbreak in South Korea in 2015. last , a completely unique corona virus (SARS-CoV-2, also referred to as COVID-19) triggered an epidemic in China in December 2019, sparking international concern. While some corona viruses have caused devastating epidemics, others cause mild to moderate respiratory infections, just like the common cold^[13-15].

Types

Corona viruses belong to the subfamily Coronavirinae in the family Coronaviridae. Different types of human corona viruses vary in how severe the resulting disease becomes, and how far they can spread. Doctors currently recognize seven types of corona virus that can infect humans. Common types^[16].

1. 229E (alpha corona virus)
2. NL63 (alpha corona virus)
3. OC43 (beta corona virus)
4. HKU1 (beta corona virus)

Epidemiology – reservoirs and transmission

There is limited research is out on how HCoV spreads from one person to subsequent . The outbreak of unknown acute respiratory tract virus broke out first in Wuhan, China, since 12 December 2019. Several studies suggested that bat may be the potential reservoir of SARS-CoV-2^[17,18]. However, researchers believe that the viruses transmit via fluids in the respiratory system, such as mucus. Corona viruses can spread in the following ways: Coughing and sneezing without covering the mouth can disperse droplets into the air. Shaking hands and touching with an individuals who has the virus can pass the virus between individuals. One person to other person spreading of SARS-CoV-2 occurs mainly between family members, including relatives and friends who intimately contacted with patients or incubation carriers. Come in contact with a surface or object that has the virus then touching the nose, eyes, or mouth. However, it is unclear whether this also applies to human corona viruses. The National Institutes of Health (NIH) suggest that

several groups of people have the highest risk of developing complications due to COVID-19^[19,20].

These groups are ^[21]

- pregnant ladies;
- Babies, and younger children particularly under age 15;
- people of any age who have definite chronic health conditions;
- people with seriously compromised immune systems.

Corona virus can mutate effectively, which makes them so contagious. To stop transmission, people should occupy home and rest while symptoms are active. They ought to also avoid close contact with people. Covering the mouth and nose with a tissue or handkerchief while coughing or sneezing also can help prevent transmission. It's important to eliminate any tissues after use and maintain hygiene round the home. In 2019, the Centers for Disease Control and Prevention (CDC) started monitoring the outbreak of a replacement corona virus, SARS-CoV-2, which causes the respiratory disease now referred to as COVID-19. Authorities first identified the virus in Wuhan, China. Quite 74,000 people have contracted the virus in China. Health authorities have identified many people with COVID-19 round the world, including many within the us. The World Health Organization (WHO) have declared a public health emergency concerning COVID-19. Since then, this strain has been diagnosed in several U.S. residents. Information on the virus is scarce at the present. Within the past, respiratory conditions that develop from corona viruses, like SARS and MERS, have spread through close contacts. On February 17, 2020, the Director-General of the WHO presented at a media briefing the subsequent updates on how often the symptoms of COVID-19 are severe or fatal, using data from 44,000 people with a confirmed diagnosis ^[22-26].

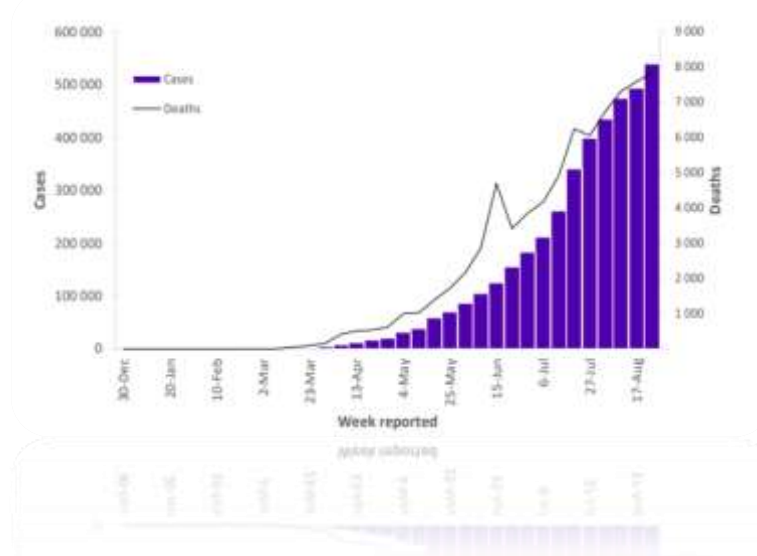
As per a report published on 24 Jan 2020, corona virus infected patient have many common features such as high fever, cough, and fatigue, shortness of breath, sore throat while diarrhoea and dyspnea were found to be as uncommon feature. Many of them patient reported bilateral abnormalities. Corona virus was isolated from broncho alveolar. It is also detected in blood samples. Till now, corona virus was not confirmed in faeces and urine sample of patient ^[27-30].

Corona virus disease 2019 (COVID-19) symptoms can vary widely. Several human have no symptoms at all, while others become so unwell that they sometime need mechanical assistance to breathe.

The chance of growing risky symptoms of COVID-19 may be higher in older people and also in people of any age who have other serious health problems — like heart or lung conditions, weakened immune systems, obesity, or diabetes. This is similar to what is seen with other respiratory illnesses, such as influenza^[31]. However, the origine and communication routine of SARS-CoV-2 remain unattainable. Transmission between healthcare workers occurred in 3.8% of COVID-19 patients, issued by the National Health Commission of China on 14 February 2020. Covid-19 two-thirds of viral RNA, mainly located in the first open reading frame (ORF1a/b) translates two polyproteins, pp1a and pp1ab, and encodes 16 non-structural proteins (NSP), while the remaining ORFs encode accessory and structural proteins. The remaining part of virus genome encodes four important structural proteins, including spike (S) glycoprotein, small envelope (E) protein, matrix (M) protein, and nucleocapsid (N) protein and also several accessory proteins, that interfere with the host innate immune response^[32].

Table 1: The risk of serious complications increases with age and Diseases conditions ^[33].

Conditions	Risk of serious complications
Older Age	In U.S.about 80% of deaths from the disease have been in people age 65 and older.
Lung problems	COVID-19 targets the lungs, Some lung conditions may increase your risk of serious illness
heart disease, diabetes and obesity	Obesity and diabetes both reduce the efficiency of a person's immune system. Diabetes increases the risk of infections.
Cancer and blood disorders	People who currently have cancer and blood disorders are at higher risk of developing more severe illness from COVID-19.
Weakened immune system	If you have a weakened immune system, you may need to take extra precautions to avoid the virus that causes COVID-19.
Chronic kidney or liver diseases	If you have chronic kidney disease, you're at higher risk

Table 2: The number of cases and death of COVID – 19 outbreak according to WHO situation reports on August 30, 2020 ^[34] .

Treatment

Effective antiviral therapy given against COVID-19, current treatments mainly focused on symptomatic and respiratory support according to the Diagnosis and Treatment of Pneumonia Caused by COVID-19 issued by National Health Commission of the People's Republic of China ^[35] .

There is no specific vaccine for this yet. Only symptomatic therapy is the treatment approach followed by health professionals. Symptomatic therapy includes administration of antipyretic and analgesic, maintenance of hydration, mechanical ventilation as respiratory support and uses of antibiotic in bacterial infections. There are presently over 169 COVID-19 vaccine competitors under progress, with 26 of these in the human trial phase. WHO is working in association with scientists, business, and global health organizations. When a secure and efficient vaccine is found, will facilitate the equitable access and distribution of these vaccines to protect people in all countries.

Conclusions

The present COVID-19 pandemic is certainly an international public health problem. Due to rapid transmission, countries around the world should increase attention into disease surveillance systems and scale up country readiness and response operations including establishing rapid response teams and improving the capacity of the national laboratory system. Over the past 50 years the emergence of many different corona viruses that cause a wide variety of human and veterinary diseases has occurred. It is likely that these viruses will continue to emerge and to evolve and cause both human and veterinary outbreaks owing to their ability to recombine, mutate, and infect multiple species and cell types.

Future research on corona viruses will continue to investigate many aspects of viral replication and pathogenesis. First, understanding the tendency of these viruses to jump between species, to establish infection in a new host, and to identify significant reservoirs of corona viruses. As bats seem to be a significant reservoir for these viruses, it will be interesting to determine how they seem to avoid clinically evident disease and become persistently infected. Second, many of the non-structural and accessory proteins encoded by these viruses remain indetermined with no known function, and it will be essential to identify mechanisms of action for these proteins as well as identify their role in viral replication and pathogenesis.

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