Corona Virus: A brief Historical Perspective

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From Wuhan, China in December 2019, patients having pneumonia due to a novel corona virus reported first time[1]. The World Health Organization (WHO) declared this Severe Acute Respiratory Syndrome infection, due to corona virus (SARS-CoV-2), and named it Coronavirus Disease 2019 (COVID-19)[2].

Historically, in literature around 1890's a respiratory disease pandemic reported which was presumed that it could be due to a coronavirus jump from animal respiratory disease known as Contagious Bovine Pleuropneumonia which was highly infectious, with high mortality. This virus affected cattle herds globally during 1870 to 1890, and supposedly caused a human pandemic in 1889-1890. Clinically, this infection characterized by a fever, general feeling of unwell, discomfort and marked central nervous system symptoms responsible for more than a million fatalities predominantly in aged population all over the world. Although, the modern-day medical science investigations has related this epidemic to H2N2 influenza virus but utter evidence relating this virus to epidemic was not confirmed due to the unavailability of preserved tissue samples from that period. Another assumption is that if this influenza virus was not responsible for 1889-1890 pandemic, then another most recently traced ancestor of the bovine coronavirus (hCoV-OC43) to about 1890's, which is having potentials to invade and attack the central nervous system[3,4].

In 1918-1919 the most severe pandemic in recent history, the Spanish flue caused by H1N1 virus having avian origin gene, affected almost 500 million people and at least 50 million death worldwide[5].

In 1930s, virus as a cause of influenza not a bacterium was reported first time after isolation of viruses from the patients having influenza. Chronologically as further evidence, the influenza-A virus was isolated in Ferrets by Andrewes and Laidlaw in 1933, followed by influenza-B virus in 1936 by Francis and then successful growth of that virus in hens' eggs embryo by Burnet[6]. The Beaudette and Hudson first time in 1937, has reported the coronavirus in animal i.e. avian infectious bronchitis virus[7]. During 1957-58, from East Asia a new pandemic named "Asian Flu" caused by a virus known as influenza A (H2N2) virus emerged and caused around 1.1 million death worldwide[6,8].

The coronavirus is known since 1937, but has not garnered wider recognition for next quarter of century. The human coronaviruses were first reported by Tyrrell and Bynoe in 1965 from human trachea of patients with common cold and named it B814[9]. In 1966, Hamre and Procknow reported growth of virus in tissue culture of medical students having cold with unusual properties and named it 229E virus[10]. In 1967, Mc-Intosh et al has reported multiple ether-sensitive strains from human respiratory tracts by using the Tyrrell et al technique and label them "OC" (OC43) due to their growth in "organ cultures"[11]. During same period, the Almeida and Tyrrell[12] has reported almost same particle i.e. B814 in infected organ culture and respiratory tract of chicken with infectious bronchitis on electron microscopy. Morphologically they were pleomorphic, 80–150 nm (medium) in size, membrane-coated and with club-shaped surface projections spaced widely, similar to 229E as reported by Hamre et al[10] and McIntosh et al[11]. Subsequently, morphologically the same viruses were reported by Tyrrell et al while working on number of human and animal virus strains and due to their crown-like (Corona) surface projections this new virus's group were name "coronavirus"[13].

In September 1968, a pandemic due to Avian virus (H3N2 influenza A) were reported from United States and caused estimated one million deaths mostly among aged population (above 65 year) worldwide. The H3N2 viruses causing seasonal flue now a days are considered the descendants of this H3N2 virus[6,14].

Almost a quarter century later i.e. in past two decades, two novel strains of coronavirus were reported to jump from animal to human and then by human-to-human transmission caused severe acute respiratory syndrome leading to high mortality. These corona viruses are named SARS-CoV in 2004 and MERS-CoV in 2012.

Chronologically, in 2002– 2003, a new β-genera Coronavirus reported from Guangdong province China, originated from bats and crossed over to humans via an intermediary host Palm civet cats and caused severe acute respiratory syndrome affecting almost 8422 people from China and Hong Kong with 916 deaths (i.e. 11% mortality), subsequently rapidly spread into 29 countries worldwide before being contained successfully[15,16].

In 2009 spring, a novel Influenza-A (H1N1 Pmdoa) virus reported first time in United States, which quickly spread across the United States and then worldwide. This new strain of H1N1 virus comprises of a unique combination of influenza genes and named Influenza-A (H1N1) pdm09 virus which was not identified among human or animals in past[6].

Again during September 2012, from Saudi Arabia, a coronavirus outbreaks named Middle East Respiratory Syndrome (MERS) reported, infecting almost 2,500 people causing more than 858 deaths with 35% mortality[7]. This epidemic was also primarily traced to bat origin with Dromedary camels as the intermediate host[17].

In December 2019, from Wuhan, China a number of patients having pneumonia of unknown origin was reported first time. Majority of these cases were traced to have visited Huanan Seafood Wholesale Market. From lower respiratory tract samples of the patients a novel corona virus identified [1]. The World Health Organization (WHO) declared this Severe Acute Respiratory Syndrome infection, caused by corona virus named SARS-CoV-2, and disease called Coronavirus Disease 2019 (COVID-19). In spite of all effort to prevent the transmission of infection outside Hubei province, cases were reported from mainland China and other part of world like

Thailand, Japan, South Korea, Iran, Italy and then so on. Within less than three months from first case report the COVID-19 spread to 180 countries and declared pandemic by WHO[2]. The global impact of this pandemic is yet uncertain but it is predicted that this pandemic may affect world population for years. The purpose of this review is to briefly summarize known to date information's about the historical back ground of corona virus.

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