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PANDEMIC DISEASE - A REVIEW

Ashwin Jaikumar Ram¹, Mr. Muralidharan.N.P², Dr. Anjaneyulu K3

¹Graduate student, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Chennai 77, India.

²Assistant Professor, Department of Microbiology, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Chennai 77, India.

³Reader, Department of Conservative Dentistry And Endodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Chennai 77, India.

¹151801056.sdc@saveetha.com, ²muralidharan@saveetha.com

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ABSTRACT:

The pandemic disease is a type of disease that spreads through the community spread from one country to another country. Among all the pandemic diseases, one of the most common and recently developed ones is the coronavirus which is caused due to the (SARS-CoV2) which leads to several other respiratory complications such as severe acute respiratory syndrome. COVID-19 is a major disaster that has occurred in the year 2020. Evidence states that this originated in Wuhan, China. In order to protect us from the pandemic, we must follow social distancing, use face masks, and use hand sanitizers. Preventive measures have to be followed to reduce the spread of the pandemic. Quarantine is one among them. The most important thing is to maintain proper personal hygiene. COVID-19 can easily spread when the climatic conditions are very worse too. Individuals from different nations started migrating from one place to another, then from one nation to another nation, where they found the spread of the disease to be less. Considerations have to be given to cardiovascular insurance during treatment for COVID-19. There was an affordable emergency, food shortage and numerous different confusions looked by the individuals because of the pandemic illness.

INTRODUCTION

Pandemic disease occurs over an epidemic disease and it spreads very rapidly by crossing the international borders and by killing lakhs of people. The fatality rate was said to be more for all the pandemic diseases compared to any other disease (1). There are several pandemic diseases which have occurred throughout the world like the Ebola Virus, H1N1 virus, Lassa fever, Rift Valley fever, Marburg virus disease, Nipah virus Spanish flu. Ebola virus is a haemorrhagic fever which is transmitted by the wild animals. Human to human transmission is possible and it is said to be 90% fatal (2). Marburg virus disease is caused due to fruit bats, and it gets transmitted from human to human, which is said to be 80% fatal(3). Lassa fever is also a type of haemorrhagic fever which gets transmitted when a person has direct contact with the urine and the faeces of the rodents. It is not said to be fatal. It can also get transmitted from human to human(4). Rift Valley fever is a disease which is caused by the direct contact with the blood or the organs of the infected animals or even by the mosquito. Human to human transmission is not possible(5). The Spanish flu is caused due to a virus named influenza which attacks the respiratory system. Direct contact with the infected person helps to transmit the disease easily (6).

Coronavirus is a critical human and animal virus. COVID-19 is caused by the Severe Acute Respiratory Syndrome (SARS-CoV2). Previously this was known as 2019-nCoV.(7) Coronavirus is with the family Coronaviridae and different Nidovirales, a family that causes sickness running from extreme cold to Severe Acute Respiratory Syndrome (SARS) (8). Coronavirus is said to be an RNA virus. Individuals after knowing the spread of the disease to be rapid, they started to migrate from one place to another so that they could escape from the risk of the pandemic disease. There was an affordable emergency, food shortage and numerous different confusions faced by the individuals because of the pandemic disease (9).

In a situation we do not know what to do to escape out of this, every attempt is made to try and get out of it. Each information is valuable for the moment, whether it is beneficial or not. The pandemic caused by SARS CoV 2 is unique in this modern day condition, where we thought we have a solution for everything. Everything proved futile in combating the pandemic even by the most developed countries. Hydroxychloroquine, which is a normally utilized antimalarial drug is utilized to treat the novel coronavirus (10). Remdesivir is additionally utilized for the treatment of the coronavirus as it is an antiviral medication (11). Coronavirus causes Acute Respiratory Distress Syndrome, as well as it has the ability to promote the cytokine storm disorder in patients (12).

PANDEMIC DISEASES

Influenza virus causes several rapid spread as there is no vaccine for the majority of the pandemic disease. Doctors, over a few years back have told that the pandemic disease is a very important disease-for the government to take immediate actions. The disease spreads from one country to another country and also from one nation to another nation (13). During this pandemic

there is lack of immunity among the people (14). The pandemic disease gets spread easily with the help of the community spread, as the climatic conditions also play a very important role in the spread of the disease(15).

MODE OF SPREAD

The pandemic disease spreads easily through transportation and urbanization as well as through person to person direct contact(16). Community spread plays a major role as it helps in the rapid spread of the disease. (17). Through international air travel, the migratory birds and insects can easily reach remote areas. Environment plays a vital role in determining the fate of the incidence. Survival of the infectious agent in the environment will remain as a source of spread.

VACCINE

A vaccine is a substance that produces antibodies which in turn induces the production of immunity. Hemagglutinin vaccine was said to be used to treat the H1N1 influenza virus(18). There is no vaccine found for the COVID - 19 till now. Still many studies have been going on in order to find the vaccine for the COVID - 19(19).

COVID-19

COVID - 19 is caused by (SARS CoV 2) which was confirmed and identified by the world health organization. COVID-19 is a major disaster that has occurred in the year 2020. Most natural disasters are more among the developing countries, But Coronavirus affects almost all the countries. Evidence states that this originated in Wuhan, China. The virus will be highly infectious, transmitting disease from one to another. It affects the infants, children, middle-age as well as old aged people (20). SARS-CoV-2 is a beta virus which resembles the genetic sequence of the bats. It mainly gets transmitted through the droplets and also through contact(21). It can also be transmitted with the help of the aerosols and also from the affected mother to the child (22).

STRUCTURE OF COVID - 19

The SARS-CoV-2 virus binds to a viral RNA. This coronavirus is an RNA virus. The range of this virus is from 60 nm to 140 nm in diameter, on the surface, they have spikes like substances for the protection(23). It cannot be viewed in the naked eyes, it can only be viewed with the help of a microscope. COVID -19 is a pleomorphic, spherical particle with bulbous surface and it is a spike protein (24)(25)(26)

DRUGS USED FOR THE COVID-19

Drugs like lopinavir help to inhibit the Coronavirus replication through several methods. Chloroquine has also been used in the treatment of pneumonia and as an immunomodulator. People infected with pneumonia have a higher negative value of nucleic acid when the throat swab has been taken within five days after using lopinavir or by using the ritonavir. The side effects of chloroquine might be present or it need not be present. It usually depends upon each and

every individual (27). Remdesivir can be used for the treatment of the novel coronavirus as it is an antiviral drug (28). Ribavirin drug should be introduced into our body through IV with a dosage of about 500 mg for the adults which has to be given twice or thrice a day along with a combination of lopinavir or the ritonavir. Hydroxychloroquine can also be given for the precaution of the coronavirus (29).

SECONDARY BACTERIAL INFECTION

Since various classes of pathogens require various kinds of invulnerable reactions, seeing how a progressing safe reaction to one sort of disease influences the host's capacity to react to another pathogen is basic for total comprehension of host-pathogen reactions. Flu contamination causes a rapid increase in the serum glucocorticoid levels, leading to several changes in the body. Glucocorticoid reaction is very important to control immunopathology during coinfection (30). The stress and anxiety will suppress the immunity more, during the pandemics. The replication of the virus in the mucosal epithelium will lead to rupture of the mucus membrane. This will facilitate the development of secondary bacterial infections. Care should be taken to choose a right antibiotic specific to the secondary coloniser bacteria. There can't be an universal prescription to treat the secondary bacterial infection. Treating the patients with the specific antimicrobial will be life saving. Low dose of steroid can be administered when the patient is at the critical stage to reduce the advancement of inflammatory damage.

SUSCEPTIBILITY

For a pandemic illness like influenza, antiviral resistance can be given by utilizing viral prescriptions for prophylaxis and for the management of the outbreak (31). For example, patients with influenza who got treatment from a medical clinic would give some important information to direct clinical administration and, ought to incorporate those things which have been told previously by the patients, during and after the antiviral treatment, especially in specific gatherings of patients, for example, immunocompromised hosts (organ transplant, patients with hematological danger rewarded with chemotherapy, those with significant lymphocytopenia, propelled AIDS, or accepting higher doses of fundamental glucocorticoids) and those with genuine sickness requiring mechanical ventilation or emergency unit (30,32)

AWARENESS

People are aware of the harmful effects of the pandemic disease and they are very much worried about it, thinking whether it would affect them or not. Majority of the people were aware of the H1N1 virus, which is said to be a virus causing pandemic disease all over the country, a few years ago (33). People are very much aware of the emerging pandemic disease and they follow safety measures, as well as precautions, were also taken in order to completely protect themselves from the virus. By doing so, they will be able to completely eradicate the emerging pandemic disease (34). People are very much aware of the COVID-19 and its harmful effects when we come to know the evidence which is obtained from the Google trends (35).

CHALLENGES FACED DUE TO A PANDEMIC

Many challenges are faced by the people due to the pandemic. Whenever any pandemic disease occurs in a country, people are not allowed to step out of their house, so they will feel isolated at home, have deep thoughts that they might lose their jobs and food scarcity. When people don't go for jobs during the rise of the pandemic disease, automatically they won't be able to pay their debts, so a financial crisis will occur for the family (18)(36).

CROSS SPECIES ADAPTATION AND RECOMBINATION

A few coronavirus cross-animal transmission will occur, just as changes in virus tropism, which leads to the production of various types and forms of coronaviruses such as the bovine coronavirus (BCoV), human coronavirus OC43 (HCoV-OC43), human coronavirus 229E (HCoV-229E), canine coronavirus (CCoV), feline coronavirus (FCoV), porcine coronavirus (PCoV), and transmissible gastroenteritis virus (TGEV)(37)

IMPACT ON HEALTH CARE SYSTEM

The non-medical health care workers had a higher predominance of tension than medical care professionals. Our discoveries are reliable with those of an ongoing COVID-19 examination showing that frontline nurses had an altogether lower effect than non-forefront medical caretakers and the overall population. The health care professionals and the frontline nurses suffered a lot wearing the Personal Protective Equipment. They had to work every day and night without eating proper food. They were not able to see their family at all. Even if they meet them, they have to see them from a long distance as the Healthcare workers cannot go near their families. (38).

INFLUENCE OF WEATHER

The extraordinary climate conditions with environmental change may likewise add to the spread of the West Nile infection in the United States and Europe(39). Certain climatic conditions can be considered as the top indicators of respiratory illnesses, for example, SARS. Atmosphere factors can likewise be an immediate reason for the natural link between the SARS-CoV and the people. Ideal temperature, dampness, and wind speed are the factors which can decide the endurance and transmission of the SARS infection (40). Changes in climate are fundamentally associated with changes in death rates because of pneumonia (41). Infections can be transmitted by variable climatic conditions like temperature (42). Research on environmental change and COVID-19 is still constrained so this examination will help to prevent COVID - 19.

PREVENTION AND SAFETY MEASURES

Hand sanitizers should be used very often, social distancing has to be maintained wherever we are and whatever we do, in order to prevent the easy spread of the pandemic disease. Use of face masks should be made compulsory for the people when they step out of the house and very importantly personal hygiene has to be maintained (43)(44)(45). Plasmid encoded *dfrA-1*, *dfrA-5*, *sul 1*, and *sul 2* mediated trimethoprim-sulfamethoxazole [TMP-SMX], MDR and the XDR strains has been tested for the antiviral activity in order to treat the pandemic Viral disease(46)(47). Many medicines are found against the *Enterococcus Faecalis* in the treatment

of the root canal (48)(49). Hepatitis - B vaccine can also be given as a precaution because it's an Antiviral drug (50). Orange peel oil is said to possess antimicrobial activity and it has many other benefits and uses (51). Bay leaf is likewise ordinarily used to treat muscles and joint agony. Fluid concentrates of narrow trees can likewise be utilized as astringents and even as a sensible treatment for open injuries. The calming movement of Bay leaf was resolved yet its capacity to repress protein denaturation where denaturation of proteins is an all-around recorded reason for aggravation (52). For the *Acinetobacter baumannii* infections, carbapenem drug can be given as a treatment (53)(54)(55). N6- adenosine methylation acts as a very important gene for the diagnosis of hypertension as well as for the cardiovascular diseases (56). Chlorhexidine mouthwashes play a major role to cleanse the oral cavity (57)(58). A study on the anti-inflammatory action of *Laurus nobilis* was carried out (52). Silico analysis was performed with the *A. baumannii* species (59). The resistance of the Antifungal drug was tested with L321F gene against *Acacia nilotica* (60)

CONCLUSION

Thus from the information obtained about the pandemic disease, we come to the conclusion that we have to be safe by following the safety measures in order to protect ourselves from the disease.

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