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Review Article

COVID-19: THE PANDEMIC-CLINICAL PRESENTATION, PREVENTION, CURATIVE INTERVENTION, PATHOLOGY AND PUBLIC HEALTH PERSPECTIVE

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Abstract:

Corona Virus Disease 2019 or more simply known as the COVID-19 emerged from the City of Wuhan in the Hubei Province of China in the last quarter of 2019 as cases presenting with pneumonia but unknown aetiology. COVID-19 presents with a wide range of clinical symptoms including Fever, Cough, Shortness of Breath (SOB), Headache and Muscle Pain Etc. Prevention is critical as there is no specific and approved treatment for COVID-19 at this time. Although many trials are underway, none has so far been very successful with a breakthrough in this regard. Treatment generally revolves around giving symptomatic and supportive care to control fever, hydration and nutrition. Different drugs including the use of Antivirals with or without a combination of antibiotics has been warranted but to no major success so far. Alternative options including the use of Passive immunization via monoclonal antibody therapy show progress but so far, the antibodies haven't been marketed. The rise of neutrophils in the lungs and a serum elevated level of cytokines and chemokines responsible for inflammation is believed to be related to the lung damage seen in the COVID-19 patients. Presence of the SARS-CoV-2 viral antigen in the sample detected via the PCR or ELISA technique, confirms the diagnosis of COVID-19 Infection. COVID-19 has an economic fall out that most countries of the world now fear an economic recession due to the existing and extended lockdown imposed at the moment. Therefore, measures need to be taken to curb this before the situation gets out of hand, especially for developing countries.

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INTRODUCTION & BACKGROUND:

Corona Virus Disease 2019 or more simply known as the COVID-19 emerged from the City of Wuhan in the Hubei Province of China in the last quarter of 2019 as cases presenting with pneumonia but unknown aetiology. The virus responsible for the clinical condition is Severe Acute Respiratory Syndrome Corona Virus 2 or the SARS-CoV-2 [1]. The virus has since then become a global issue of imminent concern. The primary thought behind writing this review was to give a broad view of this less known but rapidly evolving medical condition. Coronavirus, as the name indicates, has a crown-like appearance. SARS-CoV-2 is an RNA virus and shares a sequence identity of 79% to SARS-CoV, that caused the 2003 outbreak [2]. This is an outline and a simplified review to learn the basics of this healthcare menace facing the world during these war times.

Clinical Presentation:

COVID-19 presents with a wide range of clinical symptoms including Fever, Cough, Shortness of Breath (SOB), Headache and Muscle Pain Etc [3]. The diversity yet the similarity of symptoms to other respiratory conditions makes it a physician's nightmare to diagnose clinically. However, most cases have a very mild course of illness [3].

Prevention:

Prevention is critical as there is no specific and approved treatment for COVID-19 at this time. Although many trials are underway but none has so far been very successful with a breakthrough in this regard.

Community involvement including avoidance of large gatherings, is of utmost importance as social distancing is an effective tool to not only decrease the risk of spread but to also reduce the ever-growing disease burden on the healthcare facilities.

Preventive measure includes maintenance of good sunlight and adequate airway ventilation to kill the virus on the surfaces. Patients should be advised to wear surgical mask while care givers including

healthcare workers and those who tend for the patients should wear surgical mask and personal protective equipment and practise hand hygiene frequently [4].

Surfaces should be decontaminated regularly and extra precaution needs to be taken when high risk procedures like intubation are being carried out.

Curative Intervention:

Isolation of the positive cases is the first and foremost step in this regard. Treatment generally revolves around giving symptomatic and supportive care to control fever, hydration and nutrition. Different drugs including the use of Antivirals with or without a combination of antibiotics has been warranted but to no major success so far [5].

The use of steroid therapy has not shown benefits rather a possibility of harm to the patients has been observed and is therefore not recommended to use corticosteroids for COVID-19 [6].

Remdesivir, an antiviral medication has shown some promise and the clinical trial is undergoing but it would be too early to use it as a recommended treatment option [7-9].

Pathology:

A receptor by the name of Angiotensin Converting Enzyme (ACE) 2 found in the human lower respiratory tract, regulates inter specie and intra specie transmission of SARS-CoV-2 [10]. Both SARS-CoV and SARS-CoV-2 use the same entry point receptor mechanism. S-glycoprotein present on the surface of the virus attached itself to the host cells receptor (Human Cells) [11]. Following membrane fusion, viral RNA is released into the cytoplasm. A complex process results in the formation of viral peptide buds. These vesicles fuse to the plasma membrane, releasing the virus [12-13].

The rise of neutrophils in the lungs and a serum elevated level of cytokines and chemokines responsible for inflammation is believed to be

related to the lung damage seen in the COVID-19 patients [14-15]

Laboratory Diagnosis:

Blood samples, Sputum samples and Nasal secretions taken from the suspected cases are subject to investigations including biochemical, serological and molecular tests for COVID-19 infection. Presence of the SARS-CoV-2 viral antigen in the sample detected via the PCR or ELISA technique, confirms the diagnosis of COVID-19 Infection [16].

Plasma Therapy:

Monoclonal Antibody therapy is a newer concept when it comes to preventing infections. It carries the advantage of many drawbacks of serum therapy and Intravenous immunoglobulin preparations such as efficacy, specificity and low blood borne infections. Monoclonal Antibody therapy is an excellent curative intervention [17-20]

With limited data on the subject, no specific treatment or licensed vaccines to treat COVID-19 Infection, there is a need to look for alternative options including the use of Passive immunization via monoclonal antibody therapy especially in pandemic situations like this [21]. There is progress but so far, the antibodies haven't been marketed.

CONCLUSIONS:

COVID-19 has kept the healthcare facilities on their toes and had an economic fall out that most countries of the world now fear an economic recession due to the existing and extended lockdown imposed on most countries of the world at the moment. Therefore, measures need to be taken to curb this before the situation gets out of hand especially for developing countries. This is an outline and a simplified review to learn the basics of this healthcare menace facing the world during these war times.

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