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EARLY DIAGNOSIS, PROPHYLAXIS AND TREATMENT OF CORONAVIRUS (COVID -19)

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ABSTRACT Corona virus causes respiratory infection including pneumonia, cold, sneezing and coughing while in animal it causes diarrhea and upper respiratory diseases. Corona virus transmitted human to human or human to animal via airborne droplets. The virus spreads faster than its two ancestors the SARS -CoV and Middle East Respiratory Syndrome Coronavirus (MERS – CoV), but has lower fatality. Corona virus enters in human cell through membrane ACE -2 exopeptidase receptor. WHO and ECDC advised to avoid public place and close contact to infected persons and pet animals. Firstly , Corona virus (2019 -nCoV) was isolated from Wuhan market China at 7 Jan 2020 .

KEYWORDS : Coronavirus , MERS -CoV , SARS – CoV ,ACE -2 , hydroxychloroquine and convalescent plasma therapy .

INTRODUCTION

The 2019 novel coronavirus or the Severe Acute Respiratory Syndrome Corona Virus 2 (SARS -CoV-2) as it is now called as rapidly spreading from its origin in Wuhan City of Hubei Province of China to the rest of the world. children have been infrequently affected with no deaths but the future course of this virus is unknown.

MICROBIOLOGY

Corona virus is spherical or pleomorphic, single stranded, enveloped RNA and covered with club shaped glycoprotein. Corona viruses are four sun types such as alpha, beta, gamma, and delta corona virus. Each of sub type corona viruses has many serotypes. Some of them were affect human of other affected animals such as pigs, birds, cats, mice and dogs.

ORIGIN AND SPREADING

People can get the infection through close contact with a person who has symptoms from the virus. includes cough and sneezing .Generally, corona virus was spread via airborne zoonotic droplets. Virus was replicated in ciliated epithelium that caused cellular damage and infection at infection site. According to study Angiotensin Converting Enzyme 2 (ACE -2), a membrane exopeptidase in the receptor used by corona virus in entry to human cells .

DIAGNOSIS

A suspect case is defined as one with Fever , sore throat and cough who has history of travel to china or other areas of persistent local transmission or contact with patients with similar travel history or those with confirmed COVID -19 infection . However, cases may be asymptomatic or even without fever . A confirmed case is a suspect case with a positive molecular test.

Specific diagnosis is by specific molecular tests on respiratory samples (throat swab/nasopharyngeal swab / sputum / endotracheal aspirates and bronchoalveolar lavage).

Virus may also be detected in the stool and in severe cases , the blood . It must be remembered that the multiplex PCR panels currently available do not include the COVID -19 . In a suspect case in India, the appropriate sample has to be sent to designated reference labs in India or the National Institute Of Virology in Pune . As the equipment progresses , commercial tests will become available .

The white cell count is usually normal or low . There may be lymphopenia ; a lymphocyte count < 1000 has been associated with severe disease . The platelet count is usually normal or middle low . The CRP and ESR are generally elevated but procalcitonin levels are usually normal . The ALT or AST ,prothrombin time , creatinine , D – dimer , CPK and LDH may be elevated and high levels are associated with severe disease .

The chest X-Ray usually shows bilateral infiltrates but may be normal in early disease . CT imaging generally shows infiltrate , ground glass opacities and sub segmental consolidation .

Differential Diagnosis

The differential diagnosis includes all types of respiratory viral infections like Influenza , adenovirus , parainfluenza , respiratory syncytial virus (RSV) . It is not possible to differentiate COVID -19 from these infections clinically or through routine lab tests .

Treatment

Treatment is essentially supportive and symptomatic . The first step is to ensure adequate isolation to prevent transmission to other contacts , patients and healthcare workers . Mild illness should be managed at home with counselling about danger signs . Routine use of antibiotics and antivirals such as oseltamivir should be avoided in confirmed cases . Renal replacement therapy may be needed in some . Antibiotics and antifungals are required if co – infections are suspected or proven . The role of Corticosteroids in unproven ; WHO advocate against their use , Chinese guidelines do recommend short term therapy with low -to-moderate dose corticosteroid in COVID -19 . The Antiviral drugs such as ribavirin , lopinavir / ritonavir have been used based on the experience with SARS and MERS . In SARS patients treat with lopinavir – ritonavir with ribavirin had better outcomes as compared to those given ribavirin .

In COVID -19 oxygen was given to 76 % , non invasive ventilation in 13 % , mechanical ventilation . In 4 % , renal replacement therapy in 9% , antibiotics in 71 % , antifungal in 15% , glucocorticoids in 19 % and intravenous immunoglobulin therapy in 27 % . Antiviral therapy consisting of oseltamivir , ganciclovir and lopinavir – ritonavir was given to 75% of the patients . The duration of non -invasive ventilation was 4 – 22 days and mechanical ventilation for 3 -20 days .

Other drugs proposed for therapy are arbidol , intravenous immunoglobulin ,interferons , chloroquine, hydroxychloroquine and convalescent plasma therapy .

Prevention

There is nothing to provide complete guideline to prevent from corona virus but some guidelines was presented by WHO and ECDC . Basically, these guidelines are for health profession to set during the caring of infected patient . Because many

evidences was presented by studies about human to human transmission of corona from Wuhan , China . Another study reported about airborne transmission of virus while no one was presents the solid evidence . According to WHO , some general guidelines were published such as separate the infected patient from other family members to single room , implementation of contact and droplet precaution , airborne precautions , etc . ECDC also published the information leaflets to peoples such that Avoid contact with sick people , in particular those with a cough , fever . Avoid visiting markets and places where live or dead animals are handled , wash your hands with soap and water or use alcohol based disinfectant solution before eating , after using the toilet and after any contact with animals , Avoid contact with animals , their excretions or droppings .

CONCLUSION

COVID -19 can be transmitted between humans .Quarantine and isolation , can effectively reduce the spread of COVID – 19 , with the effect of travel restriction. In Acute respiratory infection , RT -PCR is routinely used to detect causative viruses from respiratory secretions. The most common symptoms were fever, expectoration, cough, headache, fatigue, diarrhea . COVID – 19 uses the same cell entry receptors as SARS -CoV ,ACE 2 , which regulates both Cross species and human to human transmission. The transmission of pneumonia associated with SARS – CoV _2 has not yet been eliminated . In the absence of vaccines Antiviral , Antibiotics And Steroids Are given but still there is preparation of vaccines. The Convalescent plasma therapy is very Useful for the infective patients And to identify the patients Nasal and throat swab test is performed.

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