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RESEARCH PROPOSAL: TREATMENT PLAN FOR COVID-19

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Aim of study

To propose a suitable treatment plan for the patients of covid-19.

KEYWORDS: Covid-19, favipiravir, remdesivir, treatment for covid-19.

INTRODUCTION

'What is COVid-19? And what is the major problem due to this virus?'

Coronaviruses belong to the Coronaviridae family in the Nidovirales order. Corona represents crown-like spikes on the outer surface of the virus; thus, it was named as a coronavirus. Coronaviruses are minute in size (65-125nm in diameter) and contain a single-stranded RNA as a nucleic material, size ranging from 26 to 32kbs in length. The emerging SARS-CoV-2, a beta coronavirus, can cause COVID-19, officially named by the World Health Organization (WHO) on February 11, 2020. SARS-CoV-2 is highly infectious; the entire population is generally susceptible, and respiratory droplets and contact are the main routes of transmission. The transmission rate of SARS-CoV-2 is higher than SRAS-CoV and the reason could be genetic recombination event at S protein in the RBD region of SARS-CoV-2 may have enhanced its transmission ability. COVID-19 infection may be asymptomatic or have fever, dry cough, and fatigue, with a few upper respiratory symptoms, including nasal congestion and runny nose; some patients have gastrointestinal symptoms, including abdominal discomfort, nausea, vomiting, abdominal pain, and diarrhea. Most infected children have mild clinical manifestations, and the prognosis is good. Most of the pediatric patients have recovered within 1–2 weeks after onset. It is very uncommon to progress to lower respiratory tract infections. Data from adults showed that severe cases tend to have difficulty breathing 1 week after the onset of the disease. Severe cases can progress to acute respiratory distress syndrome, septic shock, refractory metabolic acidosis, and coagulation dysfunction.

Methodology: we have collected the information from respective and offical authorized resources and have reviewed the respective articles published or available to design this research proposal.

'What is the current treatment plan followed within pakistan for covid-19'

Scientists have suggested dozens of existing compounds for testing, but WHO is focusing on what it says are the four most promising therapies: an experimental antiviral compound called remdesivir; the malaria medications chloroquine and hydroxychloroquine; a combination of two HIV drugs, lopinavir and ritonavir; and that same combination plus interferon-beta, an immune system messenger that can help cripple viruses. Some data on their use in COVID-19 patients have already emerged—the HIV combo failed in a small study in China—but WHO believes a large trial with a greater variety of patients is warranted.

Chloroquine and Hydroxychloroquine along with isolation measures are included in the treatment plan advised according to Pakistan government.

'What are the drawbacks of current treatment plan?'

According to Who remdesivir showed the best results during pre-clinical and clinical trials against covid-19, but the drawback of remdesivir is that it is only available in IV dosage form due to which it can be only used in severe conditions. Whereas chloroquine and hydoxychloeoquine have much side effects and has more toxicity, they are toxic for pateints suffering from other diseases such as, heart and kidney problems, diabetes etc. They also have many contraindications with several other agents.

'What can be the alternative treatment plan and why?'

Favipiravir can be used for mild and moderate conditions associated to covid-19 whereas remdesivir can be used in the severe conditions. Both of the drugs has their respective merits and demerits. Remdesivir is proven to be the most efficacious and safe during the several clinical trials where patients in critical condition were taken as the subject but the drawback of remdesivir is that it can only be given in severe conditions. Whereas favipiravir has shown promising results in the patients with mild and moderate conditions during clinical trials when compared to lopinavir or rotinavir, but it also have its toxic effects when dose is not managed so it cannot be used in severe conditions. Favipinavir can be used for the diabetic or kidney and heart patients as its therapeutic doses doesnot show any side effects on the regarding organs, it is efficacious, safe and has a broad antiviral spectrum similar to that of

remdesivir compared to other drug. Both remdesivir and favipiravir act on the RNA and hence destroys the virus.

"Medical authorities in China have said a drug used in Japan to treat new strains of influenza appeared to be effective in coronavirus patients, Japanese media said on Wednesday. Zhang Xinmin, an official at China's science and technology ministry, said favipiravir, developed by a subsidiary of Fujifilm, had produced encouraging outcomes in clinical trials in Wuhan and Shenzhen involving 340 patients. "It has a high degree of safety and is clearly effective in treatment," Zhang told reporters on Tuesday. Patients who were given the medicine in Shenzhen turned negative for the virus after a median of four days after becoming positive, compared with a median of 11 days for those who were not treated with the drug, public broadcaster NHK said. In addition, X-rays confirmed improvements in lung condition in about 91% of the patients who were treated with favipiravir, compared to 62% or those without the drug. Fujifilm Toyama Chemical, which developed the drug – also known as Avigan – in 2014, has declined to comment on the claims. Doctors in Japan are using the same drug in clinical studies on coronavirus patients with mild to moderate symptoms, hoping it will prevent the virus from multiplying in patients. But a Japanese health ministry source suggested the drug was not as effective in people with more severe symptoms. "We've given Avigan to 70 to 80 people, but it doesn't seem to work that well when the virus has already multiplied," the source told the Mainichi Shimbun. The same limitations had been identified in studies involving coronavirus patients using a combination of the HIV antiretroviral lopinavir and ritonavir, the source added."

CONCLUSION

Favipiravir and remdesivir would need government approval for full-scale use on Covid-19 patients, since it was originally intended to treat flu and ebola virus respectively. It is suggested that health regulatory authorities of Pakistan should approve the addition of these two drugs with the other treatment measures that are necessary to ensure the safety and management of patients of covid-19 as suggested by the WHO to carry out necessary clinical trials.

'Enrolling subjects in SOLIDARITY will be easy. When a person with a confirmed case of COVID-19 is deemed eligible, the physician can enter the patient's data into a WHO website, including any underlying condition that could change the course of the disease, such as diabetes or HIV infection. The participant has to sign an informed consent form that is

scanned and sent to WHO electronically. After the physician states which drugs are available at his or her hospital, the website will randomize the patient to one of the drugs available or to the local standard care for COVID-19. "After that, no more measurements or documentation are required," says Ana Maria Henao Restrepo, a medical officer at WHO's Emergencies Programme. Physicians will record the day the patient left the hospital or died, the duration of the hospital stay, and whether the patient required oxygen or ventilation, she says. "That's all."

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