Medicina Biomedica Journal
Vol. 1, No. 1, January 2022, pp. 26 ~ 29
ISSN: 2827- 8275, DOI: 10.30596/mbj.v1i1

USE OF CHLOROQUINE ON COVID-19 VIRUS INFECTION IN INDONESIA : STUDY OF LITERATURE

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ABSTRACT

COVID-19, which is caused by a new type of coronavirus, namely SARS-CoV-2, has become a disease that causes a public health emergency that is troubling the world. Chloroquine was initially reported as a potentially useful drug for COVID-19. The use of chloroquine has been reported in various countries in the world and also in Indonesia. This literature study aims to trace the use of chloroquine at the beginning of the COVID-19 pandemicuntil recently. The method used is through searching articles published in national and international journalswithin the last 3 years. From the search results, it can be concluded that chloroquine has not been proven to be useful in the management of COVID-19 patients and can cause severe side effects, itsuse is no longer recommended by WHO and also in Indonesia.

Keyword : COVID-19, chloroquine

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1. INTRODUCTION

On December 31, 2019, at a hospital in Wuhan,Hubei Province, China, it was reported the emergence of a mysterious pneumonia disease of unknown cause.[1,2] On 7 January 2020 the pathogen from this event was identified as a new type of beta coronavirus, novel coronavirus 2019 (nCoV-2019).[2] On January 30, 2020, WHO declared the emergenceof the novel coronavirus pneumonia (NCP) as a Public Health Emergency of International Concern (PHEIC). On February 11, 2020, the InternationalCommittee on Taxonomy of Viruses (ICTV) declared that Severe Acute Respiratory Syndrome Coronavirus2 (SARS-CoV-2) became the official name of nCoV- 2019.[1,3] On the same day WHO declared the official name of the new virus SARS-CoV-2 and the name ofthe disease as Corona Virus Disease 2019 (COVID- 19).[2] Finally, on March 11, 2020, WHO announced and designated COVID-19 as a pandemic in the world.[1,3]

COVID-19 in Indonesia is increasing day by day. The first COVID-19 cases were reported in Indonesia in March 2020, to be exact on March 2, 2020, as many as 2 people.[1,2,3] Data on March 31, 2020, showed that there were 1,528 confirmed casesand 136 deaths.[4] On December 31, 2020, the confirmed cases increased to 743,196 cases with 22,138 deaths,[2] and until August 2021 it reached 3,532,567 cases with 100,636 deaths.[5] One of the problems that arise from COVID-19 infection is choosing an effective and safe therapy. Many things have been studied regarding therapies that can be used to prevent or treat COVID-19. Various drugs have been used to save the patient's life. One type of drug that has been used because it is considered beneficial is chloroquine.

At the outset, publications regarding the possible benefits of using the drug chloroquine in patients infected with SARS-CoV-2 have attracted attention. Many in vitro studies have shown that chloroquine has the potential for broad-spectrum antiviral activity, including against SARS-

CoV-2. In this study, the authors describe the use of the drug chloroquine in the management of COVID-19carried out in Indonesia.

2. METHOD

This literature study was conducted by searching for library materials using the GoogleScholar application. The articles used are articles published in national and international journals over a span of the last 3 years and discuss the use of chloroquine in the management of COVID-19 patients in Indonesia.

3. RESULTS

COVID 19

Coronavirus Disease 2019 (COVID-19)is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2(SARS-CoV-2). This virus belongs to the coronavirus family. Coronavirus is a single strain, encapsulated and unsegmented RNA virus.[1,2] Coronavirus has 4 main protein structures, namely: protein N (nucleocapsid), protein E (envelope), glycoprotein M (membrane), and glycoprotein S (spike). SARS-CoV-2, which causes COVID-19, belongs to the beta coronavirus genus, has anenvelope, is generally round or oval in shape, and is often pleomorphic, with a diameter between 60 – 140 nm.[1,3]

COVID-19 can be transmitted throughdirect contact with an infected person (droplets)and also through indirect contact with surfaces or objects used on an infected person (eg, stethoscope, thermometer). COVID-19 has anaverage incubation period of 5-6 days while the longest incubation period is around 14 days.[1,3] Symptoms and severity of COVID-19 vary, ranging from asymptomatic, mild symptoms, moderate symptoms, severe symptoms to critical.+2,5 The most common symptoms of COVID-19 infection include fever,fatigue, and a dry cough.[3,4] Other symptoms that can be found are nasal congestion, runny nose, loss of smell and smell, headache, sore throat, and diarrhea.[3,5] In severe cases, COVID-19 causes pneumonia, AcuteRespiratory Distress Syndrome (ARDS), sepsis, septic shock, kidney failure, and even death.[1,3]

To establish a diagnosis, WHOrecommends molecular testing for all patients suspected of being infected with COVID-19. The recommended method is the molecular detection method/Nucleic Acid Amplification Test (NAAT) such as RT-PCR examination.[1,3,5]

CHLOROQUINE

Preclinical studies of chloroquine haveshown that it is active in vitro against SARS-CoV-2. Wang, et al in their research said thatchloroquine can inhibit SARS-CoV-2infection by increasing the endosomal pH required for virus/cell fusion and disrupting cellular receptor glycosylation. In addition, chloroquine also has an immunomodulatory activity that strengthens its antiviral effect.[6,7]

At the beginning of the pandemic, bothin Indonesia and in the world, the use of chloroquine was recommended in patients infected with SARS-CoV-2. According to the COVID-19 Management Protocol edition 1, April 2020, patients with COVID-19 can be given chloroquine phosphate 2 x 500 mg in their therapy.[8] The use of chloroquine in the management of COVID-19 patients in Indonesia can be seen from the case report of the Arifin Ahmad General Hospital, Riau Province on March 31, 2020. After undergoing a 10-day period of treatment and administration of the antiviral drug Oseltamivir 75 mg orally twice a day and chloroquine phosphate twice a day. 500 mg orally, the patient was declared fully recovered.[9] The use of chloroquine phosphate is also given to COVID-19 patients at the Udayana University hospital April – May 2020. The dose of chloroquine is given 2 x 500 mg orally, with a duration of

administration ranging from 5-15 days.[10] Widyaningsih et al also reported a case report regarding the use of chloroquine in COVID-19 patients at a hospital in Bali, Indonesia.[11]

Besides being useful, the use ofchloroquine also causes side effects. Side effects can include nausea, vomiting, and diarrhea.[12] Serious side effects are retinopathy, QT prolongation, and Torsades de Pointes.[12,13] Meanwhile, a meta-analysis by Allam MF concluded that chloroquine hasnot been shown to be an effective treatmentfor coronavirus in general or COVID-19 in particular.[14] In the Living guidance for clinical management of COVID-19 issued by WHO on November 23, 2021, which is an update from Clinical management of COVID-19: interim guidance, dated May 27, 2020, chloroquine and hydroxychloroquine are no longer recommended for use because the published literature is partially Most are observational in nature with few clinical trials,cause a prolongation of the QT interval and an increased risk of cardiotoxicity.[15]

In Indonesia, the revocation of the Emergency Use Authorization (EUA) for chloroquine and hydroxychloroquine by BPOM has resulted in the discontinuation of chloroquine as a treatment for COVID-19. InJanuary 2021, the Ministry of Health of the Republic of Indonesia has compiled aHandbook of Protocols for the Management of COVID-19 in Indonesia.[16] With the development of therapy for COVID-19 patients, these guidelines were refined and in August 2021 through the Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07/MENKES/5671/2021 new guidelines for the Clinical Management of Corona Virus Disease 2019 (COVID-19) were issued. These guidelines were prepared based on WHO recommendations and adapted to the development of the COVID-19 pandemic, and the provisions of laws and regulations, and there is no longer any recommendation for the use of chloroquine for the treatment of COVID-19.[17]

4. Discussions

Chloroquine has an inhibitory effect onvirus/cell fusion and also hasimmunomodulatory activity. The limitations of further research and clinical trials and thepresence of severe side effects have causedchloroquine to no longer be recommended for use in the treatment of COVID-19patients.

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