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THE POTENCY OF HYDROXYCHLOROQUINE TO TREAT COVID-19 DISEASE

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ABSTRACT

Background: several experts' opinions, theory reviews and case reports on HCQ figure various results. This review is aimed at determining hydroxychloroquine (HCQ) effect on Covid-19 patient. **Method:** The Review was done by examining publications published in Pubmed and Sciencedirect. Searching process was done by keywords: hydroxychloroquine and covid-19 and randomized clinical trial; research article and published 2020. The criterion for the choice of publications to be reviewed is the complete researches based articles. **Result:** There were 3 articles meet the criterion. Length of stay (hospitalization) to negative convertion of viral nucleic acid in HCQ vs control group was 4 (1.9) days vs 2 (1.4) days, (Z = 1.27, P>0.05); number of patients who get diarrhea and abnormal liver function between HCQ vs control groups were 4 cases (26.7%)) vs 3 cases (20%) (*P*>0.05); number of patients who get radiological progression that shown on CT images between HCQ vs control groups were 5 cases (33.3%) vs 7 cases (46.7%); The median time to normalize body temperature in the HCQ vs control group was 1 (0.2) vs 1 (0.3) day). Total negative conversion before 28 days between HCQ (1200mg/day for 3 days followed 800mg/day for2-3 weeks) +standard care group vs standard care group was (56 vs 53 patients of 150 patients). There were 2 HCQ recipients (1200mg/day for 3 days followed 800mg/day for2-3 weeks) were reported to have serious adverse events blurred vision and thirst. **Conclusion:** There is insufficient evidence that HCQ improve clinical symptom, sign or time hospitalization on covid-19 patients.

KEYWORDS: hydroxychloroquine (HCQ), Covid-19, Review article.

INTRODUCTION

Several studies have tried to find the effect of Hydroxychloroquine (HCQ) on SARS cov2. Most of the researches are only at the invitro stage. In Vitro HCQ has activity against SARS COV2 (1-5). HCQ has an effect on SARSCOV2 with IC_{50} HCQ 6.25 microM at 24 hours and 5.85 microM at 48 hours. IC_{50} HCQ is better than chloroquine.[1]

The mechanism of HCQ against SARS Cov2 is uncertain but it is possible through inhibition of viral DNA and RNA polymerase enzymes, viral protein glycosylation, inhibition of viral assembly, transport and release, inhibition of ACE2 cellular receptors, surface acidification and inhibition of viral fusion.[1-2,6-8]

Method

This research was carry out by review article. Articles reviewed were taken from Pubmed and Sciencedirect (SD) data base. Searching process was done by keywords: hydroxychloroquine and covid-19 and randomized clinical trial; research article and published 2020.

Selection criteria

The eligibility of Articles were: research article with design randomized, controlled and had complete research.

RESULTS

Search results and study characteristics

The search process with keywords: “hydroxychloroquine and covid-19 and randomized clinical trial” found total 230 articles; 11 from Pubmed data base and 219 from Sciencedirect (SD) database. After reducing duplication, and excluding base on title or abstract, only 3 articles meet eligibility criteria.

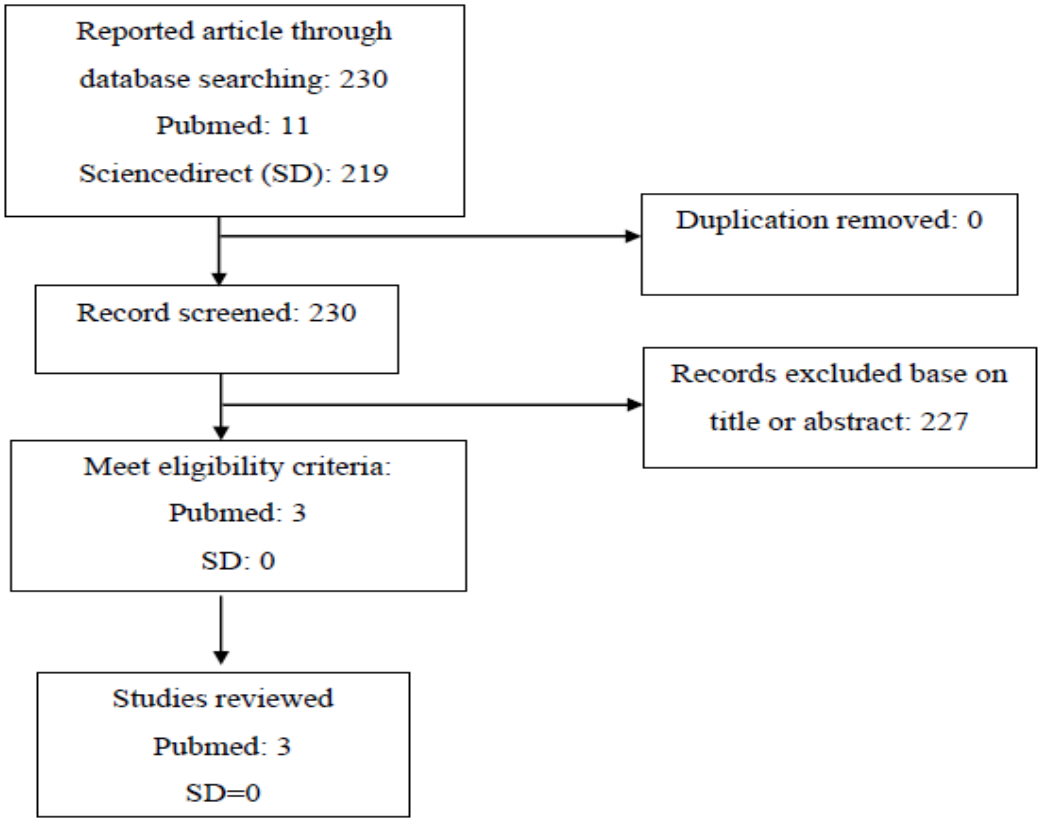

Figure 1: Flowchart of process of article search.

Study outcomes

Study by David *et al*, found that prophylaxis by HCQ did not protect illness compatible Covid-19 post exposure within 4 days on people after high/moderate-risk exposure to Covid-19; 87.6% of the participants (719 of 821) had a high risk of being exposed to be confirmed Covid-19. The incidence of a new disease compatible with Covid-19 did not differ significantly between participants receiving HCQ (49 of 414 [11.8%]) and those receiving placebo (58 of 407 [14.3%]).[9]

Study by Jun Chen *et al.* resulted in the median duration from hospitalization to negative convertion of viral nucleic acid in HCQ vs control group was 4 (1.9) days vs 2 (1.4) days, ($Z = 1.27$, $P > 0.05$]; number of patients who get diarrhea and abnormal liver function between HCQ vs control groups were 4 cases (26.7%)) vs 3 cases (20%) ($P>0.05$); number of patients who get radiological progression that shown on CT images between HCQ vs control groups were 5 cases (33.3%) vs 7 cases (46.7%); The median time to normalize body temperature in the HCQ vs control group was 1 (0.2) vs 1 (0.3) day]. There was one of 15 patients develop into severe during treatment in HCQ group.[10]

Study by Wei Tang *et al.*, found that there was no significant different of total negative conversion before 28 days between HCQ (1200mg/day for 3 days followed 800mg/day for2-3 weeks) +standard care group vs standard care group (56 vs 53 patients of 150 patients). There were 10 % patients received HCQ get diarrhea that not reported in standard care group. Two HCQ recipients (1200mg/day for 3 days followed 800mg/day for2-3 weeks) were reported to have serious adverse events blurred vision and thirst.[11]

Table 1: Charactyeristic of included criteria.

Study	Design	Location	Number of patients	Age	Sex	Duration therapy	Tretament	Interventions
David R Boulware *et al*,	Randomized, double-blind, placebo-controlled trial	US and Canada	821 asymptomatic participants	Median age (HCQ)= 41(35-51) Plasebo group= 40(32-50)	Female HCQ = 218(52, 7%); Plasebo= 206 (50, 6%)	14 days	Prophylaxis	800 mg once, followed by 600 mg in 6 to 8 hours, then 600 mg daily for 4 additional days) vs placebo
Jun Chen *et al*	RCT	Chinese	30	adult	both	5days	Therapy	HCQ 400 mg per day for 5 days+ conventional treatments vs conventional treatments
Wei Tang *et al*	Multicentre, open label, randomised controlled trial	Chinese	150 (75 HCQ; 75 Standar treatment)	Mean age: SOC plus HCQ (n=75)= 48.0(14,1) ; SOC= 44.1 (15.0)	Male: SOC plus HCQ (n=75)= 42(56%) ; SOC= 40 (53%)	2-3 weeks	Therapy	HCQ 1200 mg daily for 3days followed by 800 mg daily (2-3 weeks for patients with mild to moderate or severe disease) + standard care vs, standard care

DISCUSSION

This study states that HCQ does not improve clinical sign, clinical symptom or time hospitalization better than standard care. This may be due to: insufficient dose of HCQ, less duration of therapy, or indeed HCQ does not provide clinically improvement significantly. A

larger sample size and multiethnic study might be needed so that the full role of HCQ in the treatment of COVID-19 can be determined precisely.

There is one patient who suffers from blurred vision. One of adverse effect of HCQ is retinal toxicity. The occurrence of retinal toxicity due to HCQ is influenced by the dose of the drug. HCQ doses> 400 mg/day (cumulative dose>1000g), and duration of treatment (> 5 years) greatly increase the risk of retinal toxicity.[12] Geriatric patients, obesity, impairment of renal and/or hepatic function also increase the risk of retinal toxicity.[12,13]

CONCLUSION

There is insufficient evidence to suggest that HCQ causes clinical improvement significantly in COVID-19 patients.

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