

Deltacortil (Prednisolone) Relieves Symptoms of Corona Virus (COVID-19) Infection

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ABSTRACT

Objectives: To observe the beneficial effect of steroid Deltacortil on, fever, cough and myalgia in patients with corona virus COVID-19 infection .

Study design: Observational Study .

Place and duration of study – Furqan Clinic Gulbahar Peshawar from May 2020 till June 2020

Methodology: This study was conducted on 80 adult patients, irrespective of gender, age selected was between 30 - 50 years. Patients were divided into 4 groups, with 20 patients in each group . Group I was control group, did not receive deltacortil, Group 2 received Deltacortil on day One i.e first day of onset of symptoms for 14 days, Group 3 received Deltacortil at day 8 for 14 days and Group 4 received deltacortil at day 15 for 14 days .Dose of Deltacortil was tablet 5mg, twice a day, given to all three experimental groups for 14 days . In all groups fever, cough and myalgia was monitored. Changes and improvement in all three symptoms which occurred with Deltacortil was recorded.

Result: In group 1 control group fever, cough and myalgia persisted for 30 days, Group 2 showed that 20 % patients had fever, 55 % had cough and 10 % had myalgia at the end of month In Group 3 fever was present in 65% patients . 85 % patients had cough and 80 % had myalgia after 30 days . Group 4 showed that 90 % had fever, 90 % patients had cough and 30 % had myalgia for 30 days of study.

Conclusions: Group 2 received deltacortil from day One of onset of symptoms till day fourteen showed rapid improvement in fever, cough and myalgia than other groups taking deltacortil after seven days of occurrence of symptoms.

Key words; deltacortil, symptoms, relives, corona virus,

INTRODUCTION

Coronavirus has shown many impacts on human. It is an animal virus. Symptoms include common cold, fever, dry cough, pneumonia, myalgia, aches and pains in body, running nose, headache, hemoptysis, enteric, hepatic, and neurological symptoms. ¹ According to World Health Organization (WHO) it is termed as 2019 novel coronavirus. Coronavirus disease (COVID-19) . Initially the disease pattern was similar to (MERS) Middle East respiratory syndrome and (SARS) Severe Acute Respiratory.¹ WHO has also declared COVID-19 as (SARS-CoV-2) severe acute respiratory syndrome coronavirus 2 and as Public Health Emergency at International level.¹ . The incubation period of COVID-19 ranging from 2.1 to 11.1 days.² On their outer surface there are crown like spikes and was named as a coronavirus.³ Their size is (65–125 nm in diameter) and contain a single-stranded RNA as a nucleic material.³ COVID-19 is transmitted by three main routes, droplets transmission, contact transmission, aerosol transmission.⁴ Droplets transmission, when respiratory droplets produced by an infected person when he sneezes or cough and are inhaled by person in close area. Contact transmission is when a subject touch an object or surface contaminated with the virus and immediately touch his eyes, mouth and nose . In Aerosol transmission, respiratory droplets mix with air, forming aerosols when inhaled into the lungs cause

infection. . ⁴ Coronavirus after recognizing and binding to ACE2 host receptor, enters the host cell .⁵ The mucosal cells in throat, conjunctiva, nasal cavity and mouth are infected by the virus for replicating, virus enters the lungs causing fever, cough, on CT scan ground glass opacity representing respiratory failure.⁵ Covid -19 attaches itself on ACE 2 receptors on enterocytes of ileum and colon. Patients present with abdominal discomfort and diarrhea .⁶ Recovery period for patients presenting with mild symptoms is one week, while those for severe symptoms take 2-8 week . Depending on age with pre-existing diseases the mortality rate is high especially in elderly and middle aged patients.⁷ Blood picture revealed elevated white blood cell and reduced lymphocyte count histological examination of lungs showed damage to alveolar epithelial cells, and hyperplasia of type II pneumocytes, hyaline membrane formation. In liver there is Patchy necrosis. The heart showed mild fibrosis and mild myocardial hypertrophy.⁸ Corona virus produces pro-inflammatory cytokines, including, tumor necrosis factor alpha (TNFa), interleukin-6 (IL-6) and chemokines. ⁹ these causes fever, damage to lungs causing cough .⁹ 36% patients showed myalgia, aches, pains in body as a common symptom, reflecting generalized inflammation and response to cytokines. ¹⁰. Deltacortil –prednisolon – act as anti-inflammatory agent, used to treat certain types of allergies, inflammatory conditions, autoimmune

disorders, and cancer. It also inhibit capillary dilatation, edema, leukocyte migration, fibrin deposition, fibroblast proliferation, collagen deposition, scar formation with inflammation.¹¹ By passive diffusion glucocorticoids enter the cell, bind to the glucocorticoid receptors in the cytoplasm, a and forms (GR/GC) glucocorticoid receptor/glucocorticoid complex . The chaperone protein complex dissociates and causes the transfer of the complex into the nucleus. There this complex binds to the DNA. The activated GR/GC complex causes increased expression or transactivation of anti-inflammatory genes and exerts its anti-inflammatory effect, it reduces expression or transrepression of proinflammatory genes and has immunosuppressive effects.¹² in more severe forms, the administration of methylprednisolone significantly reduced the risk of death by 62%.¹³ In this study we used deltacortil and its effect on symptoms like fever, cough and mayalgia was seen. Earlier use of deltacortil caused marked improvement in symptoms as compared to delay in starting the drug.

MATERIAL AND METHODS

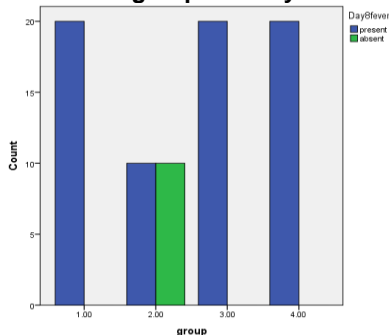
The study was conducted at Furqan Clinic Gulbahar Peshawar from May 2020 till June 2020. We selected 80 adult persons with their age ranging between 20-50 years. Irrespective of gender . Consent was taken from all the patients. .Delatacortil (prednisolone) was purachsed from local hospital pharmacy of pfizer company and was given to patients. Patients were given medicine in a dose of 5 mg 12 hourly twice a day . Group 1 was control group did not receive deltacortil. . Group 2 received deltacotil tablet 5mg, twice a day from day 1 of the onset of symptoms till day 14. Group 3 was given deltacortil 5mg twelve hourly from day 8 of onset of symptoms till day 14. Group 4 received deltacortil with same dose and time duration from day 15 of onset of symptoms till day 14. Temperature was recorded with thermometer. Cough frequency, quantity and quality was recorded, myalgia including pain and aches of limbs, body, head, activities per day were recorded. Follow up was done after seven days of start of deltacortil till fourteen days .

Statistical Analysis: Data was entered in SPSS version 24 . Frequency assessment distribution was seen in all four groups. Result was recorded

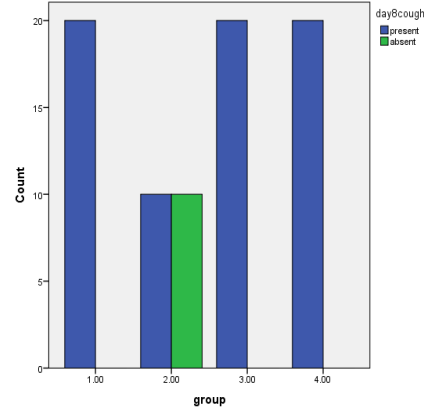
RESULT

Fever cough and myalgia was present in all groups on day 1

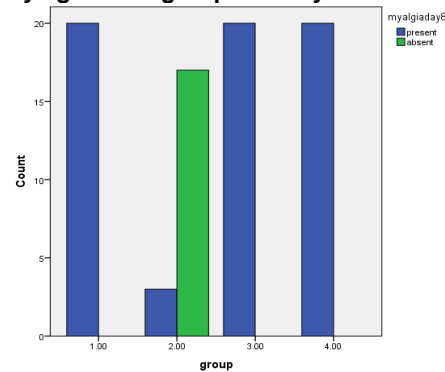
Fever of all groups on day 8



Cough of all groups on day 8

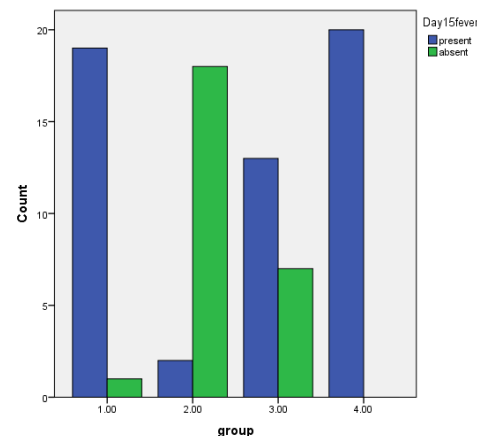


Myalgia of all groups on day 8

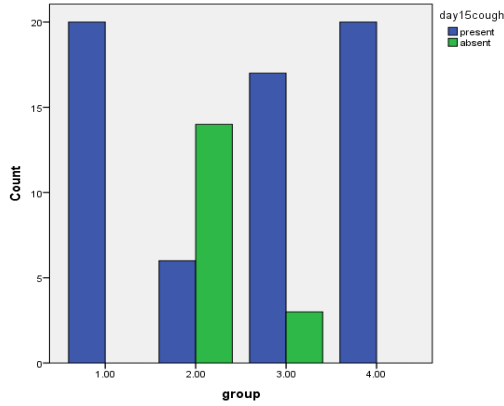


From the above graph it is seen on day 8

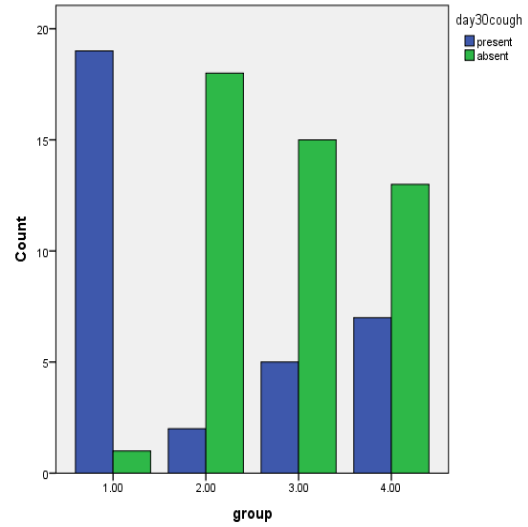
Group 1 on day 8 fever, cough and myalgia was present in all patients. Group 2 it was seen that 10 adults had fever and in 10 adults fever was absent In Group 3 and group 4 all the 20 patients had fever on day 8. Group 2 on day 8 it was seen that 10 adults had cough and in 10 adults cough was absent In Group 3 and group 4 all the 20 patients had cough on day 8. In group 2 regarding myalgia it was seen that 3 patients had myalgia on day 8 and in 17 patients it was absent. In Group 3 and group 4 on day 8 all the 20 patients had myalgia. On day 15 fever,



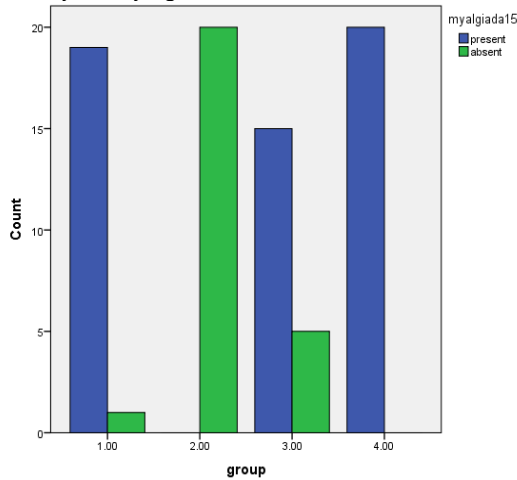
On day 15 cough



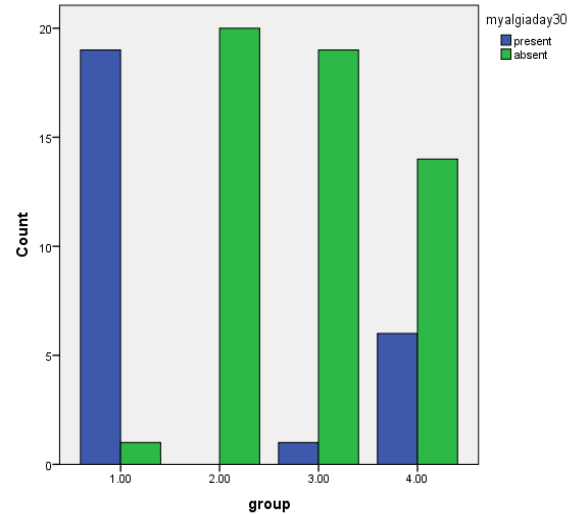
Cough on day 30



On day 15 myalgia

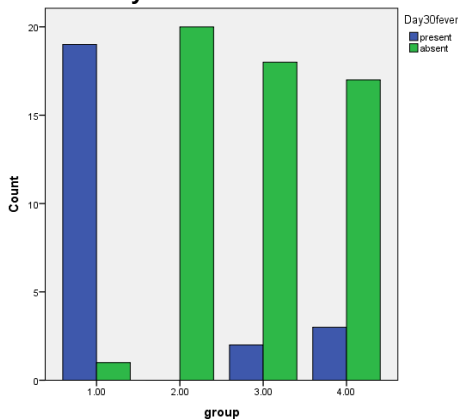


Myalgia on day 30



Group 2 on day Day 15 fever was seen in 2 patients and in 18 patients it was absent. In group 3 it was present in 13 adults and 7 adults were fever free. Group 4 on day 15 all the adults had fever, cough and myalgia. In group 2 on day 15 regarding cough 6 adults had cough and in 14 adults it was absent while myalgia was absent in all the patients. In group 3 cough was present in 17 adults and was absent in 3 patients, myalgia was present in 5 patients and absent in 15 adults. Group 4 all the patients had cough and myalgia.

Fever on day 30



In group 2 on day 30 fever and myalgia was absent in all the patients and cough was present in 2 individuals and absent in 18 adults . In group 3 it was seen that 2 adults had fever and 18 were fever free. Cough was present in 5 adults and only one patient had myalgia. Cough and myalgia were absent in 15 adults and 90 adults respectively. In group 4 three adults had fever seven adults had cough and six adults had myalgia, while seventeen adults were fever free thirteen adults were cough free and fourteen patients had no myalgia.

DISCUSSION

The above study was conducted on 80 adult subjects, without gender selection. It was an experimental study . We used corticosteroid daltacortil containing prednisolon 5mg twice a day for two weeks to each individual. Kai Kupferschmidt (jun-2020) conducted the research on humans suffering from corona virus and used dexamethasone, 6mg for 10 days, he concluded that steroid reduced death by one third in those patients who were on ventilator .¹⁴. He further said that a commonly

available and a cheap, corticosteroid, caused a great reduction in death of patients suffering from severe corona virus COVID-19 disease.¹⁴ In our study we have seen the effect of prednisolone on corona virus symptoms. Our result showed that in all four groups fever, cough and myalgia was present 100 % on day one of onset of symptoms in all the patients indicating that other conventional medicines were not so effective till deltacortil was added. Tamer M. Attia (2018) in one of his research said that prednisolone in treating symptoms of disease is more effective than conventional medicines.¹⁵ From the above result it was seen that at the end of 30 day. In group 2, group 3 and group 4 the percentage of fever was 20 %, 65 % and 90 % respectively and percentage of cough was 55 %, 85 % and 90 % respectively indicating that delay in starting the deltacortil causes delay in recovery of symptoms. While in group 2 only 10 % had myalgia, group 3 myalgia was present in 80% in group 4 myalgia was seen in 30 % patients. The above result shows that earlier the start of deltacortil earlier is the recovery. Vikram et al in 2013 in one of his research concluded that early addition of prednisolone improved therapeutic outcome and improves the symptoms earlier.¹⁶ In our research we used oral prednisolone it causes better effects and less economic burden on patient. Harniet E Downing et al in 2015 conducted a research to see the effect of oral prednisolone on inflammation and concluded that oral prednisolone relieves cough and fever rapidly than other medications.¹⁷ Glucocorticoids acts by inhibiting prostaglandin synthesis, increased prostaglandin causes inflammation. Melissa Vyvey 2010 in one of her research said that glucocorticoids are lipophilic molecule acts by inhibiting prostaglandin production, decreasing vascular permeability and causes reduction in tissue edema.¹⁸ She further said that Steroid receptors are present in the peripheral as well as central nervous system, in brain these receptors causes development, growth, differentiation and plasticity of neurons.¹⁸ Prednisolone after crossing blood brain barrier binds to steroid receptors and causes reduction in spontaneous discharge from injured nerves leading to reduction in myalgia, neuropathic pains.¹⁸ We preferred using prednisolone because it causes less myopathy than other steroids and is more effective in patients suffering from myalgia.¹⁸ Corona virus causes production of cytokines leading to inflammation and further damage in body. Edessa Negera 2018 conducted the research on effect of prednisolone on cytokines and concluded that prednisolone modulates the pro-inflammatory cytokines directly or by suppression of the immune cells which were producing these inflammatory cytokines.¹⁹ From our study we can say that deltacortil has beneficial role in treating the symptoms like fever, cough and myalgia. This may be due to its anti-inflammatory and immunosuppressant property it decreases the production of cytokines, inhibits the synthesis of prostaglandins, reduces vascular permeability and tissue edema leading to reduction in inflammation and recovery of patient.

CONCLUSION

Our research work indicates that Deltacortil (prednisolone) in the dose of 5 mg twice a day if started earlier with the onset of symptoms causes rapid reduction in symptoms

and early recovery of patients. Delay in taking this drug prolongs the recovery period. Group 2 was taking prednisolone from earlier onset of symptoms showed marked improvement in fever, cough and myalgia than other groups.

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