ORIGINAL ARTICLE

Outcome Comparison between Solumedrol and Dexamethasone in Moderate to Severe COVID Disease

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ABSTRACT

Introduction: Covid 19 is a disease caused by a virus belonging to SARS Co V2 family of viruses. It primarily effects the lungs resulting in inflammation and pneumonia.
Objectives: The main objective of the study is to compare the outcomes and efficacy of solumedrol and dexamethasone in moderate to severe COVID disease.
Material and methods: This cross sectional study was conducted in THQ Hospital Safdarabad during 2020 to 2021. The data was collected from 100 COVID-19 patients diagnosed with moderate to severe condition of the diseases. The data was collected through non-probability consecutive sampling technique.
Results: The data was collected from 100 patients of moderate to severe COVID-19 condition. There were 35 patients in group I and 65 patients' group II. The mean age for dexamethasone (group II) was 55.41 ± 10.4 years and solumedrol (group I) was 56.86 ± 9.3 years.
Conclusion: It is concluded that both drugs dexamethasone and solumedrol are effective in improving clinical and biochemical parameters of moderate to severe covid 19 disease.
Keywords: COVID-19, Patients, Inflammation, Markers, Lungs, Pneumonia

INTRODUCTION

Covid 19 is a disease caused by a virus belonging to SARS Co V2 family of viruses. It primarily effects the lungs resulting in inflammation and pneumonia. On the basis of clinical, biochemical and radiological parameters it is divided into mild, moderate and severe disease. In mild disease there is fever and upper respiratory signs but no documented hypoxia or x-ray infiltrates [1]. In moderate disease, there is tachypnea >30/min, hypoxia (SpO_2 < 94%) and infiltrates > 50% on chest x-ray and CT scan [2]. Whereas in severe disease patient needs mechanical ventilation and biochemical parameters suggest cytokine storm and patient can develop multi-organ failure [3].

In mild disease patient can be managed at home with symptomatic treatment. In moderate disease patient is admitted in hospital and given supplemental oxygen along with other treatment modalities. In severe disease patient is shifted to ICU and managed accordingly. Convalescent plasma and IL-6 inhibitors like tocilizumab are given in cytokine release syndrome associated with covid 19 [4]. Corticosteroids have been used previously in respiratory illnesses like asthma, COPD, severe bacterial pneumonia and acute respiratory distress syndrome. The use of corticosteroids in covid 19 disease is still controversial [5].

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Corticosteroids have been used previously in respiratory illnesses like asthma, COPD, severe bacterial pneumonia and acute respiratory distress syndrome. The use of corticosteroids in covid 19 disease is still controversial [7]. Some studies have shown good response to steroids as they reduce inflammation [2,3]. However corticosteroids suppress the patient's immunity making him more prone to superadded infections. A large study in Michigan reports good results of early treatment with short course of steroids [5]. In Michigan study methylprednisolone was used. Studies in china have also reported the use of corticosteroids in covid pneumonia [8].
Objectives: The main objective of the study is to compare the outcomes and efficacy of solumedrol and dexamethasone in moderate to severe COVID disease.

MATERIAL AND METHODS

This cross sectional study was conducted in THQ Hospital Safdarabad during 2020 to 2021. The data was collected from 100 COVID-19 patients diagnosed with moderate to severe condition of the diseases. The data was collected through non-probability consecutive sampling technique. The data was collected into two groups:

Group I: treated with solumedrol
Group II: Treated with dexamethasone
Inclusion criteria
- All the confirmed patients of COVID-19.
- Both male and female.
- Age 18 to 70 Years
Exclusion criteria
- Those who are not willing to participate.
- Age > 18 years.
- Pregnant females.
- Patients who need corticosteroids for any other inflammation or diseases.

Data Collection: The data was collected from 100 patients with the permission of ethical committee of hospital. Those patients who are fulfilling the inclusion and exclusion criteria, was selected for the study. Chest X-ray was done at the time of admission and all other baseline values, CBC, CRP and all labs was noted. Patients with oxygen saturation <93% on room air with normal chest x-ray and CRP between 30 and 50, were labelled as having moderate covid-19 disease. Patients with CRP> 50 and having infiltrates on chest x-ray at the time of admission were considered having severe covid-19 disease. The dose of solumedrol 1mg/kg/day twice a day and dexamethasone 8mg/day was given for consecutive 5 days. After that we again noted the saturation level of oxygen and all other necessary labs. Chest X-ray was also repeated after 5 days. Patients were converted to nasal oxygen and ICU if they are not improving and sometime mechanical ventilation is also needed.
Data analysis: The data was collected and analyzed using SPSS version 19. All the values were expressed as mean and standard deviation.

RESULTS

The data was collected from 100 patients of moderate to severe COVID-19 condition. There were 35 patients in group I and 65 patients' group II. The mean age for dexamethasone (group II) was 55.41 ± 10.4 years and solumedrol (group I) was 56.86 ± 9.3

years. There were 60 (92%) patients which are PCR (+) in group II and 34 (94%) in group I. All the baseline values are present in table 01.

Table 1: Baseline values of selected patients (n=100)

Basic characteristics	Group II	Group I	p-value
Age	55.41 ± 10.4	56.86 ± 9.3	0.338
PCR(+)	60 (92%)	34 (94%)	1.0
Tocilizumab	12 (34%)	27 (41.5%)	0.498
Antibiotics	65 (100%)	35 (100%)	0.446
Smoker	18 (28%)	8 (21%)	0.350
Pre-existing lung disease	10 (15%)	11 (16%)	0.517
Diabetes mellitis	29 (70.5%)	35 (49%)	0.029
Hypertension	9 (4%)	35 (53.8%)	1.001
IHD	12 (42.8%)	13 (20%)	0.151
CKD	12 (115.7%)	4 (16.1%)	1.001

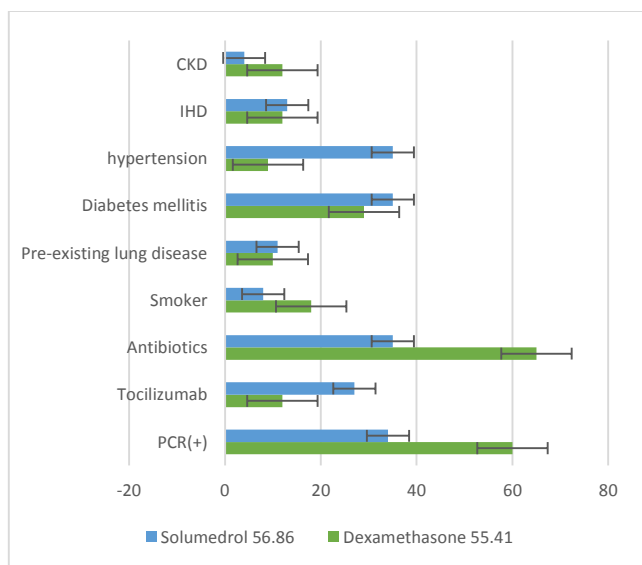Solumedrol 56.86   Dexamethasone 55.41

Table 02 shows the outcomes of both groups according to medication and severity of disease. This shows the time to get rid of oxygen, length of stay in hospital and decreases in inflammatory markers in patients.

Table 2: Variables of selected patients and length of stay in hospital

Treatment	Variables	Mean ± SD		P-value
		Group I	Group II	
Initial	Temperature (F°)	101.77 ± 1.51	101.66 ± 1.20	0.69
	Oxygen (ppm)	11.9 ± 4.29	12.8 ± 4.9	0.47
	CRP (mg/dl)	141.67 ± 69.6	126.89 ± 61.39	0.52
	Ferritin level (ng/mL)	1006.16±10.54	987.98±20.98	0.32
Day 5	Temperature	98.9 ± 1.09	98.7 ± 1.03	0.43
	Oxygen	9.34 ± 7.48	7.84 ± 6.44	0.10
	CRP	73.9 ± 56.0	59.07 ± 50.88	0.181
	Length of stay in hospital (days)	5 ± 5.67	6 ± 3.56	0.40
	Ferritin level	401 ±10.98	345 ± 9.00	0.001

DISCUSSION

Coronavirus disease 2019 (Covid-19) is caused by the virus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2), an emerging pathogen initially identified in Wuhan, China in December 2019. Until November 11, 2020, 52,024,841 people are infected globally, with 1,282,944 deaths, with the lethality of 2.5% with a greater extension than the previous epidemics by SARS-CoV and MERS [9].

To face the pandemic, drugs used in the previous SARS-COV and MERS epidemics, including chloroquine and hydroxychloroquine, lopinavir/ritonavir, azithromycin, and ivermectin, among others, showed some usefulness in vitro against SARS-CoV2 [10]. In a retrospective multicenter study in Michigan, United States, the administration of hydroxychloroquine alone or in combination with azithromycin was associated with a reduction in mortality. However, in randomized clinical trials, no favorable effect was evidenced [11].

t the beginning of the Covid-19 pandemic, the administration of corticosteroids was controversial. However, recent evidence changed ARDS ICU management secondary to other etiologies [12]. Villar et al., in a placebo-controlled, randomized, and multicenter study, found that patients with ARDS treated with dexamethasone had lower mortality (21% vs. 36%, p-value < 0.0047). Wu et al. described a group of patients with ARDS secondary to Covid-19, treated with methylprednisolone, with a lower risk of death. Recently, the RECOVERY results modified the treatment guidelines [13]. In this study, patients who received dexamethasone had a decrease in mortality in a third of ventilated patients and in a fifth in other patients who received oxygen only. However, the difference in all patients mortality was 22.9% in those who received dexamethasone 6 mg vs. 25.7% in those who did not receive it [14].

In Covid-19 patients, the high mortality can be explained by the rapid development of Organized Pneumonia secondary to SARS-CoV2, since its appearance even in the first week of infection has been documented in autopsies. This pathology generally requires treatment with high doses of corticosteroids, cited by some as "pulse" doses and longer duration. Therefore, the dose suggested by RECOVERY could be insufficient for a high percentage of patients [5].

CONCLUSION

It is concluded that both drugs dexamethasone and solumedrol are effective in improving clinical and biochemical parameters of moderate to severe covid 19 disease.

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