

EVALUATION OF SIGNIFICANT CHANGE IN BLOOD MARKERS DURING PRE AND POST INTRAVENOUS TREATMENT OF REMDESIVIR IN PATIENTS WITH COVID-19 INFECTION

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Affect of Remdesivir on Blood Marker Apollo Hospitals International Limited.

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ABSTRACT

Aim and Objectives: Aim of this study is to evaluate the change in blood markers during pre and post intravenous Remdesivir injections in Covid -19 patients. **Material and Method:** We have checked effect of Inj Remdesivir on covid-19 patients. We have taken blood investigations reports before administration of Inj Remdesivir and during course of Inj Remdesivir. The blood investigation reports checked for Covid 19 Patients like CRP, Ferritin serum, D-Dimer, SGPT, WBC Count, Interleukin-6 (IL-6), LDH: Lactate Dehydrogenase-serum during patients hospitalized in our hospital.

Result: In a result it is found that 79.17% patients have reduced CRP level, found Ferritin level decrease in 50% of patients, 35.56% patients having decreasing trend in D-Dimer value and 92.86% patient's having Interleukin – 6 reported no significant change during inj. Remdesivir treatment. In big view Remdesivir injection definitely reduce inflammatory marker in covid patient. **Conclusion:** This study will help to bring awareness about Covid-19 treatment and usages of Injection Remdesivir which is found safe and effective. Blood investigation reports plays very important role in Covid-19 patients all nurses and Pharmacists can also educate about reports' normal value and abnormal value to patient as well as doctors during this crisis situation where nurses and pharmacist should work beyond the limit for patient safety and education. Nurses can inform doctor if any abnormality of reports and Pharmacists can monitor the dose and affect of Remdesivir injection.

INTRODUCTION

A novel corona virus, severe acute respiratory syndrome corona virus 2 (SARS-CoV-2), was first identified in December 2019 as the cause of a respiratory illness designated corona virus disease 2019, or Covid-19. Several therapeutic agents have been evaluated for the treatment of Covid-19, but no antiviral medicines have yet been shown to be efficacious.^[1]

Our hospitals have separate covid 19 patient's treatment center in city. We are using injection Remdesivir in covid 19 positive patients. Dose of Injection Remdesivir is 200mg Stat and 100mg OD for next 4 days. We have strict monitoring process for Injection Remdesivir prescription writing, PAT Verifications, Indenting, dispensing, medicines hand over in covid ward, administration and finally telephonic monitoring of injections by prescription audit team.

We have done small study on Injection Remdesivir usages and during usages we have monitored some blood investigations changes. We have finalized 5 to 6 blood investigations which done during treatment.

Blood investigations like CRP, Ferritin Serum, D-Dimer, SGPT, Interlukast 6 (IL6) and WBC Count. We have randomly finalized 48 patients for this study. Study period was April-21 to June-21. We have covered admitted and discharged both type of patients. Corona virus disease (COVID-19) is new for all over world. Aim of this study to educate and understanding how disease is going. How blood marker affected by Injection Remdesivir usages. Educate nursing staffs, pharmacists for disease blood investigation and important of reporting blood investigation during Injection Remdesivir treatment. There are several medicines have been evaluated for the treatment of Corona Virus.^[2] No antiviral agent has been shown effective in treatment. Even though it is most commonly used medication during pick period of covid-19 infection. Medicine like remdesivir and favipiravir, were found in use for the treatment and rationality is to be checked for these medication. To evaluate the effect of Remdesivir on blood, several patients are studied and projected the results.^[3,4]

MATERIAL AND METHOD

We select 48 patients for this study who are confirmed positive covid 19 patients and also they completed their Remdesivir dose. We collect and analyze the data. We done the analysis through gender wise and variations in Blood reports like CRP, D-Dimer, Ferritin serum,

SGPT, IL6, WBC count during administration of injection Remdesivir. We are going in depth for covid 19 blood investigation report for knowledge of health care workers.

We have checked effect of Inj Remdesivir on post covid and present covid patients. We have taken blood investigations reports before administration of Inj Remdesivir and after completion of Inj Remdesivir. In adults who were hospitalized with Covid-19 and had evidence of lower respiratory tract infection. Duration of this study is April-2021 to AUG-2021.

As per covid-19 guideline dose administered for Inj Remdesivir 200 mg stat dose on day 1 followed by 100mg once a day for 4 days up to 5 days. Total 600 mg dose administered during treatment. Dilution of this drug is in 100ml 0.9% sodium chloride injection and over 1 hour.^[5]

We have taken Injection consent form for each patient before starting Injection Remdesivir treatment. (Consent is for regarding injection cost, its effect and relative approval for starting of injections). We have taken random patients for this study. There are no inclusion and exclusion criteria for selecting patients.

This is purely observational study. We cannot include patients and his relative in this study. Sample size of this study of 48 patients. It was randomly selected.

We have taken the blood investigation reports of Covid 19 Patients like CRP, Ferritin serum, D-Dimer, SGPT, WBC Count, Interleukin-6 (IL-6), LDH: Lactate Dehydrogenase-serum of current and discharge Covid-19 positive patients hospitalized our hospitals. Above all the investigations are selected because all these test were done in covid 19 patients. These all investigations are important for diagnosis of covid 19. We have done analysis of pre administered and post administered blood investigation reports.^[6]

RESULT

The gender wise Analysis shows total 48 patients covered in this study, in 30 patients are male and 18 patients are female.

CRP (C-reactive protein): The C-reactive protein (CRP) test is used to detect inflammation. For example, CRP may be used to detect or monitor significant inflammation in acute conditions, such as: A serious bacterial infection of the lung, urinary tract, digestive tract, skin, or other sites, with or without sepsis. A fungal or viral infection. Most general in all the

covid patients' doctor advice this test to detect covid 19 progression status in patients. Normal range of CRP is 0-5 mg/L... We have done analysis of CRP Reports of 48 patients. 38 patients (79.17% Patients) were decrease CRP level after administration of Injection Remdesivir and in 4 patients (8.33% Patients) increase CRP level after administration of Injection Remdesivir. It is observed that, 4 patients (8.33% Patients) CRP level in range during this treatment.^[7]

Ferritin – Serum (Normal Range: 30 - 400 ng/ml): Ferritin is merely known as intracellular iron storage. It is known to all that low Ferritin levels are known for being the reason for iron deficiency anemia. Elevated forms of this iron storage indicate the presence of any kind of viruses or bacteria in the human body. It has been seen in research that high Ferritin levels indicate the severity of Covid-19 as in fifty percent of cases, covid patients with extremely high Ferritin levels have died.

During study total 48 patients analyzed from that, 28 patients (58.33% patients) reported and 20 patients (41.67% patients) are non reported. Out of 28 reported patients, 14 patients (50% patients) are normal and 14 patients (50% patients) are abnormal.

D-Dimer: Normal Range of D-dimer is 0.00 - 0.50 (ug/ml FEU). D- dimer test plays an important role in detection and understand the severity of covid -19 in patient. The basic of this test is to measure the blood clot possibility in lung which can easily understand the severity of patient condition. Most of the times patient with breathing difficulty and shortness of breath are preferred for D-dimer test.

D-dimer test in Covid is advisable. Result of test is high it states that severity is higher side as there are chances of high blood clots in body and patient having high oxygen demand. Out of 48 patient total 45 Patients (93.75% patients) are reported and 3 patients (6.25% patients) are not done D-dimer test. From reported patient i.e 45 patient, 29 patients (64.44% patients) reported normal value during and after the Inj Remdesivir and 16 patients (35.56% patients) reported results on higher side after completion of 5 dose of injection.

Interleukin - 6 (IL-6): The normal range for IL-6 is less than 7 pg/ml. As IL-6 is an important mediator of fever and of the acute phase response. IL-6 is responsible for stimulating acute phase protein synthesis, as well as the production of neutrophils in the bone marrow. It supports the growth of B cells and is antagonistic to regulatory T cells. IL-6 is one of the key mediators of inflammation and viral cytokine storm in COVID-19 patients. Some studies have reported that the humanized monoclonal antibody against IL-6 receptors,

tocilizumab, can be used in COVID-19 treatment based on its cytokine storm blocking property. In our study the interleukin test was not shown any decreased trend or any specific uniformity in during and post treatment patient.

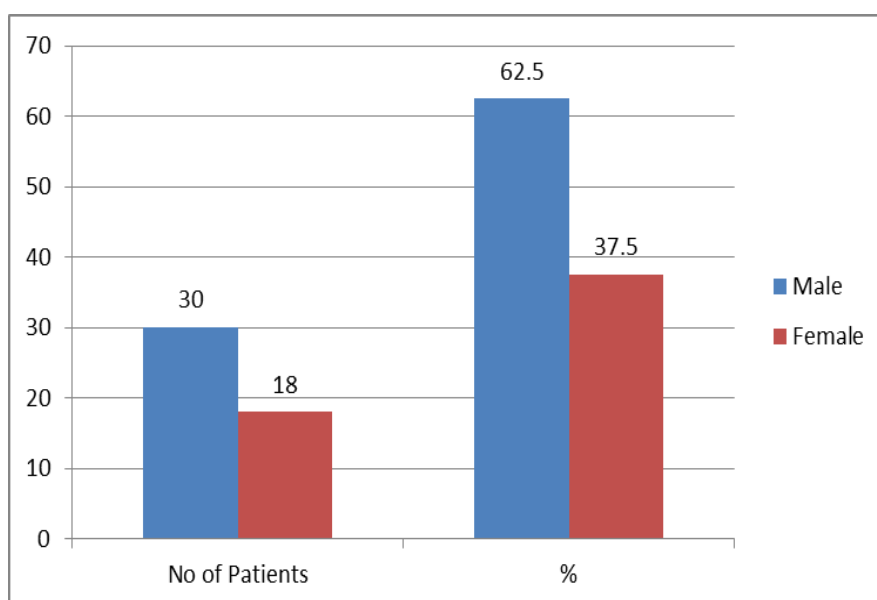
From 45 patient, total 42 patients (87.50% patients) done with this test. Out of 42 patients 3 patients (7.14% patients) are Normal and 39 patients (92.86% patients) are reported heterogeneous pattern.

DISCUSSION

This study clearly state that injection Remdesivir is safe and effective in patient with Covid - 19 infection and blood markers which are very vital in stating patient condition was found in positive result in more or less percentages. As CRP, Ferritin, D-dimer and Interlukin -6 are most preferable tests during Covid -19 treatment and based on these tests treatment can be decided by the doctors and some of the areas the test are mandatory for treatment. Results of Interlukin -6 was not found in correlation with treatment of injection remdesivir so, there is a further scope to evaluate the effective relation of covid-19 disease and more précised blood markers.

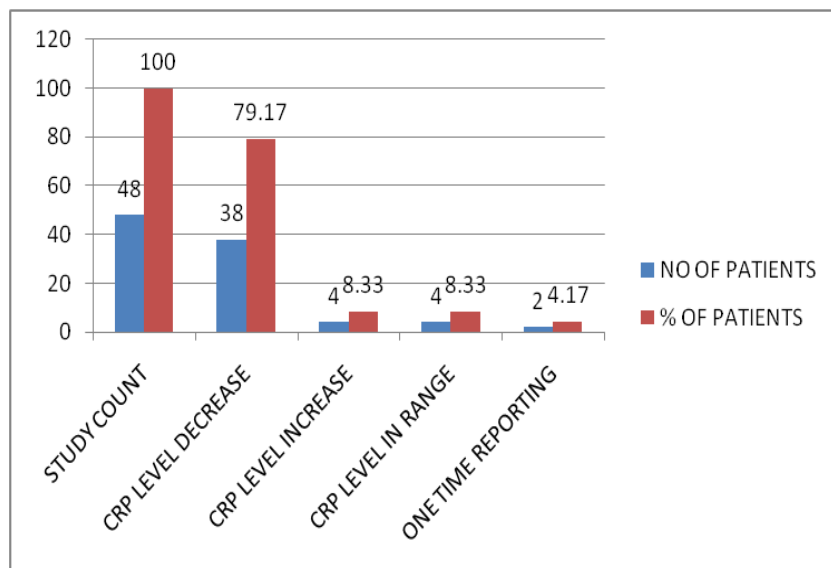
Gender wise analysis

Gender	No of Patients	%
Male	30	62.5
Female	18	37.5



CRP (C - reactive protein) Data Analysis

Crp reporting status					
Patient's details	Study count	Crp level decrease	Crp level increase	Crp level in range	One time reporting
No of patients	48	38	4	4	2
% of patients	100	79.17	8.33	8.33	4.17

**Ferritin – Serum (Normal Range: 30 - 400 ng/ml) Data Analysis**

Ferritin – serum			
	Total patients	Reported patients	Non reported patients
Patients	48	28	20
% patients	100	58.33	41.67

Ferritin – serum			
	Total reported patients	Normal report	Abnormal report
Patients	28	14	14
% patients	100	50	50

D-Dimer data analysis

Normal range: 0.00 - 0.50 (ug/ml FEU)

D-dimer			
	Total patients	Reported patients	Non reported patients
Patients	48	45	3
% patients	100	93.75	6.25

D-dimer			
	Total reported patients	Normal report	Abnormal report
Patients	45	29	16
% patients	100	64.44	35.56

D-DIMER				
	TOTAL REPORTED PATIENTS	ABNORMAL TO INCREASE VALUE	NORMAL TO INCREASE	ABNORMAL TO DECREASE
PATIENTS	16	9	5	6

Interleukin - 6 (IL-6) Data Analysis

Normal range: Less than 7 pg/ml

Interleukin - 6 (il-6)			
	Total patients	Reported patients	Non reported patients
Patients	48	42	6
% patients	100	87.50	12.50

Interluekin - 6 (il-6)			
	Total reported patients	Normal report	Abnormal report
Patients	42	3	39
% patients	100	7.14	92.86

CONCLUSION

This study will help to bring awareness about Covid 19 treatment and usages of Injection Remdesivir which is found safe and effective. Blood investigation reports plays very important role in covid patients all nurses and Pharmacists can also educate about reports' normal value and abnormal value to patient as well as doctors during this crisis situation where nurses and pharmacist should work beyond the limit for patient safety and education. Nurses can inform doctor if any abnormality of reports and Pharmacists can monitor the dose and affect of Remdesivir injection

Limitations

This is study is purely observational study. We cannot include patient and their relative for this study. We have only used patient's investigation report from our MIS. We cannot include patient's vitals during this treatment.

Ethical approval no: EC/NEW/INST/2020/460

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Declaration of patient's consent form

This study is purely observational study. We cannot include Patient and their relative in this study.

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There are no financial supports needed for this project.

CONFLICT OF INTEREST

None.

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