Original Research Paper

Pathology

RADIOLOGICAL AND BIOCHEMICAL CORRELATION OF D-DIMER VALUE IN COVID-19 PATIENTS

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ABSTRACT **Introduction** A novel coronavirus, also known as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) , was first reported in Wuhan, China in December 2019. On February 11, 2020, the World Health Organization (WHO) declared the illness brought on by SARS-CoV-2 to be coronavirus disease 2019 (COVID-19). **Objective** To correlate the D-Dimer value of COVID-19 patients with their CT Severity Score and Biochemical values. To determine haematological changes with D-dimer value in covid-19 patients. **Material And Method** Study type- Hospital based observational cross sectional study **Study center**- Study was conducted at central laboratory of Department of Pathology, Jhalawar medical college ,Jhalawar. **Study duration -** 2021 and 2022 (1yr) **Study Population**- A total of 156 rtpcr positive adult patients who were followed up in the fever clinic because of COVID-19 pneumonia. **Result** A total of 156 covid 19 confirmed cases were enrolled in study. Mean age was found to be 43.147 year (±13.030 years). Maximum of cases were from 41-50 year age group. Male and female were equally distributed. Among admitted patients of covid 19, Fever was present in 65.4% of patients. Cough was present in 65.4%. Shortness of breath was present in 67.3%,Weakness was present in 67.9%. Value of D-Dimer (> 0.5 μg/ml) was raised in 90.4% of covid 19 cases. HRCT severity score cases were diagnosed as mild cases were 10.9%, moderate were 69.9% and severe were 19.2%. **Conclusion** D-Dimer is easily available, and universally acceptable inflammatory marker, which has documented very crucial role in covid-19 pneumonia in predicting severity of illness, and assessing response to treatment during hospitalization.

KEYWORDS : D-dimer, HRCT, Covid-19

INTRODUCTION
- A novel coronavirus, also known as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first reported in Wuhan, China in December 2019.
- On February 11, 2020, the World Health Organization (WHO) declared the illness brought on by SARS-CoV-2 to be coronavirus disease 2019 (COVID-19).
- Following the COVID-19 pandemic outbreak, D-dimer has been identified as a potential indicator for its prognosis in COVID-19 patients.
- Keeping In view this study aims to correlate D-Dimer value of COVID-19 patients with their CT Severity Score and Biochemical values

OBJECTIVE
- To correlate the D-Dimer value of COVID-19 patients with their CT Severity Score and Biochemical values

METHODOLOGY
- Study type- This study is hospital based observational cross sectional study
- Study center-The present study was conducted at central laboratory of Department of Pathology, Jhalawar medical college ,Jhalawar.
- Study duration - March 2021 and July 2021
- Study Population-A total of 150 rtpcr positive adult patients who were followed up in the fever clinic because of COVID-19 pneumonia

Inclusion criteria
- Adults (aged 18 years or older) diagnosed with COVID-19 by Reverse transcription polymerase chain reaction (RT-PCR) and admitted in our hospital.
- Asymptomatic cases with Peripheral oxygen saturation (SpO2) less than 94% and symptomatic cases were consecutively enrolled in the study.
- Patients having radiological confirmed diagnosis were enrolled

Exclusion criteria
- Patient with other disease , infection or patient taking medication for some disease were excluded.
- Patient not willing to participate in study
- Patient who died during treatment were excluded

RESULT
- A total of 150 covid 19 confirmed cases were enrolled in study. Mean age was found to be 43.147 year (±13.030 years).
- Maximum of cases were from 41-50 year age group.
- In our study , Male and female were equally distributed.
- Among admitted patients of covid 19, Fever was present in 69.4% of patients. Cough was present in 69.4%. Shortness of breath was present in 67.3%,Weakness was present in 67.9%.
- D-Dimer level has significant association with oxygen saturation.[p<0.00001].
- The severity of the disease was assessed using CT severity score (total score out of 25) and were into categorized into mild (score-<7), moderate (score 7–18), and severe (score>18)
- Acc to HRCT severity score cases were diagnosed as mild cases were 10.9%, moderate were 69.9% and severe were 19.2% .
- Value of D-Dimer (> 0.5 μg/ml) was raised in 90.4% of covid 19 cases.
- In mild cases diagnosed by HRCT, 7.8 % had Raised D-Dimer. In moderate cases of covid 19, 70.9 % had raised D-DIMER and among severe cases 21.3 % I.e all cases had Raised D-Dimer value. There was a significant association between HRCT severity score and D-dimer value.
- It has been found that there is significant positive correlation between value of CRP (p <o.o5) , HRCT and LDH (p < 0.05) with D Dimer. It signify that when the level of CRP , severity
- Score of HRCT and level of LDH increases than level of D Dimer also increases.

Correlation of various biochemical marker with D Dimer

Correlations		Hb	TLC	RBC	Neutrophill	Lymphocyte	CRP mg/l	LDH	S Ferritin	HRCT
D-Dimer ug/ml	Pearson Correlation	-.018	-0.062	0.072	0.125	0.032	.334**	.297**	.109	.340**
	Sig. (2-tailed)	.826	0.444	0.374	0.121	0.693	.000	.000	.177	.000
	N	156	156	156	156	156	156	156	156	156

Correlation of D Dimer with HRCT score

HRCT severity	D-Dimer ug/ml		Total
	Normal (<= 0.5 µg/ml)	Raised (> 0.5 µg/ml)	
Mild (0 - 7)	6	11	17
	40.0%	7.8%	10.9%
Moderate (8 - 17)	3	100	103
	60.0%	70.9%	69.9%
Severe (18 - 24)	0	30	30
	0.0%	21.3%	19.2%
Total	9	141	150
	100.0%	100.0%	100.0%
Chi-square= 16.321, p= 0.000			

CONCLUSION

• D-Dimer is easily available, and universally acceptable inflammatory marker, which has documented very crucial role in covid-19 pneumonia in predicting severity of illness, and assessing response to treatment during hospitalization.

• D-Dimer has important role during interventions in intensive care unit, as follow up titers have significant role in step-up or step-down interventions in critical care setting.

• D-Dimer follow-up titer can help in predicting progression of covid pneumonia, and assessing risk of post covid lung fibrosis.

• So we conclude that D-dimer is commonly elevated in patients with COVID-19. D-dimer levels correlate with disease severity and are a reliable prognostic marker for in-hospital mortality in patients admitted for COVID-19.

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