



THROMBO EMBOLIC EVENTS IN POST COVID PATIENTS

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ABSTRACT **Background:** The novel coronavirus disease of 2019 (COVID-19) is associated with significant morbidity and mortality. The impact of thrombotic complications has been increasingly recognized as an important component of this disease. Thrombotic complications from COVID-19 are believed to be due to a hyperinflammatory response caused by the virus. Incidence of thrombotic complications remains high even after prophylactic anticoagulation. **Materials & Methods:** We conducted a single – center prospective cohort study at NRI medical college. It included 106 consecutively hospitalized patients with recent pneumonia caused by covid-19 pneumonia and D-dimer more than two times from the normal limit. It is a prospective cohort study was conducted between march 2021 to may 2022. A definitive diagnosis of thrombotic events was proven by various imaging studies. **Results:** Out of 106 patients, 21 patients had acute limb ischemia(20%),19 had myocardial infarction(18%), 17 patients had pulmonary thromboembolism(16%), 16 had acute cerebrovascular accident(CVA)(15%), 7 had abdominal and thoracic aortic thrombosis(6%),6 had mesenteric ischemia(5), 6 had disseminated intravascular coagulation(5%), 4 had left and ventricular thrombus(3%),The mean(\pm SD) age of the group was 59.9 (\pm 14.1) years. Around 67% patients were male (Men:Female ratio is 1.13:1). Around 49% patients had preexisting hypertension, 37% had obesity,31% had diabetes,20% had cardiovascular disease,6% had cerebrovascular disease, Current Smoking was associated with a 20% increased risk of provoked venous thrombosis when compared to non smokers. Screening for venous thrombosis with Duplex ultrasound reported a significantly higher incidence of venous thrombosis compared to those relying on clinical suspicion (56.3% vs. 11.0%, $p < 0.001$). **Conclusion:** This study reveals the importance of awareness of the thrombotic complications on COVID-19 patients. Knowledge of these components are essential to rapidly recognize and treat to reduce morbidity and mortality in these patients.

KEYWORDS : Thrombotic Complications, Cerebrovascular Disease, COVID-19.

INTRODUCTION

The novel corona virus disease of 2019 (COVID-19) is associated with significant morbidity and mortality. The impact of thrombotic complications has been increasingly recognized as an important component of this disease. Increased incidence of thrombotic complications in COVID-19 are believed to be due to a hyper inflammatory response caused by the virus. Thrombotic complications remains high even after prophylactic anticoagulation in majority of patients.

Aim

To study the thrombotic complications in the post covid patients.

Objective

To quantify the rate of post discharge thromboembolic events in patients with COVID-19.To identify the factors associated with the risk of post discharge thromboembolism.

Case Study

This is a single – center prospective cohort study conducted at JIPMER.

Duration Of Study

14 Months From November 2023 to December 2024.

Inclusion Criteria:

1. Patients ≥ 18 years of age, with history of Covid-19 pneumonia, with clinical, laboratory and diagnostic criteria for thrombosis.
2. No allergy to iodine-containing contrast agents,
3. Who confirmed their participation by written consent.

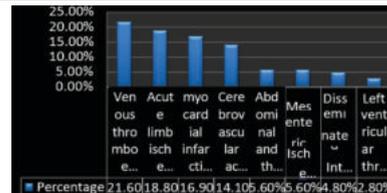
Exclusion Criteria

1. Refusal to participate in this study.
2. Allergy to contrast.

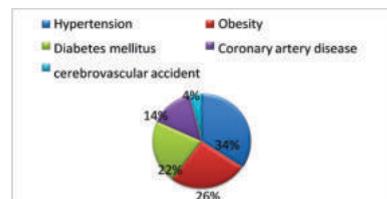
It included 106 consecutively hospitalized patients with recent history of pneumonia caused by covid-19 and D-dimer more than two times from the normal limit. A definitive diagnosis of thrombotic events was proven by various imaging studies and autopsy.

RESULTS

- The mean(\pm SD) age group was 45.02(\pm 17.16) years.
- Around 58% patients were male (Men:Female ratio is 1.13:1).



Comorbidities



Age Distribution

AGE(In years)	11-20	21-30	31-40	41-50	51-60	61-70	71-90
Frequency	9	14	22	15	23	14	10
Percentage	8.2%	13.3%	20.4%	14.1%	21.4%	13.2%	9.4%

Sex Distribution

	Frequency
Male	62
Female	44

Personal History

	Frequency
Smoking	48
Alcohol	32

Mortality Rate

	Frequency	Thrombosis developed
ICU admission (n)	44	39
Ward admission (n)	62	56

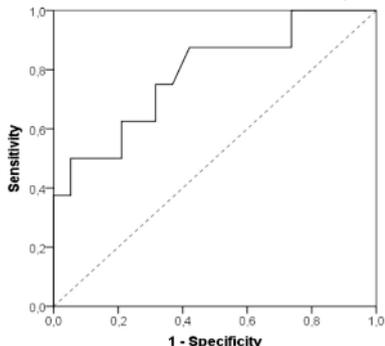
Conditions Associated With Hospital Mortality

VARIABLE	PATIENT WITH MORTALITY (n=40)	PATIENT WITHOUT M
Hypertension .n (%)	21(52.5%)	13(23.2%)

Diabetes mellitus.n (%)	14(35%)	8(14.2%)
Coronary artery disease . n (%)	8(20%)	6(10.7)
Obesity . n (%)	17(42.5%)	9(16%)
Smoking . n (%)	30(75%)	18(32%)

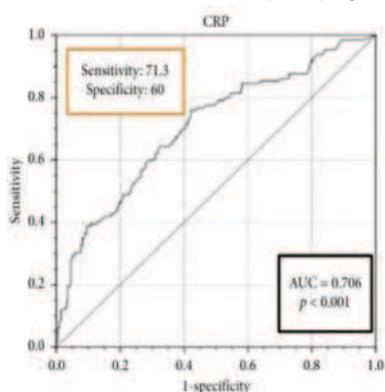
ROC CURVE

We suggest that the cut-off value of D-dimer of 1546 (570-8000)ng/ml.



ROC CURVE

We suggest that the cut-off value of CRP 10 (6-150) mg/L.



Laboratory Parameters

	Minimum	Maximum
D-DIMER(ng/ml)	150	8500
TLC (cells/cmm)	2700	18000
IL-6(pg/mL)	1.10	167.9
LDH(units/L)	56	986
S.FERRITIN(mg/L)	13.57	1840

DISCUSSION

In this study, the incidence of thrombotic complications among COVID-19 patients was 0.54%, with acute PE representing the most frequent type of venous thromboembolic complication. Bourguignon et al reported that Venous Thromboembolism and Acute Limb Ischemia occurred in 20.6% and 27.0% of patients with COVID-19 managed in intensive care units (ICUs). In our study it was 21.6% and 18.8% respectively. In the study of Martinet C et al, hypertension is the most common pre existing risk factor associated with thrombosis was 42% of cases, in our study it was 34%. According to Gasperin et al, prevalence of thrombosis in COVID-19 patients was high, especially ICU admission with higher levels of CRP and D-Dimer similar to our study, Those patients needed to be paid close attention with prophylactic therapy.



Limitations

Potential underestimation due to detection of bias if patients were

not systematically screened for thrombotic events.

- Small sample size.

CONCLUSION

The prevalence rate of thrombosis was higher in patients with COVID-19 than we thought, especially in those admitted to ICU. Patients who had a significantly higher level of D-dimer and CRP. Hypertension, coronary artery disease, diabetes, obesity, smoking and male sex tended to be risk factors of thrombotic complications for COVID-19 patients. This study reveals the importance of awareness of the thrombotic complications on COVID-19 patients. Knowledge of these components are essential to rapidly recognize and treat to reduce morbidity and mortality in these patients.

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