

DISCUSSION

Among patients with post COVID-19, CAD has been identified as a high-risk condition. We aimed to assess the clinical outcomes and mortality among patients with post COVID-19 according to CAD status. Patients with post COVID-19 and CAD have an exceedingly higher risk of mortality, which is mainly attributable to the burden of comorbidities rather than to a direct effect of CAD. Patients with CAD had an absolute increase in the occurrence of ARDS throughout hospitalization and noninvasive ventilation.

In our study Biomarkers are screened based on **Joanna Lewek *et al*** using Mean, Standard Deviation and Chi square Test, Biomarkers- CRP (1.65 vs 0.62, $p=0.02$), Troponin-T (17.9 vs 4.2, $p=0.01$). Biomarkers-Elevated level of CRP, Troponin and worsening of left ventricular ejection fraction are related to the severity of CAD complications. Higher prevalence of DM in patients with severe complications is consistent with the previous evidence. The data confirms that the presence of DM-2 affects not only the acute phase of the disease but also the long-term complications. In our present study elevated levels of Biomarkers, DM shows significant increase in the risk of getting CAD complications. All the biomarkers showed significant p value which is analyzed by using the student's T test. Highly significant p value explains there is a risk of increasing complications if the biomarkers are elevated which supports **Joanna Lewek *et al*** study.

In our study CAD including STEMI, NSTEMI, are screened based on **Carlos Diaz-Arocutipa *et al*** where STEMI (13% vs 1%, $P=0.03$), LVD (23% vs 3%, $p=0.02$). This study summarizes the clinical features, management and outcomes of the patients with COVID-19 who had ST-segment elevation. The frequent symptom was chest pain, in majority of the cases the main reperfusion strategy was primary percutaneous coronary intervention instead of fibrinolysis. This data suggests that a relatively high proportion of COVID-19 patients with ST-Elevation had non-obstructive CAD. Our present study shows that there is any increase in the STEMI ($p=0.0001$), and the common symptom is chest pain with a significant p value ($p=0.0001$) which supports the **Carlos Diaz-Arocutipa *et al*** study.

In our study Angiographic profile is screened based on **Alexandre Abizaïd *et al*** using Mean \pm SD or T or Kruskal-wallis test. SYNTAX score (95% CI 1.18-7.64, $p=0.02$), TIMI($p<0.01$), Comorbidities- Smoking ($p=0.311$). It states that median angiographic SYNTAX score shows multiple vessel disease. CAD, TIMI and myocardial blush grades were associated with a higher risk of death. Even our present study shows the significant p values for SYNTAX and TIMI Scores i.e, ($p=0.0001$) which are related with higher mortality rate. Our study also recommends the treatment patterns for patients with CAD.

According to the study of **Mohammed Ali Gameil *et al*** AST ($P<0.001$), ALT ($P<0.001$), ALP ($p=0.001$), Serum Creatinine ($p=0.025$), HDL ($p=0.119$), LDL ($p=0.001$), WBC ($p=0.001$),

Neutrophils ($p=0.001$), TG ($p=0.001$), TC ($p=0.001$) in post COVID-19 survivors. Hemoglobin ($p=0.042$) were calculated by student's T-Test and Mean, Standard deviation. There is a significant decrease in the Lymphocyte count ($p=0.001$) for 3 months after recovery from the COVID-19, which is inversely correlated with severity of COVID-19. The long-term impact of COVID-19 on the hepatic functions is still unclear. In the study liver function tests showed statistically significant variations in post COVID-19 Survivors than individuals without COVID-19. In our present study we found that a persistent elevation of AST, ALT, Serum creatinine, HDL, LDL, WBC, TG and TC and got significant values in Hemoglobin, WBC, LDL, TG, ALP and agreed with the **Mohammed Ali Gameil *et al*** study as our study shows the significant decrease in the Lymphocyte count ($p=0.0001$).

Out of 169 Patients with CAD, 104 were Post COVID-19 patients and 65 with Non COVID-19. In our study Post COVID-19 patients showed significant increase in laboratory parameters like HB, WBC, HDL, TG, ALP, LV-Mild, LV-Severe, STEMI, Troponin, CPK-MB, CRP, BP and no increase of these parameters were observed in Non COVID-19 Patients.

Risk assessment Score, SYNTAX and TIMI Scores showed more possibility of getting other complications in post COVID-19 patients than in Non COVID-19 patients.

We have observed that symptoms like Chest pain, Palpitations, Epigastric pain, Fever, Vomiting, Dyspepsia and Diseases like ACS, MI(AWMI), LVD were common in post COVID-19 patients than in Non COVID-19 patients.

LIMITATIONS:

- If we could have more sample size, we would have accessed the in-depth information of post COVID-19 in CAD patients. Lack of a control group of Non COVID-19 individuals prevents drawing definitive conclusions from this study, so the observed results cannot be generalized.
 - CAD encompasses a wide spectrum of clinical entities. Although this study did not find a specific association between the type of CAD and the risk of mortality, our findings should be considered hypothesis-generating in view of the relatively small sample of CAD subgroups.
 - We extended the follow-up among discharged patients whose length remains short. Whether patients with CAD derive additional long-term complications from COVID-19 deserve further investigation.
 - The present study presents information regarding angiographic and clinical features of patients with COVID-19 referred for CAG irrespective of the indication, which provides a useful overview of the potential value of an invasive approach in this clinical scenario.
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FUTURE DIRECTIONS:

- COVID-19 survivors experienced residual significant clinical and biochemical alterations that necessitate comprehensive medical care and close follow-up for longer periods.
 - This study would help the patients to know the impact of post COVID-19, ways and means to tackle the challenges faced.
 - We would like to recommend a large sample size to assess the impact of post COVID-19, and TIMI score for the evaluation of the risk.
 - The SYNTAX score is a unique tool to score the complexity of CAD as it is very important to use the scoring tool correctly, so we would like to recommend strongly.
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