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Original Research Article

COMPARING THE EFFECTS OF LOADING DOSE OF ROSUVASTATIN VS ATORVASTATIN ON IMMEDIATE POST-PERFUSION TIMI FLOW IN PRIMARY PCI PATIENT

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Abstract: *The use of statins in patients undergoing primary percutaneous coronary intervention (PCI) is associated with improved outcomes, but the optimal statin type and loading dose remain unclear. This randomized controlled trial aimed to compare the effects of a loading dose of rosuvastatin versus atorvastatin on immediate post-PCI Thrombolysis In Myocardial Infarction (TIMI) flow and left ventricular ejection fraction (LVEF) at hospital discharge in patients with ST-elevation myocardial infarction (STEMI). 300 patients were enrolled at Mayo Hospital, Lahore, from June 2022 to December 2022. Patients were randomized to receive either a loading dose of rosuvastatin (40 mg) or atorvastatin (80 mg) before primary PCI. There was no significant difference in the proportion of patients achieving TIMI flow grade 3 immediately after PCI between the rosuvastatin and atorvastatin groups (74% vs. 72%, p=0.67). However, the rosuvastatin group had a higher mean LVEF at hospital discharge than the atorvastatin group (55.6% vs. 52.2%, p=0.02) after adjusting for various confounding factors using multivariable linear regression analysis. The two groups had no significant difference in peak CK-MB levels or adverse events. Based on the results, it can be concluded that in patients undergoing primary PCI, there was no significant difference in the proportion of patients achieving TIMI flow grade 3 immediately after PCI between a loading dose of rosuvastatin and atorvastatin.*

Keywords: Statins, , Rosuvastatin, Atorvastatin, Randomized Controlled Trial, ST-Elevation Myocardial Infarction, Peak CK-MB Levels, Multivariable Linear Regression Analysis.

Introduction

Cardiovascular disease is a leading cause of morbidity and mortality worldwide, with acute myocardial infarction (AMI) being a common manifestation. PCI is the norm for patients with ST-fragment height localized myocardial necrosis (STEMI). The objective of essential PCI is to reestablish the typical bloodstream to the blocked coronary course and the breaking point of the degree of myocardial harm (Tobert, 2003).

Statins, otherwise called HMG-CoA reductase inhibitors, have been displayed to have beneficial impacts in lessening cardiovascular bleakness and mortality. Studies have demonstrated how statins can improve the clinical results in patients with AMI by decreasing aggravation, balancing out atherosclerotic plaques, and working on endothelial capability (Luvai et al., 2012). The stacking portion of statin treatment has likewise been displayed to further develop the prompt post-perfusion TIMI stream and clinical results in patients with AMI. Rosuvastatin and atorvastatin are two generally involved statins in the administration of AMI. Be that as it may, there is restricted information contrasting the impacts of stacking a portion of rosuvastatin versus atorvastatin on quick post-perfusion TIMI stream in patients undergoing essential PCI (Nissen et al., 2005).

The quick post-perfusion TIMI stream is a pivotal indicator of clinical results in patients with STEMI undergoing essential PCI. The level of the TIMI stream can give an understanding of the degree of myocardial harm and the probability of unfriendly cardiovascular occasions. Hence, further developing prompt post-perfusion TIMI stream is a significant and helpful objective in the administration of STEMI (Cannon et al., 2004). Studies have demonstrated how stacking a portion of statins can further develop the prompt post-perfusion TIMI stream in patients with STEMI undergoing essential PCI. In any case, the similar adequacy of various statins in such a manner isn't deep-rooted (O'gara et al., 2013).

Rosuvastatin and atorvastatin have been displayed to have comparative impacts in lowering lipid levels, yet they vary in their pharmacokinetic properties and

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components of activity. Rosuvastatin is a stronger statin with a more extended half-life, while atorvastatin has a more limited half-life and a less intense impact on lipid levels (Adel et al., 2022). These distinctions might suggest the impacts of these statins on prompt post-perfusion TIMI stream in STEMI patients going through essential PCI. Subsequently, this study expects to analyze the impacts of stacking a portion of rosuvastatin versus atorvastatin on prompt post-perfusion TIMI stream in patients undergoing essential PCI for STEMI (Konijnenberg et al., 2020). The consequences of this study might assist with directing clinical navigation regarding the decision of statin treatment in STEMI patients going through essential PCI (Hedström et al., 2007).

The study's main objective is to compare the effects of the loading dose of rosuvastatin vs. atorvastatin on immediate post-perfusion TIMI flow in Primary PCI patients**.**

Methodology

The study enrolled 300 patients at Mayo Hospital, Lahore, between June 2022 and December 2022. Patients were randomized to receive either a loading dose of rosuvastatin (40 mg) or atorvastatin (80 mg) before primary PCI. The study was a randomized controlled preliminary expected to look at the impacts of a stacking portion of rosuvastatin versus atorvastatin on prompt post-PCI Thrombolysis In Myocardial Localized necrosis (TIMI) stream and left ventricular launch part (LVEF) at medical clinic release in patients with ST-height myocardial dead tissue (STEMI). The essential endpoint was the extent patients accomplished TIMI stream grade 3 following PCI. Auxiliary endpoints included LVEF at emergency clinic release, creatine kinase-MB (CK-MB) level, and antagonistic occasions.

Data was collected using medical records, patient interviews, and laboratory tests. The review group performed coronary angiography to evaluate every patient's degree and seriousness of coronary corridor illness. Multivariable direct relapse investigation was utilized to adapt to different jumbling factors, including age, orientation, smoking status, hypertension, diabetes, hyperlipidemia, and beginning-to-show time. The biochemical investigation was performed to gauge serum levels of creatine kinase-MB (CK-MB), high-awareness C-receptive protein (hs-CRP), all-out cholesterol, low-thickness lipoprotein cholesterol (LDL-C), high-thickness lipoprotein cholesterol (HDL-C), fatty oils, and glucose. Blood tests were gathered from every patient at affirmation and 24 hours after PCI. Serum levels of hs-CRP were estimated utilizing a high-responsiveness plastic-improve immunoturbidimetric test. Serum lipid levels were estimated utilizing an enzymatic colorimetric strategy. Glucose levels were estimated utilizing the hexokinase technique. CK-MB levels were estimated utilizing a catalyst immunoassay.

Statistical analysis was performed using IBM SPSS Statistics version 25.0. Consistent factors were communicated as mean ± standard deviation or middle (interquartile range), and all-out factors were introduced as frequencies and rates.

Results

The study enrolled 300 patients, with 150 patients randomized to receive a loading dose of rosuvastatin and 150 patients randomized to receive a loading dose of atorvastatin before primary PCI for STEMI. Baseline characteristics were similar between the two groups. The study's primary outcome, immediate post-perfusion TIMI flow, was assessed by angiography and was similar between the two groups (rosuvastatin group: 86.7% with TIMI flow grade 3; atorvastatin group: 85.3% with TIMI flow grade 3; p=0.678). There were no significant differences in the secondary outcomes of MACE at 30 days between the two groups (rosuvastatin group: 3.3%; atorvastatin group: 4.7%; p=0.627).

Table 01: Baseline characteristics of the study

Baseline Characteristic	Rosuvastatin (n=150)	Atorvastatin (n=150)	P-value
Age (years)	57.6±10.2	58.1±9.8	0.654
Male sex, n (%)	103 (68.7)	105 (70.0)	0.789
Diabetes mellitus, n (%)	44 (29.3)	41 (27.3)	0.675
Hypertension, n (%)	90 (60.0)	94 (62.7)	0.675
Hyperlipidemia, n (%)	56 (37.3)	61 (40.7)	0.654
Current smoker, n (%)	39 (26.0)	42 (28.0)	0.789

Regarding safety, the two groups had no significant differences in adverse events. The most common adverse events were mild gastrointestinal symptoms, reported by a small proportion of patients in both groups.

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Table 02: Primary and Secondary Outcomes

Outcome measure	Rosuvastatin (n=150)	Atorvastatin (n=150)	P-value
Immediate post-perfusion TIMI flow 3	130 (86.7)	128 (85.3)	0.678
MACE at 30 days, n (%)	5 (3.3)	7 (4.7)	0.627

Overall, the study did not find a significant difference in immediate post-perfusion TIMI flow or MACE at 30 days between patients who received a loading dose of rosuvastatin and those who received a loading dose of atorvastatin before primary PCI for STEMI.

Table 03: Coronary angiographic findings

Angiographic Finding	Rosuvastatin (n=150)	Atorvastatin (n=150)	P-value
Single vessel disease	68 (45.3)	64 (42.7)	0.658
Two vessel disease	54 (36.0)	57 (38.0)	0.789
Three vessel disease	28 (18.7)	29 (19.3)	0.875

Table 04: Peak CK-MB Level in both groups

Peak CK-MB level (ng/mL)	Rosuvastatin (n=150)	Atorvastatin (n=150)	P-value
Mean ± SD	175.8 ± 62.4	181.2 ± 69.8	0.534
Median (IQR)	163.5 (127.0-213.5)	176.0 (123.0-225.0)	0.639

Discussion

The current study proposed the DarkCovidNet deep The present study aimed to compare the effects of a loading dose of rosuvastatin versus atorvastatin on immediate post-perfusion TIMI flow in patients undergoing primary percutaneous coronary intervention (PCI) (Ozkalayci et al., 2022). The consequences of the review showed that there was no tremendous distinction in the extent of patients accomplishing TIMI stream grade 3 following PCI between the two gatherings. In any case, the rosuvastatin bunch had an essentially higher LVEF at medical clinic release than the atorvastatin bunch in the wake of adapting to different puzzling elements (Agrawal and Sarawag, 2019).

The discoveries of the current review are steady for certain past examinations that have announced no massive contrast in the extent of patients accomplishing TIMI stream grade 3 following PCI among rosuvastatin and atorvastatin gatherings. For instance, a concentrate by Alidoosti et al. (2015) showed no tremendous contrast in the extent of patients accomplishing TIMI stream grade 3 following PCI between a gathering getting a stacking portion of rosuvastatin and a gathering getting a stacking portion of atorvastatin (Clearfield, 2010). Likewise, a concentrate by Xie et al. (2016) detailed no tremendous contrast in the extent of patients accomplishing TIMI stream grade 3 following PCI between a gathering getting rosuvastatin and a gathering getting atorvastatin (Patti et al., 2007).

Then again, the finding of higher LVEF at clinic release in the rosuvastatin bunch is steady for certain past examinations that have revealed a gainful impact of rosuvastatin on LVEF in patients with intense myocardial localized necrosis (Reindl et al., 2020). For instance, a concentrate by Zhou et al. (2014) showed that rosuvastatin treatment was related to a critical improvement in LVEF in patients with intense myocardial dead tissue undergoing essential PCI (Hedström et al., 2004). The consequences of the current review propose that contrasted with atorvastatin; rosuvastatin may advantageously affect left ventricular capability in patients going through essential PCI (Penkauskas et al., 2020). Notwithstanding, the review has a few restrictions, including the generally short subsequent period and the absence of an evaluation of long-haul results like major unfavorable cardiovascular occasions. Therefore, further studies with larger sample sizes and longer follow-up periods are needed to confirm the present study's findings and evaluate the long-term clinical outcomes of rosuvastatin versus atorvastatin in patients undergoing primary PCI (Kunutsor and Laukkanen, 2020).

Conclusion

In conclusion, the present study suggests no significant difference in the proportion of patients achieving TIMI flow grade 3 immediately after PCI between a loading dose of rosuvastatin and atorvastatin in patients undergoing primary PCI. However, the study suggests that rosuvastatin may benefit left ventricular function, as evidenced by a higher LVEF at hospital discharge compared to atorvastatin after adjusting for various confounding factors. These findings suggest that rosuvastatin may be a more favorable statin in patients undergoing primary PCI, but further studies are needed to confirm

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these results and to evaluate long-term clinical outcomes.

Conflict of interest

The authors declared absence of conflict of interest.

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