

Analysis of Role of Statins on Cardiac Patients with Chronic Kidney Disease and Renal Failure: A Research Analysis

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ABSTRACT

Objective: The objective of our study is to find the role of statins in CVD and those patients who are suffering from renal failure and chronic kidney disease.

Study Design: Comparative / cross sectional study.

Place and Duration of Study: This study was conducted at the Sialkot Medical College and RHC, Dhullanwala, Gujrat from January 2018 to March 2018.

Materials and Methods: The study was conducted at Sialkot Medical College and RHC, Dhullanwala, Gujrat with the permission of ethical committees and concerned departments. For this study the data was collected from 50 patients who were suffering from cardiovascular and kidney diseases. We made two groups of study for this purpose. One group was control group and the other group was suffering from CVD and kidney problems.

Results: The values of analysis of statin therapy in patients shows the comparison between two groups on the basis of functional values. ROC curve explained the specificity and sensitivity of statin therapy in patients.

Conclusion: The results of this study clearly showed that patients of CKD are at increasing risk for CVD. Also, there is significant evidence depicting that patients with CKD get advantage from statin therapy with improvement of CV outcomes. Nevertheless, in patients who are on dialysis and are of stage 5 CKD, the advantages of statin therapy on CV outcomes are less definite, and further large RCTs may be required to explain this substance.

Key Words: Chronic, CKD, Statin, Patients, Renal Failure

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INTRODUCTION

Chronic kidney disease (CKD) is one of the major public health problems. Cardiovascular disease (CVD) keeps on being one of the major cause of morbidity and mortality among individuals with CKD around the world, with number of cardiovascular occasions and mortality reliably expanding as renal function deranges. Dialysis patients have death rates up to 40-crease higher than the overall public, with CVD being in charge of up to half of these passing.¹ Patients with CKD have increased commonness of various hazard factors for CVD, including lipid variations from the norm, hypertension, stoutness, and diabetes.

Statins are outstanding to decrease the cardiovascular (CV) occasions and mortality in patients having coronary supply route disease.²

The fundamental impact of the statins is to decrease the low-thickness lipoprotein cholesterol (LDL-C) levels. Be that as it may, statins additionally apply critical pleiotropic impacts, including calming and antithrombotic activities, and also change of endothelial capacity.

A few investigations have revealed that the benefits of statins in patients with coronary heart diseases (CHD) are by inhibiting the catalyst 3-hydroxy-3-methylglutaryl coenzyme A reductase. This enzyme is needed for the rate limiting step of cholesterol synthesis, which results in decreased intrahepatic cholesterol levels. It causes an increase in the movement/atomic translocation of the interpretation factor sterol administrative element which limits protein in our body. Hence, starting the low-thickness lipoprotein receptor (LDLR) quality with resulting up direction of LDLRs, ultimately leading to a lessening in circulating LDL-C levels over a period of time.⁴

The use of statins in the population with dyslipidemia to decrease cardiovascular (CV) risks and mortality is all around archived. Astonishingly, the patients with chronic kidney disease (CKD), especially those with progressive and advanced renal disease, are by and large stopped from extensive clinical trials due to fear of high morbidity and mortality, and also security issues of the medications.⁵ In this regard, the influence of statins on such patients is for the most part from some post hoc subgroup investigation in which the

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effects of statins on kidney remains arguable. Chronic kidney disease is associated to dyslipidemia, involving the whole range of plasma lipoproteins. The particular lipoprotein variations from the normal values found in patients with CKD may be different depending upon the degree and the necessary driver of renal dysfunction, and the type of dialysis in patients having end stage renal disease(ESRD).⁶

MATERIALS AND METHODS

The study was conducted at Sialkot Medical College, Sialkot and RHC Dhullanwala, Gujrat, with the permission of ethical committees and concerned departments. For this study the data was collected from 50 patients who were suffering from cardiovascular disease and kidney disease. For this purpose we made two groups of study. One group was control group and the other group was suffering from CVD and kidney problems. The second group was also getting the statin therapy for the cure of their problem but the control

group was not getting any kind of therapy, they just get normal medication. Then we collected the socio economic status and therapy status of both groups. Then we analyzed the data and found that either statin therapy is helpful for patients or not.

Student’s t-test was applied to assess the variations in roughness among groups. Two-way ANOVA was carried out to examine the contributions. A chi-square test was performed to study the variations in the distribution of the fracture modes (SPSS 19.0).

RESULTS

The data was collected for further analysis. Table 01 of the data shows the basic values of control group and patients. It shows the BMI, age, Total cholesterol level and other basic values. We can find that cholesterol level is high in patients as compared to normal values. We also showed the comparison of statin group and normal group.

Table No.1: General values of Control group and diseased group

Variable	Diseases Group	Control Group	t Value	p Value
Age (Year)	56.56±8.46	53.64±8.36	1.716	0.081
BMI (kg/m2)	24.31±2.26	23.37±2.09	2.195	0.031
SBP (mmHg)	140.36±15.70	116.53±13.46	8.248	0.000
DBP (mmHg)	87.94±10.69	75.81±9.94	5.967	0.000
PP (mmHg)	52.42±12.87	40.72±8.74	5.426	0.000
FBG (mmol/)	5.12±0.65	5.06±0.49	1.764	0.081
TG (mmol/L)	1.74±0.75	1.69±0.86	1.838	0.071
TC (mmol/L)	4.95±0.76	4.88±0.82	1.712	0.090
HDL-	1.30±0.43	1.31±0.56	1.717	0.089
LDL-C	3.46±0.58	3.38±0.66	1.139	0.266

Note : BMI : Body Mass Index ; SBP : Systolic Blood Pressure ; DBP : Diastolic Blood Pressure ; PP : Pulse Pressure ; FBG : Fasting Blood Glucose ; TG : Triglyceride ; TC : Total Cholesterol ; HDL-C : High-Density Lipoprotein ; LDL-C: Low-Density Lipoprotein

Tale 02 shows the values of analysis of statin therapy in patients. It shows the comparison between two groups on the basis of functional values. ROC curve explained the specificity and sensitivity of statin therapy in patients (Figure 01).

Table No.2: Comparison between two groups in structural and functional parameters

Group	IMT (µm)	CC(mm ² /KPa)	α	β
CVD Group	694.88±77.63	0.89±0.13	5.68±1.23	11.25±1.01
Control Group	586.87±62.12	0.96±0.08	4.77±0.62	9.24±1.24
T value	7.818	-3.115	4.712	9.004
P value	0.000	0.002	0.000	0.000

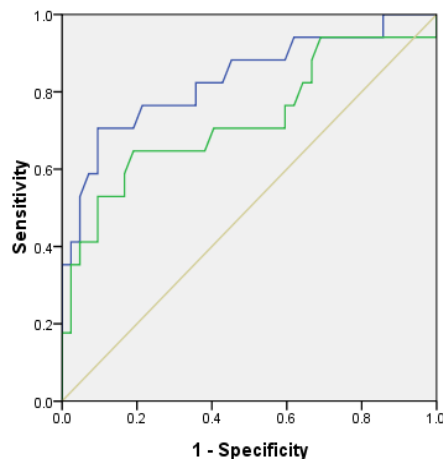


Figure No.1: ROC curve of statin therapy in patients

DISCUSSION

A large quantitative survey, incorporating 31 trials with in excess of 48 000 people, proposes that treatment with statin reduces the danger of cardiovascular occasions crosswise over various levels of kidney work.⁷ Major cardiovascular occasions are decreased by 23%, including a 22% lessening in coronary occasions, and 9% decrease in cardiovascular or all-cause passing. No noteworthy impact was seen on the danger of renal disappointment, or on the danger of unfriendly occasions involving disease mortality. End focuses for the assessment of the impact of statin treatment on kidney function in patients with CKD, have included protein discharge and movement of CKD.⁸

Starting examination indicated distinctive rates of expanded protein discharge with different statins. Be that as it may, clinical investigations that particularly assessed the impact of statin treatment on protein discharge yielded clashing outcomes, with some exhibiting a lessening in proteinuria and others demonstrating no impact. There are clashing information regarding the effect of statins on movement of CKD.⁹

Some of the investigations have suggested that statins may limit the rate of decrease in renal function in patients with mellow to direct renal impairment. Although others have found that statins were not better than placebo treatment. In another research which comprised of extremely late substantial meta-examination including 57 randomized controlled trials (RCTs) with 143 888 participants, statins did not lessen the risk for renal dysfunction in patients with CKD not on dialysis but rather did unremarkably decreased proteinuria and rate of assessed glomerular filtration rate (eGFR) deterioration.¹¹⁻¹³ These results are consistent with the findings of another exceptionally late meta-examination of 23 randomized controlled trials (RCTs) with 39 419 participants with non-end-organize CKD, showing that statins caused a detectably critical depletion in micro-albuminuria, proteinuria but did not sufficiently moderate the clinical movement of non-end-organize CKD. Moreover, in another meta-investigation, which examined the sustainability of statins in patients with diabetic nephropathy and included 14 trials with 2866 members. It revealed that statins lessened albuminuria and this decrease in albuminuria was more significant in patients of type II diabetes mellitus with diabetic nephropathy.¹⁴

In a vast meta-investigation, which involved 8834 members with organize 1– 3 CKD and 32 846 man a very long time of development, statin treatment was appeared to be helpful for the essential cardiovascular anticipation in CKD.³⁶ More particularly, statins decreased the danger of CVD by 41% ($P < .001$) and diminished aggregate mortality by 34% ($P = .005$) and the danger of CHD by 45% ($P < .001$).³⁸ For arrange 3

CKD just, statins decreased the danger of CVD by 44% ($P < .001$) and diminished aggregate mortality by 38% ($P < .001$), the danger of CHD by 45% ($P < .001$), and the danger of stroke by 57% ($P = .003$).¹⁵⁻¹⁷

CONCLUSION

The results of this study clearly showed that patients of CKD are at increasing risk for CVD. Also, there is significant evidence depicting that patients with CKD get advantage from statin therapy with improvement of CV outcomes. Nevertheless, in patients who are on dialysis and are of stage 5 CKD, the advantages of statin therapy on CV outcomes are less definite, and further large RCTs may be required to explain this substance.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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