

COMPARITIVE STUDY OF EFFECT OF STATINS ON LIPID PROFILE IN CHRONIC KIDNEY DISEASE - DIALYSIS & NON-DIALYSIS PATIENTS.

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ABSTRACT

Aim:

The aim of the study is to compare the effect of statins on lipid profile in chronic kidney disease(dialysis & non dialysis) patients.

Methodology:

The study design was a comparative prospective observational study which is conducted to assess the lipid profile in CKD patients on dialysis and non dialysis. Patient demographics and the required relevant information or data is collected from patient record and laboratory record. Pregnant women and patients with age less than 18 years were excluded from the study. The results obtained will be analyzed and evaluated statistically.

Results:

In our study we have taken a total of 104 patients divided equally as dialysis and non-dialysis significantly proved with $p < 0.05$. Based on the clinical and laboratory data there was a significant difference between the two groups receiving statins.

Conclusion:

This study suggests that there is an appropriate difference in the patients receiving statins on dialysis and non-dialysis. Our data imply that education is required to improve the use of statin in persons with CKD relying on dialysis

Keywords: Non Dialysis, Dialysis, Chronic Kidney Disease, ASCVD, Statins therapy, Glomerular Filtration rate, CVD.

INTRODUCTION

- Chronic kidney disease also known as chronic renal failure, is defined as progressive loss of renal function (nephrons) which is irreversible.
- The normal kidney function is to filters toxins and excess fluids from the blood.
- In case of kidney damage, accumulation of water and toxins.
- In blood leads to kidney abnormalities like albuminuria, proteinuria, dyslipidemia, electrolyte imbalances.
- If the condition is left untreated it may progress and lead to cardiovascular disorders.
- If the estimated glomerular filtration rate (EGFR) is under 60ml/min/1.73m² continuing for 3months or more regardless of cause is considered as chronic kidney disease.
- CKD progresses to end stage renal disease (ESRD) through 4 grades of CKD.
- Continuation of CKD is linked with large number of critical conditions like dyslipidemia, anemia, mineral bone disease and cardiovascular complications.
- So, CKD patients should be evaluated for the indication of these complications and go for appropriate treatment.

CLASSIFICATION:

CKD is classified based on the

- Estimated glomerular filtration rate as **Grade1, Grade2, Grade3, Grade4 and End Stage Renal Disease.**

AETIOLOGY:

- The most common causes of CKD are acute renal failure hypertension and diabetes.
- Glomerulonephritis, polycystic kidney disease.
- Recurrent kidney infection (pyelonephritis)
- Others include obesity, smoking and tobacco use.
- Family history of CKD.

CLINICAL PRESENTATIONS OF CKD:

Risk factors:

- Diabetes Mellitus.
- Hypertension.
- Elderly people.
- Family history of CKD.
- Obesity.
- Existing kidney abnormalities.

DIALYSIS:

When the kidney function is declined by 85-90% and the eGFR is <15, then dialysis is required. It is a procedure that involves purifying, filtering blood and removing excess fluids. Dialysis generally takes 3-5hours thrice weekly. **Hemodialysis** is the most

frequently used technique that uses hemodialyzer. **Peritoneal dialysis** involves a catheter placed directly into the lining of peritoneum (abdomen) which acts as the natural filter and dialysate is added as a cleansing solution.

Lipid profile test is a blood test which is a screening tool for the levels of various lipids in the body like Total cholesterol, LDL, HDL, Triglycerides (TG). This test is also used to measure the risk of patient for cardiovascular diseases. HDL levels of 60mg/dl or higher are considered normal and levels below 40mg/dl is a risk factor for heart disease.

Normal VLDL level ranges from 5-40mg/dl.

Normal LDL levels : 130 - 159 mg/dl.

MATERIAL AND METHODS:

For this study, consent of Institutional ethics committee, Durgabai Deshmukh hospital was taken. This prospective observational study was conducted for 6 months in department of Nephrology, Durgabai Deshmukh hospital, a 300 bedded multi-speciality hospital. A study was conducted to evaluate patients with Chronic Kidney Disease. Baseline demographic data was collected from the patient case reports. Patients over the age of 18 years with CKD related condition and dialysis patients are covered.

RESULTS AND DISCUSSION:

The research comprised a total of 104 patients. The technique was strictly followed throughout the experiment. 52 people get therapy for statin dialysis (group I), while 52 get therapy for statin nondialysis (Group II). The study which included 52 dialysis and 52 non-dialysis patients as shown that both the groups are equally prone to cardiovascular complications like ASCVD and Heart failure but in general dialysis patients are at more risk of developing cardiovascular complications like Atherosclerosis, stroke, cardiac failure, etc. The results have significant public and clinical consequences as reduced eGFR increases the likelihood of cardiovascular disease independent of diabetes status[3, 4], and the risk of ASCVD in the community is reduced by statin therapy[12–15]. Statin usage likelihood was also substantially reduced among CKD Stage 5 veterans who were not reliant on dialysis compared to CKD Stage 3A veterans. The perceived danger of using statin in advanced CKDs or the lack of proof that individuals benefit from continuous dialysis might contribute to a reduction in statin prevalence. The demographic data will be gathered from the Baseline Patient Case Report.

	Non-Dialysis	Dialysis
Male	32	31
Female	20	21

Tab1 : Study gender differentiation in CKD

Gender in Non-Dialysis and Dialysis

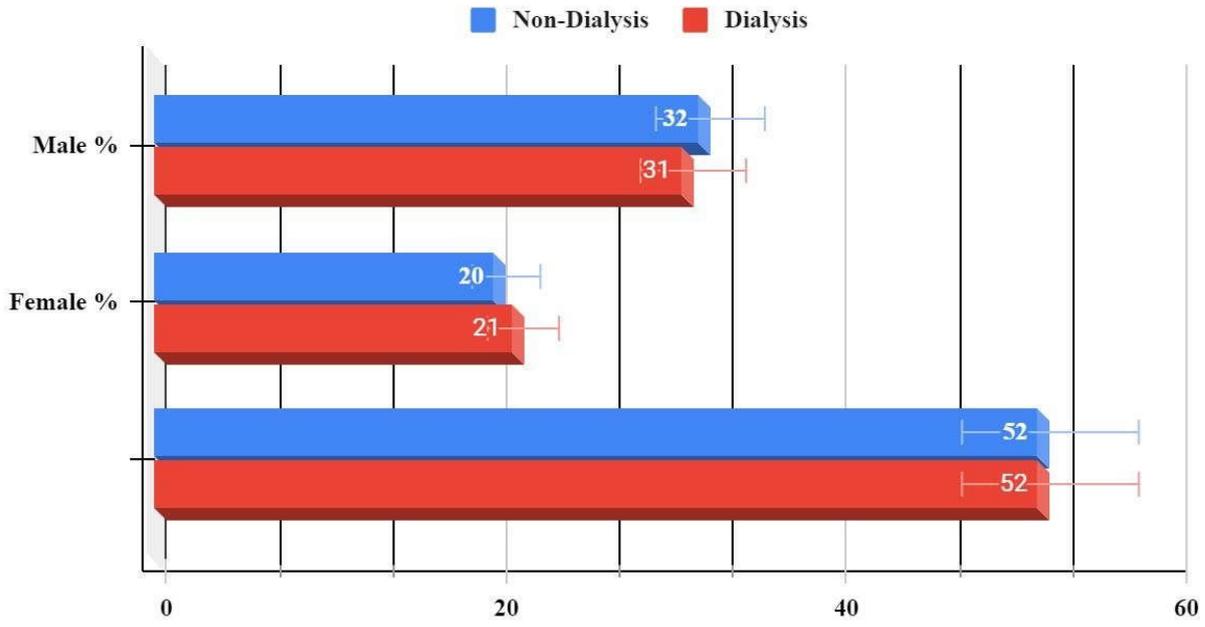


Fig:1: Characteristics of both group Dialysis & Non Dialysis

	Non-Dialysis	Dialysis
ASCVD %	18	17
Heart failure %	34	35

Tab:2:Characteristics of both groups

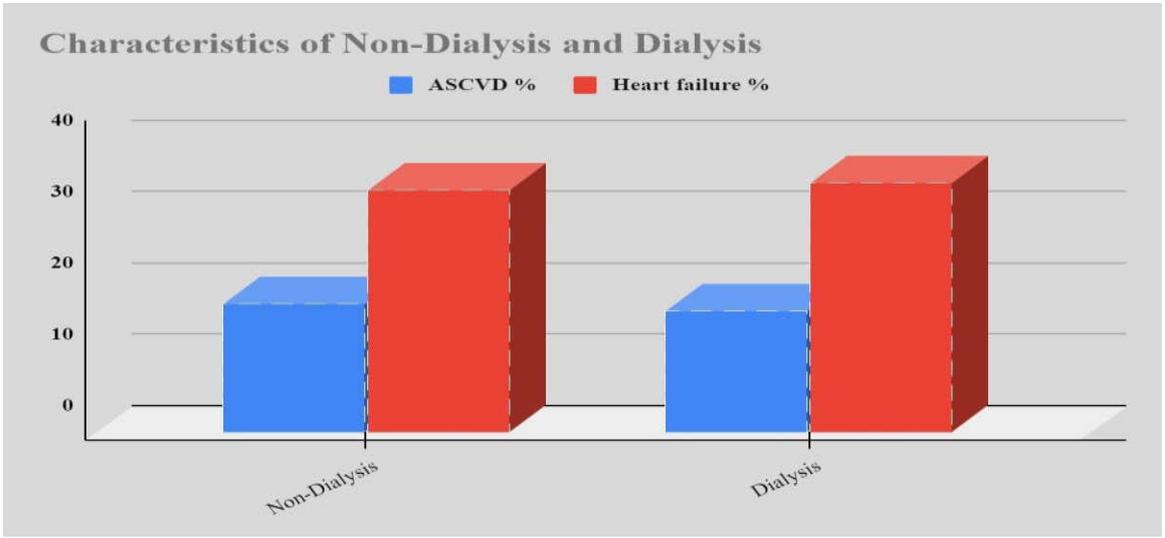


Fig:2 : Characteristics of both group Dialysis & Non Dialysis

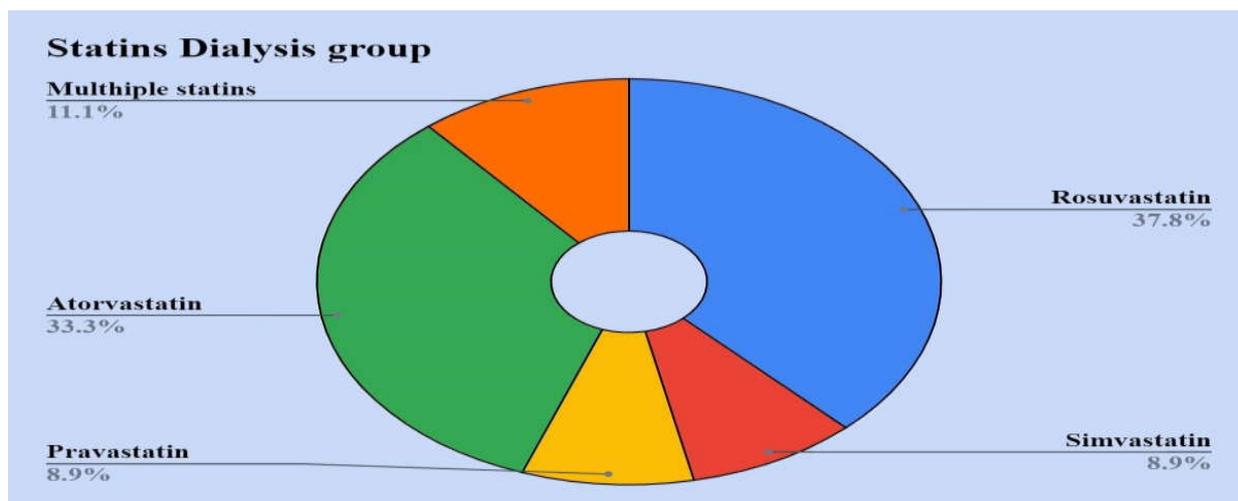


Fig3 :Use of statins in Dialysis group.

The following graph depicts the usage and kind of statins in the dialysis group of Rosuvastatin with 37.0%, Atorvastatin 33.3%, Simvastatin with 8.9%, Pravastatin with 8.9%, and other Multiple Statin with 11.1%.

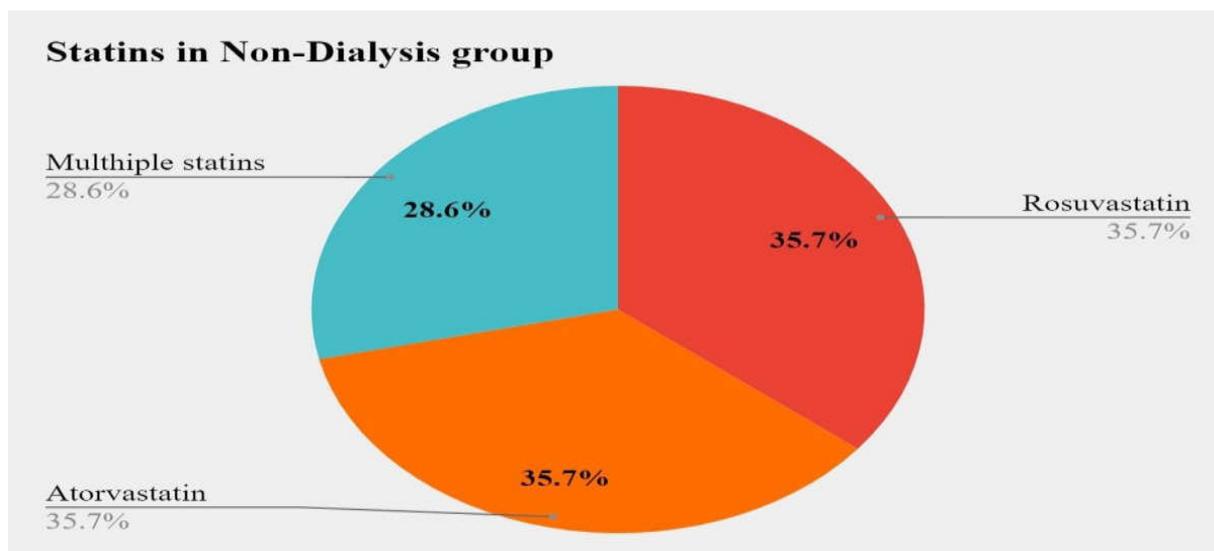


Fig:4:Pie chart representing the use of statins in Non- Dialysis group.

The graphic demonstrates how the non-dialysis group uses and the types of statins, 35.7% rosuvastatin, 35.7% atorvastatin and 11.1% other multiplied data.

The following table shows the use of statin medicines in group I non-dialysis and dialysis with use of Rosuvastatin: 34% and 5% in group II; atorvastatin is 30% in group I and 5% in group I; figure II and group II is 4% and group I is 10%.

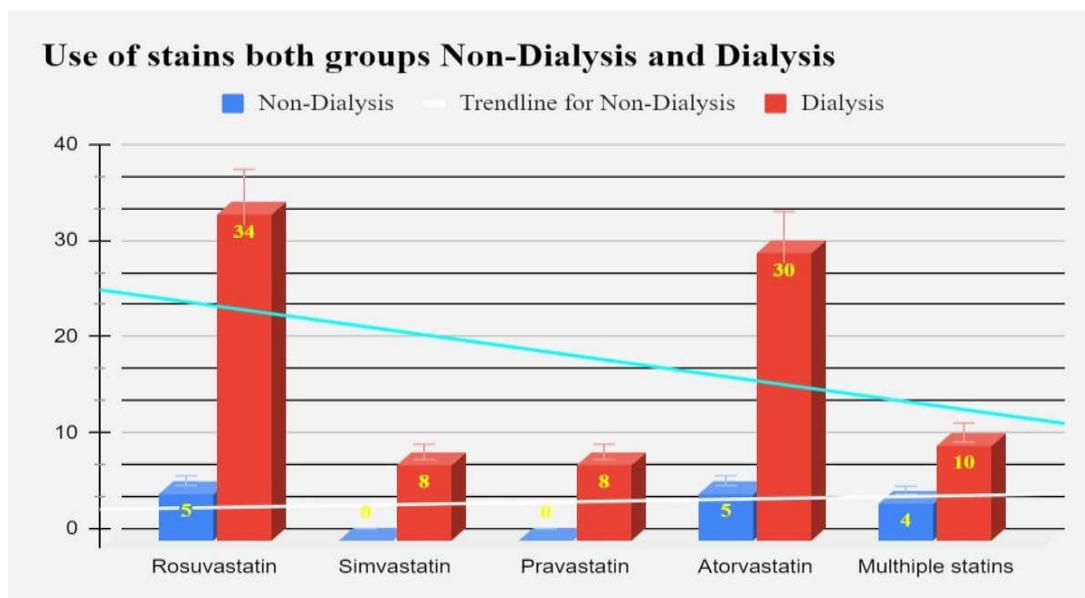


Fig:5 :Use of statins in Dialysis and Non-Dialysis groups

STATISTICAL TOOL:

All attributes were summarized descriptively. Deviation values of the middle and default were measured using Microsoft Excel. Numbers and percentages were utilized for categorical data in the data summaries. For easy interpretation, the data were presented using tables and graphs. The data acquired were evaluated and analyzed using the practical numeral values that were generated during the project work.

Statin	Non-Dialysis	Dialysis
Rosuvastatin	5	34
Simvastatin	0	8
Pravastatin	0	8
Atorvastatin	5	30
Multiple statins	4	10

Tab:3:Types of statins in both Dialysis groups.

The use of statins is 84% among non-dialysis patients and 16% in the other dialysis group.

CONCLUSION:

Statin lowers the mortality and the incidence of cardiovascular disease in early CKD adults, but has little or no effect on dialysis patients who are receiving statins also has no impact in kidney transplant recipients. . In case of statin intolerance or LDL-C goals cannot be attained with maximum dose of statins then ezetimibe should be used alone or in combination with statins. Statin mono therapy or statin + ezetimibe combination therapy should not be started in individuals with CKD treatment without any established cardiovascular complications. This study suggests that there is very little impact of statins in CKD dialysis patients. So, our results imply that training is required to improve the use of statins in people with Chronic kidney disease patients who rely on dialysis.

ETHICS AND CONSENT:

The entire study was conducted according to the AHA/ASA guidelines. All the relevant and necessary data was collected from inpatient records, laboratory reports, prescriptions and by interacting with the patients.

CONFLICTS OF INTEREST:None.

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