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Review Article

IMPACT OF STATINS ON OUTCOME OF PATIENTS SUFFERING FROM CEREBRAL ISCHEMIC STROKE

¹Dr Toheed Rehman, ²Dr Khalid Hassan, ³Dr Wahid Gul¹Medical Officer, Mardan Medical Complex²BHU Hayaseri Dir Lower Temergara Maidan³Lady Reading Hospital Peshawar

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Abstract:

Objective: CIS (Cerebral Ischemic Stroke) is very frequent in the population with elder age. The use of Statins appears to be very effective in the reduction of the disability resulted by cerebral ischemic stroke. The aim of this research work is to determine the impact of Statins on the outcome of cerebral ischemic stroke.

Methodology: All the patients of cerebral ischemic stroke who got admission in the Mardan Medical Complex, diagnosed with the clinical & para-clinical results in the year of 2018 were the participants of this research work. The patients were those persons who were using Statins at least three months before the cerebral ischemic stroke and controls never used Statins in their life. The measurement of the motor activity carried out on the basis of MRS (Modified Rankin Scale). The modified Rankin scale was comparing the variable at admission & discharge time from this very hospital. If there is no alteration in the motor condition or it becomes worse, it defined the adverse outcome.

Results: Total 230 patients of cerebral ischemic stroke in which one hundred and three were females were the part of this case work. The average age of the patients was 71.59 years. The amount of the patients of CIS with scores of MRS lower than 4 was much high in the group of Statins in comparison with the controls at the discharge & admission time. The proportion of the patients with adverse outcome was very low in the group of Statin in comparison with the group of controls. We found the same results when the adjustment of the both groups carried out for hypercholesterolemia.

Conclusion: Outcome in the patients who were using Statins prior to cerebral ischemic stroke was much better in comparison with the persons who were not taking Statins. It appears sensible to advocate Statins to decrease motor disability & resulting good outcome in the patients present with high danger of acquiring cerebral ischemic stroke.

KEY WORDS: Neurological, Statins, Cerebral Infarction, Hypercholesterolemia, Central Nervous System, Disability.

Corresponding author:**Dr. Toheed Rehman,**

Medical Officer, Mardan Medical Complex

QR code



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INTRODUCTION:

CIS is type of neurological deficiency that remains for minimum twenty-four hours. It reveals focal ischemia of CNS (Central Nervous System) [1-3]. The 3rd most common reason of death in USA is stroke and it is also the most frequent disorder of disabling the neurological system. Approximately, 750000 new patients of strokes appear and about 150000 patients meet their death every year due to this disease in our country Pakistan [1, 3, 4]. There are many important risk factors of stroke as hypertension, smoking of cigarettes, and high use of alcohol, hypercholesterolemia & use of the oral contraceptives [1, 3, 4]. There are two patho-physiologic processes in the CI (Cerebral Infarction). First one is the loss of the oxygen & glucose supply and the second one is the alterations in the cellular metabolism leading to the collapse [2, 4]. Statins has the capability to reduce the production of the LDL (low density lipoprotein). Various surveys have concluded that Statins decreases the danger of stroke even in the patients with no increased low density lipoprotein of the low high density lipoprotein [2-10]. MRS is very common for the measurement or evaluation of the disability of motor in the patients found with stroke [5, 9].

METHODOLOGY:

All the patients who got admission in the Mardan Medical Complex in the year of 2018 due to cerebral ischemic stroke were the part of this research study. The patients were present with the past history of the hypertension, ischemic diseases of heart and diabetes mellitus were not the art of this research work. We took the written consent from all the participants after explaining the purposes and objective of the study to the participants of their attendants. We confirmed the cerebral ischemic stroke with physical assessment of the patients & examination of the hypo-dense area in the brain carried out with the help of computes tomography scan. Patients available with the past background of taking any proportion of Statins in the

duration of last 3 months were the members of control group. The patients with no use of Statins were the controls of this current research work. Members of both groups were available with matched age and gender.

MRS was in use for the measurement of the motor ability. The range of the scale was zero to six. Zero scale means perfect health, scale four shows serious disability and six scale showed the death of the patient. The state of good motor was present if the scale was on less than four. We compared the MRS at the time of arrival and discharge. There was presence of adverse outcome when there was no change or MRS scores were high or greater than 4. We checked the fasting cholesterol of serum at the time of admission. The level of cholesterol greater than two hundred mg/dl in females & two hundred and twenty mg/dl in males were showing the hyper-cholesterolemia. Chi square test method was in use for the comparison of amount of the participants in each group. Adjustment of the collected information carried out for hypercholesterolemia & we reanalyzed the data with the utilization of the Mann-Whitney test. T test was in use for the comparison of average values of various continuous variables.

RESULTS:

There were total two hundred and thirty patients in which 103 were female patients & 127 were male patients with an average age of sixty years were the part of this research work. The average MRS in the group of Statins (2.70 ± 1.44) was much different in comparison with the group of controls (4.28 ± 0.88) at the time of admission. The average MRS in the group of Statins (1.590 ± 1.58) was also much different in comparison with the group of controls (4.09 ± 1.25) at the time of discharge. There was an important disparity between the users of Statins and group of controls in accordance with the status of MRS (greater or lower than four) at the time of admission & at the time of discharge, as available in Tables-1 & Table-2.

Table-I: Comparison of Statin for Users and Control Groups According to Modified Rankin Scale at the Time of Admission

Groups	Modified Rankin Scale > 4	Modified Rankin Scale < 4	Total
Statin group	25.0	55.0	80.0
Control group	124.0	26.0	150.0
Total	149.0	81.0	230.0

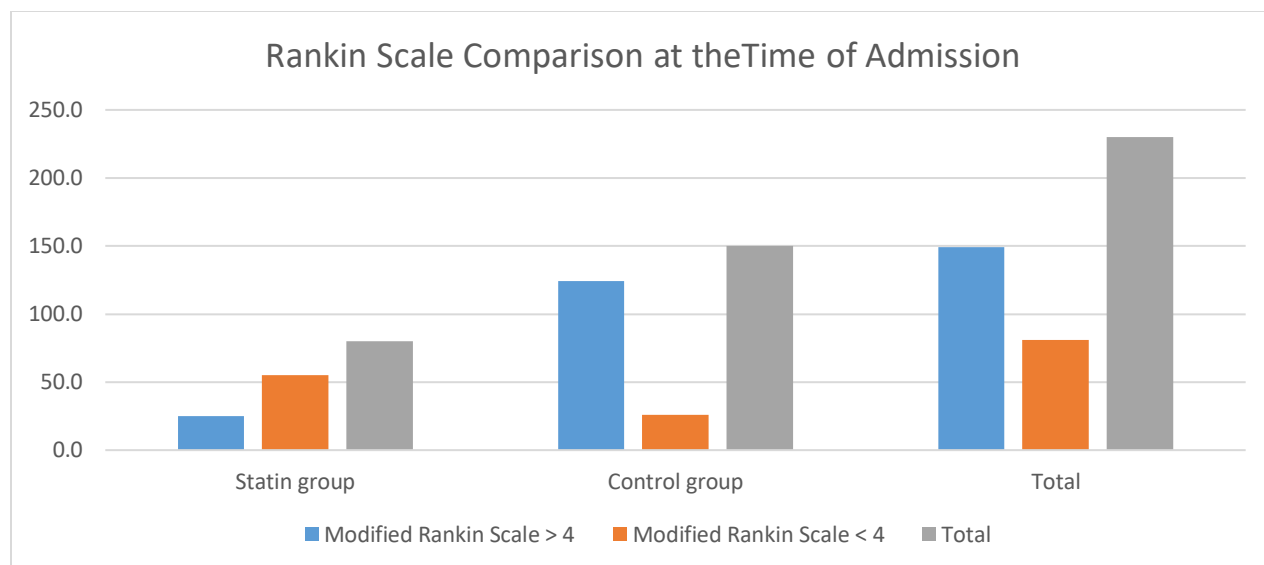
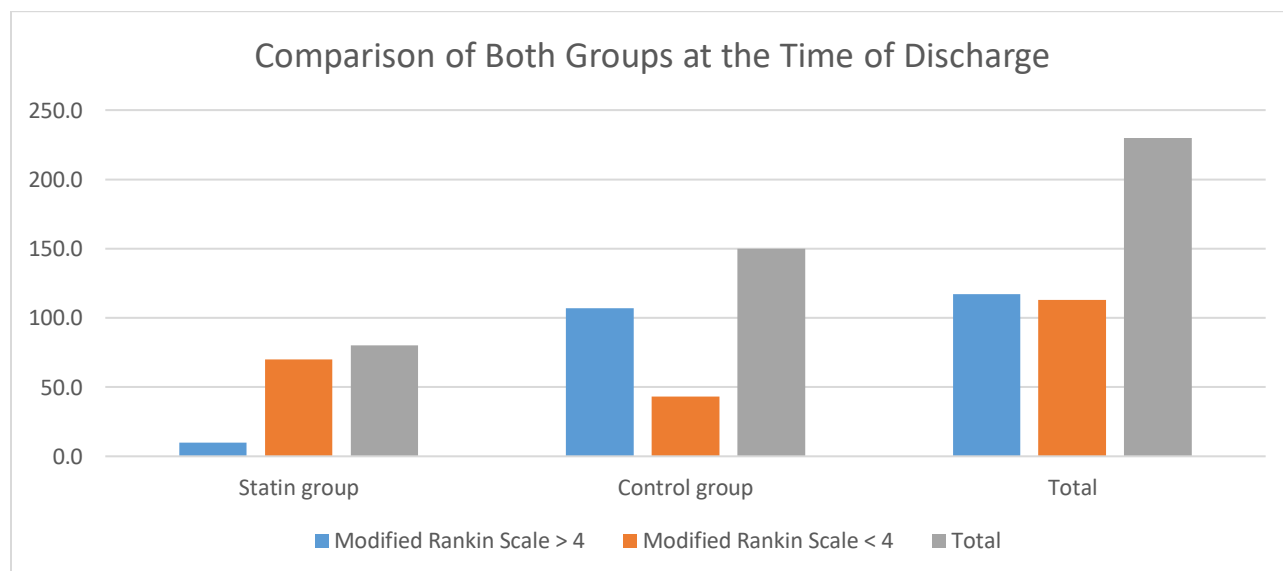


Table-II: Comparison Of Statin for Users and Control Groups According to Modified Rankin Scale at the Time of Discharge

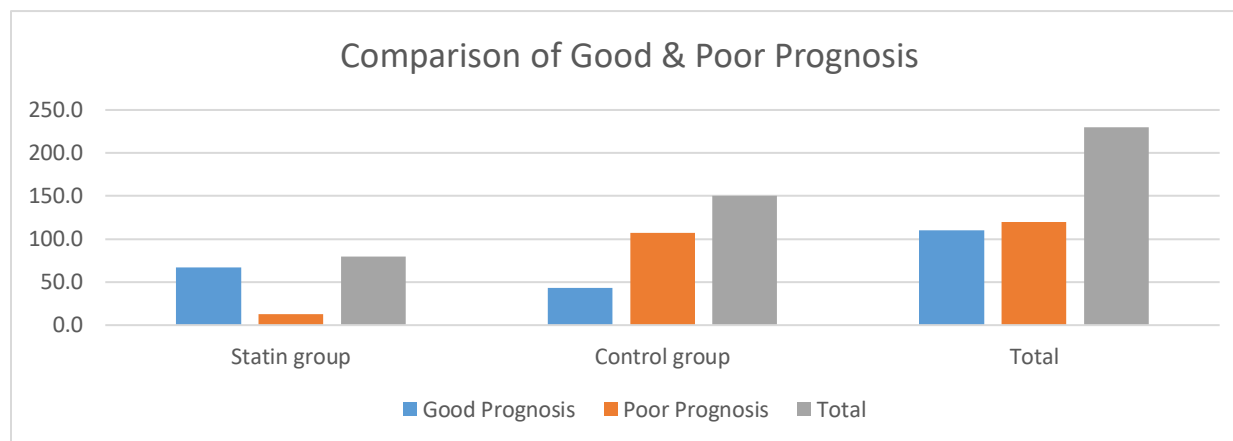
Groups	Modified Rankin Scale > 4	Modified Rankin Scale < 4	Total
Statin group	10.0	70.0	80.0
Control group	107.0	43.0	150.0
Total	117.0	113.0	230.0



We found much important difference in the prognosis between the users of Statins and group of the controls as available in Table-3.

Table-III: Comparison of Short Term Prognosis Between Statin Users and Control Groups

Groups	Good Prognosis	Poor Prognosis	Total
Statin group	67.0	13.0	80.0
Control group	43.0	107.0	150.0
Total	110.0	120.0	230.0

**DISCUSSION:**

There were total two hundred and thirty patients of CIS with an average age of sixty years were the part of this research work. We discovered significant disparity between the users of Statins and group of control in accordance with the condition of the MRS (Greater or lower than four) at the time of admission & discharge. In accordance with the findings of Reeves MJ [5], Statins has the ability to decrease the danger of stroke in the population present with high risk and it can be the factor of improvement in the outcome of patients using Statins before CIS. After adjustment of multi-variable, pre-treatment with taking Statins has an association with the lower odds of adverse outcome of patient (Odd Ratio=0.74, CI= 95%). On research work found an important association between the use of Statins & race. In white race, there was association of Statins with statistically less odds with adverse outcome (OR=0.610, 95.0% CI 0.420, 0.860), but in the race of blacks, there was association of Statins with non-statistically important rise in the adverse outcome (OR=1.820, 95.0% CI 0.980, 3.390). Pre-treatment with the usage of Statins has association with better outcome of stroke in race of whites, but they discovered no proof to know about the valuable impacts of Statins in race of blacks. There is suggestion of further studies, including randomized surveys on large sample size, to observe the

differential impacts of Statins on the patients of CIS among two races [5].

Joan Martí-Fabregas [6] proposed that Statins has valuable impacts on the patients suffering from CIS. He stated that the patients who got pretreatment with Statins prior to the stroke's onset have very lower amount of the serious neurological impacts and good clinical outcome. He included one hundred and sixty-seven patients (Average age of 70.70 ± 12.0 years). Eighteen percent patients were using Statins when got admission in the hospital. Outcomes at 3 months were very common in the group of Statins (80.0% versus 61.30%, $P=0.0590$ with the MRS; 76.70% versus 51.80%, $P=0.0150$ with BI). Statins has the ability to provide advantages for functional outcome for a long duration when managed before the onset of CIS. But randomized & controlled surveys are the requirement to assess the validity of the findings of this research work [6]. Lalouschek W stated the impacts of Statins on CIS that Statins decrease the danger of MI (Myocardial Infarction) and stroke among patients suffering from various types of vascular diseases.

CONCLUSION:

The outcome among patients using Statins prior to cerebral ischemic stroke was much better in comparison with the persons who never used Statins. It is very authentic to recommend the Statins to decrease the motor disability as well as better outcome

among patients available with high danger for the development of cerebral ischemic stroke.

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