

Paper Title (18 Bold)

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Abstract: (11Bold) Analgesia, one of the components of triad of anaesthesia, has now extended to relief of postoperative pain, chronic pain and cancer pain. The spinal cord has been used in the practice and Spinal anaesthesia is the commonly used technique for lower limb surgeries as it is easy to administer, economical and causes less hemodynamic variation than general anaesthesia. Additives can be used to increase the duration of postoperative analgesia. Since there are no studies comparing Buprenorphine and Nalbuphine, we have selected this study to evaluate the efficacy of Bupivacaine with Buprenorphine compared with Nalbuphine for postoperative analgesia. (10) **Key Word:** (11Bold) Intrathecal; Bupivacaine; Buprenorphine; Nalbuphine; Postoperative analgesia.

I. Introduction (11 Bold)

Diabetes is now commonly recognized as a coronary heart disease risk equivalent^{1,2,3,4}. This is mainly attributed to the high rates of dyslipidemia among diabetic patients which are the major factors accounting for the high percentage of deaths among diabetics due to cardiovascular disease (CVD)⁵. Numerous epidemiological studies and randomized controlled trials have shown a link between elevated LDL-C levels with increased CVD risk in both diabetic and non diabetic populations.^{6,7} Thus reducing LDL-C levels is the primary goal of therapy for diabetic patients. Statins are considered the first pharmacological line of treatment of dyslipidemia in diabetic patients⁹. Lowering of LDL-C levels is thought to be the main beneficial effect of statin treatment. There is no drug available for treating diabetic dyslipidemia and no previous study has documented the efficacy. The current study aims to build growing awareness of atherosclerosis specific care and the efficacy of two most commonly prescribed statins in India. (10)

II. Material And Methods (11 Bold)

This prospective comparative study was carried out on patients of Department of general Medicine at Dr. Ram Manohar Lohia Combined Hospital, Vibhuti Khand, Gomti Nagar, Lucknow from November 2014 to November 2015. A total 300 adult subjects (both male and females) of aged ≥ 18 years were included in this study. (10)

Study Design: Prospective open label observational study

Study Location: This was a tertiary care teaching hospital based study done in Department of General Medicine, at Dr. Ram Manohar Lohia Combined Hospital, Vibhuti Khand, Lucknow, Uttar Pradesh. (10)

Study Duration: November 2014 to November 2015.

Sample size: 300 patients.

Sample size calculation: The sample size was estimated on the basis of a single proportion design. The target population from which we randomly selected our sample was considered to have a confidence interval of 10% and confidence level of 95%. The sample size actually obtained for this study was 96 patients for each group. We planned to include 300 patients (Group A and Group B) for each group with 4% drop out rate. (10)

Subjects & selection method: The study population was drawn from consecutive diabetic patients who presented to Dr. Ram Manohar Lohia Combined Hospital with dyslipidemia and underwent fasting blood test of lipid profile before statin treatment initiation between November 2014 to November 2015. Patients were divided into three groups according to doses of statins. The prescribed doses of statin in RMLH for diabetic patients (10)

With dyslipidemia were as follows:

Group A (N=100 patients) -Atorvastatin 40mg daily to each patients;

Group B (N=100 patients) -Rosuvastatin 20mg daily to each patients; and

Group C (N=100 patients) -Rosuvastatin 20 mg to each patients at alternative days.

Inclusion criteria: (10) Bold

1. Diabetic patients (fasting blood glucose ≥ 126 mg/dL [7.0mmol/L])
2. Either sex
3. Aged ≥ 18 years,
4. Patients have a total cholesterol level of ≥ 154.68 mg/dl, LDL-C ≥ 96.6 mg/dl, HDL-C ≥ 138.6 in men and ≥ 46.3 mg/dl in women.
5. Fasting triglycerides ≥ 150.56 mg/dl, obtained within 1 week before the first use of statins which was then compared at first- and second-year intervals. (10)

Exclusion criteria: (10) Bold

1. Pregnant women;
2. Patients with genetic disorders
3. Patients on other concurrent lipid lowering agents such as bile acid sequestrants (cholestyramine, colestevlam), niacin, ezetimibe, fenofibrate and/or omega 3.
4. Patients with previous history of angina, severe vascular disease, or other life threatening disease.
5. Patients with nephropathy and/or hypothyroidism, active liver disease, bile duct problems, or ALT $> 3 \times$ ULN.
6. Patients with creatine kinase levels $> 10 \times$ ULN.
7. Patients taking concurrent corticosteroids, ciclosporin, and/or hormone replacement therapy.
8. Patients who are physically inactive.
9. Patients with a history of drug or alcohol abuse.

Statistical analysis (10) Bold

Data was analyzed using SPSS version 20 (SPSS Inc., Chicago, IL). Student's t-test was used to ascertain the significance of differences between mean values of two continuous nonparametric Mann-Whitney test. In addition, paired t-test was used to determine the difference between baseline and 2 years after regarding biochemistry parameters, and this which was a nonparametric test that compares two paired groups. Chi-square and Fisher exact tests were performed to test for differences in proportions of categorical variables but P 0.05 was considered as the cutoff value or significance. (10)

III. Result (11 Bold)

Table no 1 Shows metabolic parameters of patients of the three groups before treatment. Total cholesterol (TC), 224.3 ±30.8 mg/dl, 226.1 ±35.4&225.3 ±40.7 mg/dl, LDL-C, 158.3 ±26.7 mg/dl, HDL-C, 37.5 ±2.70 mg/dl, 35.5 ±2.21&36.4 ±1.90 mg/dl, Triglyceride 165.8 ±30.8 mg/dl, 162.6 ±28.2&166.8 ±35.7mg/dl, Non-HDL-C 180.6 ±31.2 mg/dl, 182.4 ±142.5 ±25.7 mg/dl, 148.2 ±26.9 & 145.8 ±27. mg/dl4, HbA1c, %, 5.82 ±0.2, 5.62±0.4 & 5.65 ±0.3 respectively of patients of the three groups. The difference in the values of all was not statistically significant (p>0.05) (10) Bold

Table no 1 (10 Bold): Shows metabolic parameters of patients of the three groups before treatment. (10)

	Atorvastatin 40 mg	Rosuvastatin 20mg	Rosuvastatin 20 mg alternate day	P value (I to II)	P value (I to III)
Lipids, mg/dL					
Total Cholesterol (TC)	224.3±30.8	226.1±35.4	225.3±40.7	0.7017	0.8449
LDL-C	158.3±22.6	156.1±27.8	157.2±26.7	0.5399	0.7535
HDL-C	37.5±8.70	35.5±9.21	36.4±7.90	0.357	0.487
Triglyceride	165.8±30.8	162.6±28.2	166.8±35.7	0.4444	0.8323
Non-HDL-C	180.6±31.2	182.4±29.2	185.2±32.4	0.6740	0.3077
Glucose and HbA1C					
FBG, mg/dL	142.5±25.7	148.2±26.9	145.8±27.4	0.1271	0.3808
HbA1c, %	5.82±0.2	5.62±0.4	5.65±0.3	0.265	0.357

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IV. Discussion (11 Bold)

Dyslipidemia in patients with diabetes plays an important role in development of atherogenesis. The standard of treatment for dyslipidemia have been statins. For the treatment of dyslipidemia, statins are used. The statins used are atorvastatin and rosuvastatin. (10)

The four major statin beneficiary groups have already been defined by NCEP 2013 report.

There is a wealth of evidence suggesting that lowering low density lipoprotein cholesterol (LDL-C) reduces the risk of cardiovascular disease (CVD). Both European and US guidelines recommend the use of statins as first-line therapy for dyslipidemia and specify target LDL-C levels. Previously, a National Cholesterol Education Program (NCEP) report had proposed more aggressive LDL-C goals for very high-risk patients.

Despite the proven benefits of LDL-C reduction, lipid management is suboptimal and many patients fail to achieve recommended LDL-C goals^{11,12}. The most likely reasons for this are lack of efficacy for LDL-C lowering and suboptimal dose titration.

Such aggressive LDL-C goals, however, are harder to achieve. The most effective statin at the lowest dose would represent a simple, effective treatment strategy, enabling more patients to achieve their lipid goals without the need for dose titration.

Rosuvastatin, at a dose of 20 mg, has demonstrated high efficacy for LDL-C lowering, enabling patients with hypercholesterolemia to achieve their lipid goals^{10,11}.

V. Conclusion (11 Bold)

Rosuvastatin 20 mg on every other regimen had equal effect when compared to daily dose regimen of atorvastatin 40 mg & rosuvastatin 20mg.

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