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ORIGINAL RESEARCH

Assessment of safety and efficacy of Saroglitazar in patients with diabetic dyslipidemia

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ABSTRACT

Background: Cardiovascular diseases (CVD) are the primary cause of morbidity and mortality among individuals with T2D, where cardiovascular risk tends to be primarily influenced by dyslipidemia. The present study assessed efficacy of Saroglitazar in patients with diabetic dyslipidemia.

Materials & Methods: 84 patients with type II diabetes mellitus of both genders were selected. Patients were treated with Saroglitazar 4 mg once daily. All parameters such as serum fasting blood glucose, post-prandial blood glucose level (PPBG), glycated hemoglobin (HbA1c), blood urea, serum creatinine, S.G.O.T, S.G.P.T and lipid profile were determined at baseline, 12 weeks and 48 weeks.

Results: Out of 84 patients, males were 50 and females were 34. The mean FPG was 154.2, 128.5 and 118.4, PPG was 232.6, 170.1 and 158.5, HbA1C was 8.0, 7.6 and 6.9, triglyceride level was 608.4, 206.4 and 222.4, total cholesterol was 312.2, 244.7 and 172.1, non- HDL- C was 272.8, 197.6 and 124.3, LDL- C was 163.6, 114.8 and 102.17, HDL- C was 39.4, 40.1 and 40.5, creatinine was 0.6, 0.7 and 0.7, CPK was 72.3, 69.6 and 66.3, SGOT was 44.6, 40.3 and 38.3, SGPT was 32.2, 36.4 and 35.4 at baseline, 12 weeks and 48 weeks respectively. The difference was significant (P<0.05).

Conclusion: Saroglitazar is a very effective with sufficient safety therapeutic agent in diabetic dyslipidemia patients with very high triglycerides level.

Key words: cholesterol, Saroglitazar, triglyceride

INTRODUCTION

Cardiovascular diseases (CVD) are the primary cause of morbidity and mortality among individuals with T2D, where cardiovascular risk tends to be primarily influenced by dyslipidemia. The anti-hyperlipidaemic agents have been studied for decades, and evidence supports their cardiovascular benefit in selected patients with the presence or absence of T2D.[1] Diabetic dyslipidemia is a type of lipoprotein dysfunction characterized by decreased high-density lipoprotein levels, an increase in triglyceride levels, and an increase in low-density lipoprotein (LDL) particles. Approximately around 70% of the patients who have T2D are likely to develop dyslipidemia.[2]

Type 2 diabetes mellitus (T2DM) is a complex metabolic disorder characterized by persistent hyperglycaemia due to relative insulin deficiency, insulin resistance, dyslipidemia and vascular inflammation that are associated with an increase in the risk for cardiovascular

diseases (CVDs). An estimated 463.0 million adults aged 20–79 years have diabetes across the world.[3]

Saroglitazar is the novel molecule approved in India for the management of DD. It is the first dual peroxisome proliferator activated receptor (PPAR)-a/g agonist to have successfully completed its clinical research and to be approved for clinical use anywhere in the world.[4] In previous studies, saroglitazar has shown significant benefit in terms of improvement in lipid and glycemic parameters with good safety profile. There has been a 46.7% decrease in TG, 32.5% decrease in non-HDL-C, 0.3% absolute reduction in glycosylated hemoglobin (HbA1c) with saroglitazar 4 mg in Indian DD patient.[5] The present study assessed efficacy of Saroglitazar in patients with diabetic dyslipidemia.

MATERIALS & METHODS

The present study consisted of 84 patients with type II diabetes mellitus of both genders. All patients were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Parameters such as serum fasting blood glucose, post-prandial blood glucose level (PPBG), glycated hemoglobin (HbA1c), blood urea, serum creatinine, S.G.O.T, S.G.P.T and lipid profile were assessed. Patients were treated with Saroglitazar 4 mg once daily. All parameters were determined at baseline, 12 weeks and 48 weeks. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 84		
Gender	**Males**	**Females**
Number	50	34

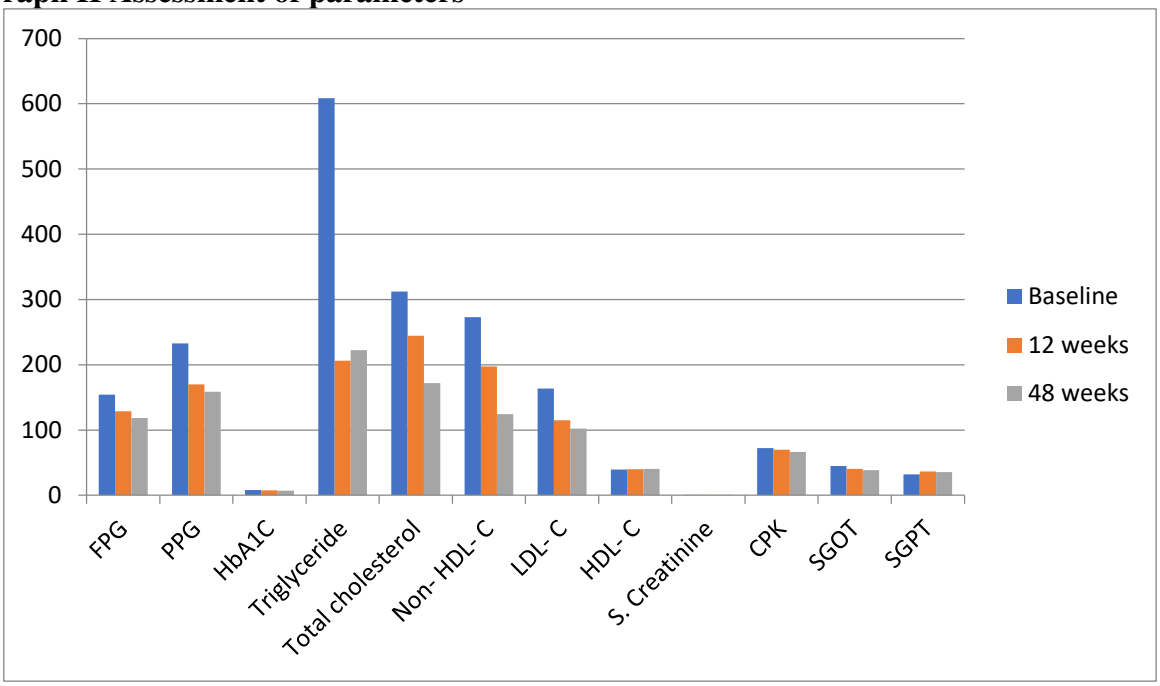
Table I shows that out of 84 patients, males were 50 and females were 34.

Table II Assessment of parameters

Parameters	Baseline	12 weeks	48 weeks	P value
FPG	154.2	128.5	118.4	0.04
PPG	232.6	170.1	158.5	0.05
HbA1C	8.0	7.6	6.9	0.03
Triglyceride	608.4	206.4	222.4	0.02
Total cholesterol	312.2	244.7	172.1	0.04
Non- HDL- C	272.8	197.6	124.3	0.02
LDL- C	163.6	114.8	102.17	0.05
HDL- C	39.4	40.1	40.5	0.04
S. Creatinine	0.6	0.7	0.7	0.91
CPK	72.3	69.6	66.3	0.86
SGOT	44.6	40.3	38.3	0.72
SGPT	32.2	36.4	35.4	0.97

Table II, graph I shows that mean FPG was 154.2, 128.5 and 118.4, PPG was 232.6, 170.1 and 158.5, HbA1C was 8.0, 7.6 and 6.9, triglyceride level was 608.4, 206.4 and 222.4, total cholesterol was 312.2, 244.7 and 172.1, non- HDL- C was 272.8, 197.6 and 124.3, LDL- C was 163.6, 114.8 and 102.17, HDL- C was 39.4, 40.1 and 40.5, creatinine was 0.6, 0.7 and 0.7, CPK was 72.3, 69.6 and 66.3, SGOT was 44.6, 40.3 and 38.3, SGPT was 32.2, 36.4 and 35.4 at baseline, 12 weeks and 48 weeks respectively. The difference was significant ($P<0.05$).

Graph II Assessment of parameters



DISCUSSION

Cardiovascular disease (CVD) is the major cause of morbidity and mortality in individuals with type 2 diabetes mellitus and responsible for 75% of deaths among type 2 diabetes patients.[6] There is also 2- to 4-fold increase in cardiovascular events when compared with nondiabetic patients.[7]It is evident that diabetes and diabetic dyslipidemia with high triglycerides (TGs) are commonly associated. Diabetic dyslipidemia is an important factor contributing to the increased risk of CVDs.[8] Studies have shown that three out of four diabetes patients globally have associated dyslipidemia.[9,10] It is also known as atherogenic dyslipidemia, is the triad of high triglycerides (TG), higher proportion of small dense low density lipoprotein cholesterol (sd-LDL-C) and low high density lipoprotein cholesterol (HDL-C).[11,12] The present study assessed efficacy of Saroglitazar in patients with diabetic dyslipidemia.

We found that out of 84 patients, males were 50 and females were 34. Chhabra et al[13] in their study a total of six studies with 581 adults were enrolled. A significant decrease in low-density lipoprotein cholesterol was observed with saroglitazar 4 mg therapy compared to saroglitazar 2 mg and control. A significant decrease in the total cholesterol was observed with saroglitazar 4 mg therapy compared to saroglitazar 2 mg and control. Saroglitazar was not associated with adverse effects such as increase in serum creatinine levels, alanine aminotransferase and aspartate aminotransferase and bodyweight reduction.

We found that The mean FPG was 154.2, 128.5 and 118.4, PPG was 232.6, 170.1 and 158.5, HbA1C was 8.0, 7.6 and 6.9, triglyceride level was 608.4, 206.4 and 222.4, total cholesterol was 312.2, 244.7 and 172.1, non- HDL- C was 272.8, 197.6 and 124.3, LDL- C was 163.6, 114.8 and 102.17, HDL- C was 39.4, 40.1 and 40.5, creatinine was 0.6, 0.7 and 0.7, CPK was 72.3, 69.6 and 66.3, SGOT was 44.6, 40.3 and 38.3, SGPT was 32.2, 36.4 and 35.4 at baseline, 12 weeks and 48 weeks respectively. Krishnappa et al[14] compared efficacy and safety of 2 mg and 4 mg saroglitazar as compared to pioglitazone 30 mg on glycemic control in patients with type II diabetes mellitus. Patients received once-daily doses of either saroglitazar or pioglitazone. Efficacy evaluations of glycemic parameters and other lipid parameters were conducted at week 12, 24 and 56 and compared to the baseline levels. A total of 1155 patients were enrolled in this study. The baseline characteristics were similar

between the three treatment groups. The within group mean (±SD) change in HbA1c (%) from baseline of the saroglitazar (2 mg and 4 mg) and pioglitazone treatment groups at week 24 were: −1.38±1.99 for saroglitazar 2 mg; −1.47±1.92 for saroglitazar 4 mg and −1.41±1.86 for pioglitazone, respectively. Statistically significant reduction from baseline in HbA1c was observed in each treatment group at week 24.

PPAR agonists have been reported to inhibit vascular smooth muscle cell proliferation, decrease the risk of thrombosis and suppression of atherosclerosis or restenosis. So, PPAR agonists have a potential to improve restoration of the cardiovascular system and its associated cardiovascular risk.[15]

Small sample and short follow up is drawback of this study.

CONCLUSION

Authors found that Saroglitazar is a very effective with sufficient safety therapeutic agent in diabetic dyslipidemia patients with very high triglycerides level.

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