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Assessment of Effect of Saroglitazar in Patients with Diabetic Dyslipidemia with Very High Triglycerides Level

Ramaiyah M S[1], R C Krishna Kumar[2]

[1]Associate Professor, Department of Medicine, Melmaruathur Adhiparasakthi Institute of Medical Sciences, Tamil Nadu, India. Email: msramaiyah@gmail.com, Orcid ID: 0000-0002-5460-5596

[2]Medical Director, Department of Medicine, PK Das institute of medical sciences, Vaniamkulam, Ottapalam, Kerala, India. Email: director@pkdims.org, Orcid ID: 0000-0002-4028-4920

Abstract

Background: The aim is to assess effect of Saroglitazar in patients with diabetic dyslipidemia. **Subjects and Methods:** Eighty- six type II DM patients of either gender were enrolled and parameters such as serum creatinine, S.G.O.T, S.G.P.T and lipid profile were determined. Patients were prescribed 4 mg Saroglitazar once daily and patients were recalled regularly. All variables were recorded at baseline, 12 weeks and 36 weeks. **Results:** Out of 86 patients, males were 56 and females were 30. The mean weight was 64.2± 3.7Kgs, height was 171.2± 14.2 cms and BMI was 26.2± 5.9 Kg/m^2. The mean total cholesterol level at baseline, 12 weeks and 36 weeks found to be 324.5, 232.6 and 168.4, triglyceride level was 542.3, 342.5 and 290.5, LDL-C was 167.3, 114.2 and 105.2, HDL-C was 41.2, 43.2 and 43.6, SGPT was 34.6, 38.2 and 37.2, SGOT was 45.3, 42.6 and 40.3 and creatinine level was 0.6, 0.6 and 0.5 respectively. The difference was significant (P< 0.05). **Conclusion:** Saroglitazar found to be efficient in diabetic dyslipidemia with very high triglycerides level.

Keywords: Diabetes, Dyslipidemia, Saroglitazar.

Corresponding Author: Dr. R C Krishna Kumar, Department of Medicine, Medical Director, PK Das institute of medical sciences, Vaniamkulam, Ottapalam, Kerala, India.
Email: director@pkdims.org

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Introduction

Diabetes mellitus (DM) is one of the most common metabolic disorders in the world. DM is a very important cardiovascular risk factor, and most diabetic patients die due to cardiovascular disease (CVD). DM and dyslipidemia commonly coexistent in many patients.[1] The most common type of dyslipidemia in type 2 DM (T2DM) is atherogenic dyslipidemia of diabetes (ADD).[2] 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.[3] There is also 2- to 4-fold increase in cardiovascular events (coronary heart disease, stroke and peripheral vascular disease) when compared with nondiabetic patients.[3]

Many different modalities are available for management of ADD.[4] Saroglitazar is a novel dual peroxisome proliferator-activated receptor (PPAR) agonist with predominant PPAR-α and moderate -γ agonism designed to optimize a lipid and glycemic benefits with minimum effects of weight gain and edema.[5] Saroglitazar also causes increased lipolysis and elimination of TG-rich particles from plasma by activating lipoprotein lipase (LPL) and reducing production of Apo C-III, an inhibitor of LPL activity.[6] Saroglitazar was also found to reduce plasma LDL-C. PPAR activation by saroglitazar also induces an increase in the synthesis of apolipoproteins A-I and A-II, and HDL-C.[7,8] Considering this, we conducted present study to assess effect of Saroglitazar in patients with diabetic dyslipidemia.

Subjects and Methods

This prospective study was conducted after obtaining approval from ethical review committee of the institute. We recruited eighty- six type II DM patients of either gender. All were enrolled after they agreed to participate with their written consent.

A thorough clinical examination was carried. Parameters such as serum creatinine, S.G.O.T, S.G.P.T and lipid profile were determined. Patients were prescribed 4 mg Saroglitazar once daily and patients were recalled regularly. All variables were recorded at baseline, 12 weeks and 36 weeks. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

Results

Out of 86 patients, males were 56 and females were 30. The mean weight was 64.2± 3.7Kgs, height was 171.2± 14.2 cms and BMI was 26.2± 5.9 Kg/m^2 [Table 1].

The mean total cholesterol level at baseline, 12 weeks and 36

weeks found to be 324.5, 232.6 and 168.4, triglyceride level was 542.3, 342.5 and 290.5, LDL-C was 167.3, 114.2 and 105.2, HDL-C was 41.2, 43.2 and 43.6, SGPT was 34.6, 38.2 and 37.2, SGOT was 45.3, 42.6 and 40.3 and creatinine level was 0.6, 0.6 and 0.5 respectively. The difference was significant (P< 0.05) [Table 2, Figure 1].

Table 1: Demographic variables

Variables	Value
Male	56
Female	30
Weight (Kgs)	64.2± 3.7
Height (cms)	171.2± 14.2
BMI (Kg/m^2)	26.2± 5.9

Table 2: Assessment of variables

Parameters	baseline	12 weeks	36 weeks	P value
TC	324.5	232.6	168.4	0.01
TG	542.3	342.5	290.5	0.02
LDL-C	167.3	114.2	105.2	0.05
HDL-C	41.2	43.2	43.6	0.12
SGPT	34.6	38.2	37.2	0.90
SGOT	45.3	42.6	40.3	0.85
Creatinine	0.6	0.6	0.5	0.98

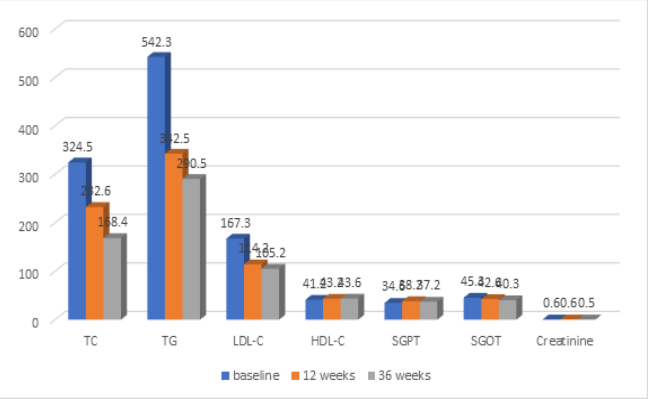

Figure 1: Assessment of variables

Discussion

It is mentioned in studies that Saroglitazar increases the expression of numerous PPAR γ-responsive genes involved in carbohydrate and lipid metabolism, including adiponectin, adipocyte fatty acid-binding protein, LPL, fatty acid transport protein, and fatty acid translocase (CD36).[9,10] By increasing the expression of these genes, saroglitazar decreases the postprandial rise of plasma FFA, improves postabsorptive, insulin-mediated suppression of hepatic glucose output, reduces the metabolic burden on liver and muscle, and promotes glucose utilization.[11,12] Robust antidiabetic and insulin-sensitizing effects of saroglitazar were observed in preclinical models, in which hyperglycemia and/or impaired glucose tolerance is a consequence of insulin resistance in target tissues.[13,14] We assessed effect of Saroglitazar in patients with diabetic dyslipidemia.

Our results showed that out of 86 patients, males were 56 and females were 30. The mean weight was 64.2± 3.7Kgs, height was 171.2± 14.2 cms and BMI was 26.2± 5.9 Kg/m^2. Pai et al,[15] evaluated the safety, tolerability, and efficacy of saroglitazar 2 mg and 4 mg capsules as compared to high dose pioglitazone in patients with diabetic dyslipidemia on 122 patients. The efficacy analysis included 109 patients (n = 37 in saroglitazar 2 mg; n = 39 in saroglitazar 4 mg; n = 33 in pioglitazone). Saroglitazar 2 mg and 4 mg significantly reduced plasma triglyceride from baseline by 26.4% and 45% respectively, as compared to pioglitazone -15.5% at week 24. Saroglitazar 4 mg treatment also demonstrated marked decrease in low-density lipoprotein (5%), very-low-density lipoprotein (45.5%), total cholesterol (7.7%), and apolipoprotein-B (10.9%).

Our results showed that he mean total cholesterol level at baseline, 12 weeks and 36 weeks found to be 324.5, 232.6 and 168.4, triglyceride level was 542.3, 342.5 and 290.5, LDL-C was 167.3, 114.2 and 105.2, HDL-C was 41.2, 43.2 and 43.6, SGPT was 34.6, 38.2 and 37.2, SGOT was 45.3, 42.6 and 40.3 and creatinine level was 0.6, 0.6 and 0.5 respectively. Agarwal SK et al,[16] enrolled 120 patients with type 2 diabetes mellitus of both genders and serum fasting plasma glucose, post prandial glucose, glycated hemoglobin (HbA1c), blood urea, serum creatinine, S.G.O.T, S.G.P.T and lipid profile as assessed. Patients were treated with Saroglitazar 4 mg once daily and the follow-up data were available for 12 months. Out of 120 patients, males were 80 and females were 40. The mean triglyceride level was 610.4, 208.4 and 224.4, total cholesterol was 312.2, 244.7 and 172.1, non- HDLC was 274.8, 199.6 and 126.3, LDL- C was 165.6, 116.8 and 104.17, HDL- C was 41.4, 42.1 and 42.5, HbA1C was 8.02, 7.8 and 7.1, FPG was 156.2, 130.5 and 120.4, PPG was 234.6, 172.1 and 160.5, SGOT was 46.6, 42.3 and 40.3, SGPT was 34.2, 38.4 and 37.4, S. Creatinine was 0.7 and CPK was 74.3, 71.6 and 68.3 at baseline, 12 wees and 52 weeks respectively. Krishnappa et al,[17] determined the efficacy and safety of saroglitazar (2 mg and 4 mg) as compared to pioglitazone 30 mg on glycemic control in patients with type 2 diabetes mellitus. Patients received oncedaily doses of either saroglitazar or pioglitazone for a total of 24 weeks. Patients were continued in a double- blind extension period for an additional 32 weeks. 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.

Conclusion

Saroglitazar found to be efficient in diabetic dyslipidemia with very high triglycerides level.

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