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CASE STUDY

Treatment of Hypertriglyceridemia in a Diabetic Patient with Renal Impairment

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Background

Hypertriglyceridemia is a challenge to treat the renally impaired patients as it has been recorded in several studies that the well-known class of drugs to treat hypertriglyceridemia, fibrates, tends to increase serum creatinine. In the Fenofibrate Intervention and Event Lowering in Diabetes (FIELD) trial a 12% average creatinine elevation (from 0.88 to 0.99 mg/dL) which was reversible on discontinuation was noted with fenofibrate.[1]

Recently, Saroglitazar, a dual peroxisome proliferator-activated receptor (PPAR) α/γ agonist, has been approved for treatment of hypertriglyceridemia in type 2 diabetes patients not controlled by statin therapy. Pharmacokinetic studies have shown Saroglitazar is not excreted in the urine indicating that it has non-renal route of elimination. It is predominantly eliminated unchanged by the hepatobiliary route[2] and not associated with increase in serum creatinine levels as noted in the pivotal trials.[3,4] Hence, Saroglitazar may be considered a valuable option in diabetic patient with impaired renal functions.

The Case

A 62-year-old lady who is a known case of type 2 diabetes and hypertension on treatment since 15 years, dyslipidemia on treatment and known case of chronic kidney disease and diabetic retinopathy visited with the complaints of burning micturition and fever. She had no complaints of hypoglycaemia. At the time of presentation, the patient was on vildagliptin 50 mg once daily, met for min 500 mg once daily, glimepiride 2 mg twice daily, bisoprolol 5 mg per day, aspirin 75 mg once daily, amitriptyline 12.5 mg once daily, iron supplementation twice daily, rabeprazole and domperidone once daily.

On examination, patient weighed 63.8 kg, height was 150.6 cm, blood pressure was 130/80 mm Hg and pulse was 78 beats per minute. No abnormalities were detected in the cardiovascular or respiratory system. Bilateral pitting pedal oedema was present.

Her laboratory investigations revealed haemoglobin 11.2 g/dL, Hba1c 11.2%, fasting blood sugar (FBS) 360 mg/dL, post prandial blood sugar (PPBS) 494 mg/dL, total cholesterol 152 mg/dL, VLDL 63 mg/dL, HDL 32 mg/dL, LDL 57 mg/dL and TG 318 mg/dL. Renal parameters showed serum creatinine level was 2.4 mg/dL, urine creatinine 90.96, urine albuminuria 92.49 mg/dL and serum uric acid 5.4 mg/dl Liver enzymes and thyroid-stimulating hormone (TSH) were within normal range.

Based on her history and laboratory parameters she was prescribed gliclazide 60 mg extended release once daily, linagliptin 5 mg once daily, insulin 16 U/day (NPH at bedtime, insulin glulisine TID), rosuvastatin 10 mg/day, bisoprolol 5 mg/day, nitrofurantoin 100 mg twice daily, iron supplementation once daily and pantoprazole 40 mg once daily and Saroglitazar 4 mg a day. She was advised to follow up after a month and also visit her nephrologist.

At 1 month follow up patient has no complaints and on examination she weighed 65.6 kg, blood pressure was 120/70 mm Hg and no abnormalities were detected in cardiovascular and respiratory systems. Her FBS was 110 mg/dL and PPBS 162 mg/dL. Total cholesterol was 164, VLDL 28.4 mg/dL, HDL 42 mg/dL, LDL 109 mg/dL and Triglyceride (TG) dropped to 142 mg/dL. There

was reduction noted in both serum creatinine to 2.31 mg/dL and urine micro albuminuria to 23.25 mg/dL. She was advised to continue on the same medications.

Her reports of follow up with nephrologist at 4 months showed HbA1c of 6.9%, FBS 136 mg/dL and PPBS 239 mg/dL. Her total cholesterol was 149 mg/dL, VLDL 26.6 mg/dL, HDL 59 mg/dL, LDL 63.4 mg/dL and TG was 133 mg/dL. Serum creatinine was 2.71 mg/dL. Her medications were continued and insulin total daily dose was reduced to 9 U /day.

Her laboratory reports at 6 months showed FBS of 119 mg/dL, PPBS 144 mg/dL and serum creatinine 2.38 mg/dL and at 8 months shows FBS of 132 mg/dL, total cholesterol 210 mg/dl, VLDL 38.8 mg/dL, HDL 46 mg/dL, LDL 125.2 mg/dl and TG of 194 mg/dL. Patient was advised to continue the same post a telephonic consultation.

At 11 months she consulted another diabetologist for a follow up visit and on examination her weight was 68.4 kg and blood pressure 118/92 mm Hg. Laboratory parameters revealed FBS was 94 mg/dL, serum creatinine 2.45 mg/dL, lipid profile showed total cholesterol was 189 mg/dL, VLDL 23 mg/dL, TG 115 mg/dL, HDL 48 mg/dL and LDL 118 mg/dL. Her liver function test (LFT) parameters were within normal limits. She was switched from insulin 16 U/day to insulin 30 U/day (insulin glulisine and human NPH), switched from gliclazide 60 mg/day to gliclazide 80 mg/day, vildagliptin 50 mg/day, saroglitazar 4 mg/day, atorvastatin 10 mg a day and vitamin D supplementation.

Table1 | Serial parameters

	TG (mg/dl)	HbA1c (%)	FBS	Serum creatinine (mg/dl)
Baseline	318	11.2	360	2.4
After 1 month	142		110	2.31
After 4 months	133	6.9	136	2.71
After 8 months	194		119	2.38
After 11 months	115	7.1	94	2.45

Comment

This case (Table 1) shows that the addition of Saroglitazar over a year for treatment of hypertriglyceridemia in renally impaired patients lead to control of triglycerides with no significant increase in serum creatinine levels. Further studies are imperative to establish the safety of Saroglitazar in renal impaired patients.

References

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"Education is the ability to listen to almost anything without losing your temper or your self-confidence."

— Robert Frost