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Case Report

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A Patient with Uncontrolled Type 2 Diabetes and Dyslipidemia whose Blood Glucose Level is managed by Hydroxychloroquine 400 mg: A Case Report

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Abstract

Inflammation is considered to play a crucial intermediary role in pathogenesis of diabetes and number of co-existing disease. Hydroxychloroquine (HCQ) works through a novel mechanism and may therefore be a useful adjunctive therapy for patients with T2DM. Here I report a case of a female patient with uncontrolled type 2 diabetes with dyslipidemia who achieve an optimal glycemic control when Hydroxychloroquine was added to the existing pharmacotherapy. The subject has been taking Metformin (500 mg), Glimepiride (2 mg), Voglibose (0.2 mg) and Vildagliptin (500 mg) and a strict exercise regimen for last 2 year but his diabetes was poorly controlled with glycated haemoglobin (HbA1c) of 8.3%. Patient expresses anxiety about using injectable therapy and refused initiation of basal insulin. To achieve glycemic control HCQ 400 mg once daily was initiated as an add on antidiabetic drug. After 12 weeks, her fasting blood glucose was 135 mg/dL, and postprandial glucose was 190 mg/dL and HbA1c was 7.4%. She returns for follow-up after 24 weeks and is feeling well. She states that her quality of life has improved significantly. After 24 weeks, her fasting blood glucose was 115 mg/dL, postprandial glucose was 150 mg/dL and her HbA1c was 6.8%. The case highlights that Hydroxychloroquine 400 mg once a day is an effective add-on for getting good glycemic control when appropriately used in type 2 diabetes mellitus patients who are poorly controlled on other oral agents.

Keywords

Hydroxychloroquine; Diabetes Mellitus; Oral hypoglycemic agents; Insulin; HbA1c

Introduction

Achieving targeted glycemic control is a significant problem in patients being treated for diabetes. In diabetes management, adequate blood glucose control is of vital importance to prevent the further complications. There are several oral antidiabetic agents are available along with injectable therapy like insulin. However, there are patients who, for various reasons, are unable to achieve optimal glycemic control despite on strict dietary or exercise regimen and remain unresponsive to drug treatment. Inflammation is considered to play a crucial intermediary role in pathogenesis of diabetes and number of co-existing disease. Hydroxychloroquine, a long-standing safe and inexpensive treatment for autoimmune disorders, may improve glycemic control in patients Unresponsive to more than two oral antidiabetic Agents [1].

In this case, it has been observed that addition of Hydroxychloroquine 400 mg helps patient to achieve targeted HbA1c who were previously with other oral antidiabetic drug combination (Vildagliptin + Metformin+ SU + Voglibose).

Case presentation

A 52 rear old female (Weight 71 kg, BMI 25.4 kg/m^2) is present with history of uncontrolled type 2 diabetes. This patient has diagnosed as hypertensive almost 5 years back. She was presented at my clinic with abdominal discomfort and suboptimal diabetes control. The medical documents that she brings to this appointment indicate that his hemoglobin A1c (A1C) has never been <8% in past 2 years. She has a history of Cholecystectomy, 8 years back. At presentation her BP was 140/92 and pulse was 88 bpm. Her body mass index (BMI) is 25.4 kg/m^2, which she has worked hard to reduce from 31.1 kg/m^2 over the last 2 years.

Physical examination reveals the followings

Heart: Rate and rhythm regular, no murmurs or gallops. Lungs: few scattered creps present.

Eyes: corrective lenses, pupils equal and reactive to light and accommodation, Fundi-clear, no arteriolovenous nicking, no retinopathy.

Vascular assessment: no carotid bruits; femoral, popliteal, and dorsal is pedis pulses 2+ bilaterally

Neurological assessment: diminished vibratory sense to the forefoot, absent ankle reflexes, monofilament (5.07 Semmes-Weinstein) felt only above the ankle

The remaining examination is normal. Her laboratory findings are as follows:

HbA1c: 8.3%

Glucose (Fasting): 166 mg/dL

Glucose (Postprandial): 273 mg/dl

Cr: 1.2 mg/dL

Sodium: 134 mg/dl,

Potassium: 3.2 mg/dl

Total cholesterol: 175 mg/dL

HDL cholesterol: 44 mg/dL

LDL cholesterol: 107 mg/dL

Triglycerides: 142 mg/dL

Thyroid: nonpalpable

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She was put on combination therapy of Metformin (500 mg), Glimepiride (2 mg), Voglibose (0.2 mg) and Vildagliptin (500 mg). She was also received atorvastatin 10 mg and combination of amlodipine 5 mg + telmisartan 40 mg. As her HbA1c was on higher side (8.3%) despite on multiple oral antidiabetic agents, she was advised to initiate basal insulin therapy. During a discussion of therapeutic options, patient expresses anxiety about using injectable therapy and refused initiation of basal insulin. Patient was quiet anxious regarding her uncontrolled blood sugar. The patient was not willing to continue treatment with vildagliptin because of it's high cost.

Change in treatment regimen

To achieve targeted HbA1c level, patients was advised to take Metformin 1000 mg, Glimepiride 2 mg and Hydroxychloroquine 400 mg. Atorvastatin 10 mg and combination of amlodipine 5 mg + telmisartan 40 mg was continued.

Treatment Outcome

After 12 weeks, her fasting blood glucose was 135 mg/dL, postprandial glucose was 190 mg/dL and Her HbA1c was 7.4%. She returns for follow-up after 24 weeks and is feeling well. She states that her quality of life has improved significantly. After 24 weeks, her fasting blood glucose was 115 mg/dL, postprandial glucose was 150 mg/dL and her HbA1c was 6.8%. Total cholesterol was 160 mg/dL; triglycerides are 135 mg/dL; high-density lipoprotein is 55 mg/dL; and low-density lipoprotein is 98 mg/Dl (Table 1).

Table 1: Fasting plasma glucose (FPG), postprandial plasma glucose (PPG) and HbA1c levels at baseline, 3 and 6 months of HCQ therapy.

Plasma Glucose Levels	Baseline	3 months	6 months	Decrease from baseline
FPG [mg/dL]	166	135	115	-51
PPG [mg/dL]	273	190	150	-123
HbA1c	8.3%	7.4%	6.8%	-1.5%

Discussion

A common challenge faced in primary care is how to manage patients whose glycemic control has declined on multiple drug therapy and in addition patients is not willing to initiate insulin therapy. Before stepping up pharmacotherapy with add on medication, it is imperative to ensure that current treatments are being used in an optimal way. Hydroxychloroquine works through a novel mechanism and may therefore be a useful adjunctive therapy for patients with T2DM [2]. Hydroxychloroquine, a long-standing safe and inexpensive treatment for autoimmune diseases such as rheumatoid arthritis and systemic lupus erythematosus, improve glucose tolerance and prevent diabetes mellitus with novel mechanism of action. HCQ most likely acts by reducing the lysosomal degradation of internalised insulin-insulin receptor complex. This is a novel mechanism of action in contrast to insulin secretagogue or insulin sensitizer action of other antidiabetic drugs. Also HCQ is relatively safe except for common adverse effects such as gastrointestinal discomfort and pruritus [3]. Effect of Hydroxychloroquine in patients with Type 2 diabetes is dose dependent, higher the dose of Hydroxychloroquine result in greater reduction in HbA1c [4]. In the current case its use as an add on antidiabetic drugs resulted in achievement of target HbA1c level along with the control of plasma glucose levels. HbA1c level decreased by 1.5% and FPG and PPG levels decreased by 51 mg/dL and 123 mg/dL respectively after HCQ was added to the treatment regimen. Hydroxychloroquine is generally considered to be a very safe medication. Retinopathy is the major safety concern with long-term HCQ use, the incidence of which according to the American Academy of Ophthalmology can be minimized by keeping the daily dose <6.5 mg/kg/day and the need of annual screening is now reduced to baseline screening and subsequent screening only after 5 years of Hydroxychloroquine use [5].

Conclusion

Hydroxychloroquine 400 mg once a day is an effective add-on for getting good glycemic control when appropriately used in type 2 diabetes mellitus patients who are poorly controlled on other oral agents.

Disclosure

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