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Education-Family Physician Corner

Liraglutide Limited Experience in Bahrain

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ABSTRACT

Background: Liraglutide is a Glucagon like peptide-1 (GLP-1) agonist which has been approved in the treatment of type 2 diabetes. This drug has gained popularity because of its multiple advantages. It controls blood glucose, reduces weight, regulates blood pressure and retains beta cell mass in the pancreas of diabetic patients.

The primary objective of this small intervention is to assess and compare the efficacy (change in HbA1c) after 26 weeks of adding Liraglutide to the pre-trial in subjects with inadequately controlled type 2 diabetes.

Design: A Prospective Clinical Trial.

Setting: A'Ali Health Center, Bahrain.

Method: Four patients who were residents of A'Ali, BMI ≥35 and uncontrolled diabetic on medication (HbA1c >7%) were recruited for twenty-six weeks clinical trial to receive Liraglutide. The small cohort was followed up, and glycemic control and BMI were assessed pre and post trial.

Result: Obvious reduction in glycemic control and weight were noticed at the end of the 26 weeks.

Conclusion: In this small trial, Liraglutide is effective in improving glycemic control and reducing weight.

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INTRODUCTION

Treatment for diabetes has taken a different leap when new methods of hypoglycemia were introduced a decade ago. The traditional Biguanides and Sulphonylureas were competed by the PPAR-γ inhibitors and then by Incretin-based therapy including GLP-1 agonists[1].

GLP-1 agonists were first approved in 2009 by Novo Nordisk under the product name Victoza[1-2]. L-cells located in the distal ileum and colon releases GLP-1 in response to food rich in carbohydrates and fats[1]. Glucose-modulated insulin release from the pancreas is

enhanced via incretins. Incretins have other diabetes-related functions including suppression of increased glucagon secretion, delay of gastric emptying, decrease of appetite, maintenance of β-cell function, and increase of β-cell mass[1]. Incretins, on the other hand, do not cause suppression of normal counter-regulatory increase in glucagon secretion during hypoglycemia[1-2].

GLP-1 receptor agonist or Liraglutide is an analog to human glucagon-like peptide (GLP-1) and carries 97% homology. Numerous randomized, multicenter trials performed in phase 3 examined the efficacy and safety of Liraglutide through implementing it as monotherapy and combination therapy in patients with type 2 diabetes[1,2]. Liraglutide Effect and Action in Diabetes (LEAD) study confirmed that Liraglutide, either as monotherapy or in combination with other anti-diabetic drugs, improves hyperglycemia with HbA1C reductions of up to 1.6%[3]. Liraglutide is associated with a decreased risk of hypoglycemia in comparison with other anti-diabetic agents. Another major benefit of Liraglutide is weight loss (1.8 to 3.4 kg) and thus improving patients' quality of life. Also, improvement of pancreatic beta cell function by GLP-1 may lead to delay in disease progression[3,4,5].

Safety of Liraglutide is under scrutiny. The short term safety profile of Liraglutide is promising while the long term safety is awaited[1-7].

The American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) is suggesting the use of GLP-1 agonists as a second or third line therapy depending on patient's preference and requirements. GLP-1 agonists are preferred in obese patients and those who have tendency for hypoglycemia[7].

The aim of this small clinical trial is to evaluate the efficacy of Liraglutide in uncontrolled diabetics.

METHOD

The study was initiated in the first week of February 2012 for 26 weeks. Four patients fulfilled the criteria: (1) A'Ali area resident, (2) BMI ≥35 and (3) Uncontrolled diabetic on medication (HbA1c >7%). The selection was limited to four patients because of the limited source of Liraglutide.

The initial dose of 0.6 mg of Liraglutide was escalated to 1.2 mg and 1.8 mg in weekly increments of 0.6 mg. The titration period was followed by a 23-24 week treatment period with fixed dose of Liraglutide. During the trial, the subjects had to attend a total of 4 visits.

HbAlc, body weight, fasting lipid profile including total cholesterol (TC), HDL-C, LDL-C and triglycerides (TG), vital signs (systolic and diastolic blood pressure) were monitored.

Informed consent was obtained from all the participants.

RESULT

Four patients received Liraglutide, two patients were females. Table 1 displays the means of the study variables at the beginning and at end of the 26-week period. All the variables showed decrease except for serum cholesterol, LDL and systolic blood pressure which

showed an increase. Diastolic blood pressure showed no change. Statistical analysis was not done because of the small sample size.

Table 1: The Means of Variables at the Beginning and End of Study

Variables	Beginning (mean)	End (mean)	Difference (mean)
FBS (mmol/L)	10.85	7.40	-3.45
HbA1c %	8.47	6.35	-2.12
Blood pressure	130/80	133/80	+3/0
Weight (kg)	107.00	102.00	-5.00
Total Cholesterol (mg/dL)	4.27	4.62	+0.35
LDL(mg/dL)	2.49	2.7	+0.21
HDL(mg/dL)	1.05	1.125	+0.075
Triglycerides(mg/dL)	1.60	1.47	-0.13
BMI	39.80	37.95	-1.85

DISCUSSION

Our sample is small; definite conclusion could not be drawn and compared to international studies[1-7]. The obvious findings is an improvement in metabolic and physical parameters including fasting blood sugar (FBS), HbA1c, HDL, Triglycerides, weight and BMI. The short term improvement in these parameters is well documented in many diabetes related studies[1-7].

The decrease in weight in our study with an average of 5 kg is comparable to other international studies. The decrease in HbA1c in our study with an average of 2.12% is comparable to other studies. BMI decrease to an average of 1.85[1-7].

Diastolic blood pressure (DBP) did not change. This may be attributed to the fact the DBP was normal in our patients at the beginning of the study. The stability of DBP was documented in other studies[1,-7].

Observed changes in other parameters including serum cholesterol, LDL and systolic blood pressure could not be seen in similar studies. These unequivocal results may be attributed to the small sample size.

CONCLUSION

Liraglutide exerts several beneficial effects including the improvement in glycemic control and the reduction in body weight, SBP, and LDL. These effects are indicative of its ability to counteract the deleterious burden of the metabolic syndrome and several other cardiovascular risk factors. Liraglutide and other GLP-1 agonists may prove to be a new mode of diabetes therapy that may not only lead to improved glycemic control, but may reduce the cardiovascular effects that accompany diabetes.

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