Students' Corner
Letter to the Editor

Glucagon like Peptide-1 Receptor Agonists and Di-Peptidyl Peptidase Inhibitors… A new Class of drugs for the treatment of Diabetes

Madam, Diabetes is a syndrome of disordered metabolism, usually due to a combination of hereditary and environmental causes, resulting in abnormally high blood sugar levels. According to WHO, the number of diabetic patients in the year 2000 were 171,000,000 which will skyrocket to 366,000,000 by year 2030.[1] There are several factors driving the growth of diabetes but changes in lifestyles, diet-leading to weight gain and genetic predisposition are chief culprits.

The prevalence of diabetes in Pakistan in the 20-79 year age group is 6.2 million which indicates that over 11% of the adult population are suffering from diabetes which leads to a lot of complications including atherosclerosis, retinopathy, nephropathy and neuropathy. Globally the direct healthcare cost of diabetes for people in the 20-79 age group is estimated to be around $153 billion annually. In a study published, in Karachi on an average a person with diabetes spends Rs.965.00 per month, which is a huge amount and it threatens the economic growth and standard of living.[2]

During the electives of one author at Manchester Royal Infirmary Hospital, UK about a month back, it was observed that doctors were prescribing a new class of drugs called Glucagon like Peptide-1(GLP-1) Receptor Agonists and Di-Peptidyl Peptidase-4 (DPP-4) Inhibitors instead of the usual glitazones and sulfonylureas as the former directly reduce insulin resistance and latter can cause hypoglycaemia, an unwanted side effect.

GLP-1 Agonist (Incretins) as Exenatide increases insulin secretion from the pancreas in a glucose dependant manner, decreases glucagon secretion from pancreas, escape inactivation from DPP-4 and binds to appetite receptor in the hypothalamus to reduce appetite and gradually reduce weight.[3]

DPP-4 Inhibitors as Vildagliptin, Liraglutide and Sitagliptin are enzyme inhibitors which inhibit the enzyme DPP-4. As a result the incretins escape inactivation and continue to play a role in insulin secretion and blood glucose control regulation, maintain normal amounts of HbA1C and reduce weight.[4]

A comparison of GLP-1 Agonists and DPP-4 Inhibitors with other conventional drugs is given in Figure.[5]

The information above shows that GLP-1 Agonists and DPP-4 Inhibitors are a good choice of controlling blood levels of glucose and weight gain. This group of drugs in addition to other treatment of diabetes will increase the cost. The advantages of a better glycaemic control and less-weight gain make it a drug of choice. If the government contemplates an increase in the health budget the new drugs could be used more for the advantage of the people with diabetes.

Agent	↓ Food intake	↓ Gastic Emptying	↓ Glucose Absorption	↑ Insulin Secretion	↓ Glucagon Secretion	↑ Glucose Uptake	↓ PPG
α-Glucosidase Inhibitor			√				√
Metformin					√	√	√
Insulin					√	√	√
Amylin analog	√	√			√	√	√
Sulfonylurea				√	√	√	√
Thiazolidinedione					√	√	√
GLP-1 receptor agonist	√	√		√	√	√	√
DPP-4 inhibitor				√	√		√

Figure: DPP-4: dipeptidyl peptidase-4; GLP-1: glucagons-like peptide-1; PPG: postprandial plasma glucose.
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