Case Study 3: Y.L.

Scenario

Y.L. makes an appointment to come to the clinic where you are employed. She has been complaining of chronic fatigue, increased thirst, constantly being hungry, and frequent urination. She denies any pain, burning, or low back pain on urination. She tells you she has a vaginal yeast infection that she has treated numerous times with OTC (over-the-counter) medication. She admits to starting smoking since going back to work full time as a clerk in a loan company. She also complains of having difficulty reading numbers and reports making frequent mistakes. She says by the time she gets home and makes supper for her family, then puts her child to bed, she is too tired to exercise. She reports feet hurt; they often "burn or feel like there are pins in them." She reports that after her delivery, she went back to her traditional eating pattern which you know is high in carbohydrates.

In reviewing Y.L.'s chart, you notice she has not been seen since the delivery of her child 6 years ago. She has gained a considerable amount of weight; her current weight is 173 lb. Today her BP is 152/97 mm Hg and her plasma glucose is 291 mg/dL. The PCP (primary care provider) orders the following labs: UA, HbA1c (hemoglobin A1c), fasting CMP, CBC, fasting lipid profile, and a baseline 24-hour urine collection to assess Creatinine clearance. The lab values are as follows: fasting glucose 184 mg/dL, A1c 10.4, UA +glucose, - ketones, cholesterol 256 mg/dL, triglycerides 346 mg/dL, LDL (low-density lipids) 155 mg/dL, HDL (high-density lipids) 32 mg/dL, ratio 8.0. Y.L. is diagnosed with type 2 diabetes.

After meeting with Y.L. and discussing management therapies, the PCP decides to start MDI (multiple dose injection) insulin therapy and have the patient count carbohydrates. Y.L. is scheduled for education classes and is to work with the diabetes team to get her blood sugar under control.

1. **Identify the three methods used to diagnose DM.**

   Three methods used to diagnose diabetes mellitus is HGB-A1C, fasting blood glucose, and random blood glucose. HGB-A1C measures the average of BG levels over 2-3 months by using blood. There is no prep for this diagnosis, but the downfall is that it may give inaccurate results if you are pregnant or anemic. A fasting blood glucose is no caloric intake for at least 8 hours. When diagnosing the individual, the glucose needs to be greater than or equal to 126 mg/dL to be considered positive DM. The final method is a random blood glucose. This is when a BG is greater or equal to 200 mg/dL. This individual must also have symptoms of hyper/hypoglycemia crisis to be classified as a diabetic.

2. **Identify three functions of insulin.**

   Insulin promotes glucose intake, glycogenesis, lipogenesis, and protein synthesis of the skeletal muscle. It keeps blood lipid levels within normal range and suppresses the production of LDL in the liver.

3. **Insulin's main action is to lower blood sugar levels. Several hormones produced in the body inhibit the effects of insulin. Identify three.**

   Epinephrine, growth hormone, and cortisol.

4. **Y.L. was stated on lispro (Humalog) and glargine (Lantus) insulin with carbohydrate counting. What is the most important point to make when teaching the patient about glargine?**

   The most important point to make when teaching the patient about glargine is that it is a long-acting insulin. It also should never be mixed with another insulin. Glargine should only be taken once a day at the same time everyday. As for Lispro should be taken with meals. Lispro has a peak which can cause hypoglycemia; why it should be taken with a meal, and Glargine does not.

5. **Because Y.L. has been on regular insulin in the past, you want to make sure she understands the difference between regular and lispro. What is the most significant difference between these two insulins?**

Regular insulin is a short acting insulin and take 30 mins to an hour to take effect. Insulin Lispro is a rapid acting insulin and means that the effects are immediate. Food needs to be eaten within those 15 mins.

5. **What is the peak time and duration for lispro insulin?**

Lispro insulin peak time is 30 mins – 90 mins. The duration is 3-5 hours.

6. **Y.L. wants to know why she can't take NPH and regular insulin. She is more familiar with them and has taken them in the past. Explain why the provider chose lispro and glargine insulin over NPH and regular insulin?**

The provider wanted more flexibility for the dosing. NPH and regular insulin does not provide that.