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.
   The three methods that can be used to diagnosed include polydipsia, polyuria, and polyphagia. You can also use tests such as, fasting blood sugar, hemoglobin A1C, and a random blood sugar test.
2. Identify three functions of insulin.
   restores ability of cells to use glucose as an energy source, corrects hyperglycemia, and can treat type 1 and type 2 diabetes.

3. Insulin's main action is to lower blood sugar levels. Several hormones produced in the body inhibit the effects of insulin. Identify three.
   Cortisol, human growth hormone, and epinephrine all counteract the main action of insulin. They do this by decreasing the movement of glucose to the cell.

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 thing with glargine is to make and sure and take it every time at the same time. Onset is one hour, it does not peak, and it lasts 24+ hours. This makes it perfect to take at night and to help stabilize blood sugars over the whole day.

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?
   The biggest difference between regular insulin and lispro is the onset, peak, and duration between the two. This should be taken into consideration when planning meals and activities.

6. What is the peak time and duration for lispro insulin?
   Peak is 30-90 minutes and the duration is 3-5 hours.

7. 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?

With lispro and glargine there is more flexibility for dosing. Since lispro has a short onset, she is able to take it when she wants. Then the glargine gives her the steady insulin level throughout the day so she does not bottom out or have hypoglycemia.