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.
    Hemoglobin A1C, fasting blood glucose, and 3 of 5 factors of metabolic syndrome.
2. Identify three functions of insulin.
    Stimulate glucose production and release by the liver, decrease movement of glucose into cell, and help maintain normal blood glucose levels.
3. Insulin's main action is to lower blood sugar levels. Several hormones produced in the body inhibit the effects of insulin. Identify three.
    Glucagon (which is released from the alpha cells), epinephrine, 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 they must take it at the same time every day – it does not matter what time of the day, but it must be the same time, and cannot be mixed with the other insulin.
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 most significant difference between regular insulin and lispro insulin is that lispro insulin is a rapid-acting insulin and will work within 15-30 minutes, and regular insulin is a slower acting insulin which will work withing 30-60 minutes.
6. What is the peak time and duration for lispro insulin?
    Lispro insulin's peak is within 30-90 minutes, and its durations lasts about 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?
    The provider most likely chose to not give NPH and regular insulin because both their peaks collide around the four-hour mark which could put the patient in danger of hypoglycemia if not closely monitoring of her blood glucose. The provider most likely chose to prescriber lispro ad glargine because they will not interact negatively and will be easier to manage for the patient.