

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.
 - a. Hemoglobin A1C: 10.4
 - b. Fasting glucose: 184 mg/dL
 - c. Random blood glucose: 291 mg/dL
2. Identify three functions of insulin.
 - a. Restores ability of cells to use glucose as an energy source.
 - b. Correct hyperglycemia
 - c. Treats both T1DM and T2DM.
3. Insulin's main action is to lower blood sugar levels. Several hormones produced in the body inhibit the effects of insulin. Identify three.
 - a. Glucagon
 - b. Epinephrine
 - c. 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?
 - a. Dosing can be done at anytime of the day, but needs to be given at the same time everyday

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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?
 - a. Lispro has a faster rate of absorption after injection, therefore needs to be administered with meals and patient must eat within 15 minutes to avoid hypoglycemia.
6. What is the peak time and duration for lispro insulin?
 - a. Peak time: 30-90 minutes
 - b. Duration: 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?
 - a. Glargine is often used when they can't control a patient's blood sugar because they have a lot of peaks and valleys. It is easier to keep blood levels steady with a long duration insulin.
 - b. Lispro is a rapid acting insulin to help reduce glucose levels and treat postprandial hyperglycemia. Rapid acting insulin can help with quick changes in blood glucose, due to its rapid onset of 15-30 minutes.