

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 used to diagnose DM are the hemoglobin A1c, fasting blood glucose, and random blood glucose test.

2. Identify three functions of insulin.

Three functions of insulin are it transports and metabolizes glucose for energy, stimulates storage of glucose in the liver and muscle as glycogen, and signals the liver to stop the release of glucose.

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

Three hormones that inhibit insulin effects are glucagon, epinephrine, and growth hormone.

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?

Glargine cannot be mixed with other insulins in the same syringe because it compromises the way it works in the body.

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?

Insulin lispro is a rapid acting insulin and regular insulin is a slower acting insulin. Regular insulin starts working within 30 to 60 minutes of administration, peaks in 2 to 3 hours, and its duration is 5 to 7 hours while insulin lispro starts working within 15 to 30 minutes, peaks in 30 minutes to 90 minutes, and its duration is 3 to 5 hours.

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

Insulin lispro peaks in 30 minutes to 90 minutes, and its duration is 3 to 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 chose lispro and glargine because NPH and regular insulin given together can peak at 4 hours crossing each other causing a drop in blood sugar putting you at high risk for hypoglycemia. Lispro and glargine will not cause that because glargine does not have a peak time, it works for 24 hours or more at a steady rate.