

## **Autumn Ford 128433**

### **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.  
A1C, fasting glucose, and random blood glucose accompanied with the metabolic disorder symptoms of blood pressure over 130/85, HDL <40, fasting glucose >100, and triglycerides >150. Also the s/s of paresthesia, lethargy, 3 Ps-polyuria, polydipsia, and polyphagia, hx of gestational diabetes and smoking that put her at increased risk of T2D.
2. Identify three functions of insulin.
  - a. Corrects hyperglycemia
  - b. restores ability of cells to use glucose as an energy source
  - c. Lowers plasma potassium 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.
  - 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?  
That the patient should take Lantus at the same time every day. It is a long acting insulin, and the onset is 1 hour with no peak and a 24 hr duration.
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 slower acting than Lispro, with an onset of 30-60 minutes, peak at 2-3 hours, and a duration of 5-7 hours compared to Lispro's onset of 15-30 mins, 30-90 min peak and 3-5 hour duration. Lispro should be administered within 15 minutes of meals, whereas regular insulin must be taken within 30 minutes of a meal.

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

Peak is 30-90 mins, and 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?

NPH can be unpredictable and put her at risk for high/low blood sugar levels, but the glargine will help her levels stay more consistent over 24 hours, reducing blood sugar spikes during the night and helping her to get her blood sugars under control. The Lispro is rapid acting used with a sliding scale to help manage spikes in blood sugar after eating a meal, and dosing is safer since it is shorter lasting than regular insulin.