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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 (HGB A1C)
   - Fasting Blood Glucose
   - Random blood glucose

2. Identify three functions of insulin.
   - Helps decrease blood glucose levels
   - Contributes with carbohydrate metabolism
   - Contributes with lipid metabolism

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
   - Epinephrine
   - 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?
   - One important point to teach about Glargine is that it is a long lasting insulin compared to Lispro and that it should be taken/mixed after Lispro. Glargine also can be done any time of the day but it needs to be the same time every day. The onset is 1 hour with no peak and it lasts at least 24 hours or more.

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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?
   - Lispro is a fast acting insulin that is to be taken first and Regular insulin is a slower acting insulin that is taken after Lispro. Lispro works in about 15-30 minutes and last for about 0.5-2.5 hours while Regular insulin works about 30-60 minutes and lasts 5-7 hours. Lispro also needs to be taken with food within those 15 minutes at least.

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

- Peak time is 0.5 to 2.5 hours and lasts 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 only be mixed with the short acting insulins and regular insulin is not short acting. The provider chose lispro and glargine because short acting can be mixed with the longer acting.