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 level greater than 6%, are over weight or obese, have at least one other risk factor for DM (hypertension BP greater than 130/80, a lipid profiles reflecting high density lipoprotein(HDL) cholesterol of less than 35mg/dL or with triglycerides more than 250mg/dL history of vascular disease or other diseases associated with hyperglycemia. Casual/random plasma glucose measurement 180 or greater. Fasting plasma glucose 126 or greater.

2. Identify three functions of insulin.

Insulin is a hormone produced by the b cells in the islets of Langerhans of the pancreas. Under normal conditions insulin is continuously released into the blood stream in small increments, with increased release when food is ingested. Insulin lowers blood glucose and facilitates a stable, normal glucose range of approximately 70-110 mg/dL. Insulin promotes glucose transport from the blood stream across the cell membrane to the cytoplasm of the cell. Cells break down glucose to make energy, and liver and muscle cells store excess glucose as glycogen

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 hormones

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?

To never mix with another 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?

Lispro is a rapid acting insulin, while regular insulin is short acting.

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

Peak time is 30mins/3hrs, duration is 3/5hrs

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?

There is less flexibility with the NPH and regular