

Diabetes Mellitus: Review Questions

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QUESTIONS

Choose the single best answer for each question.

Questions 1 and 2 refer to the following case study.

A 54-year-old man who is new to the area presents for a routine medical evaluation. He reports a history of hypertension for which he takes long-acting diltiazem. He also reports mild fatigue and notes that he has experienced nocturnal voiding approximately twice per week for the past 18 months. He denies drinking alcohol but has a 30 pack-year history of smoking. He has a 48-year-old brother with type 2 diabetes, and his father died of a myocardial infarction at age 53 years. On physical examination, the patient is obese and his blood pressure is 140/90 mm Hg and pulse is 60 bpm. Other results of physical examination are normal. A fasting plasma glucose level is 138 mg/dL.

- 1. What is the most appropriate management of the patient's glucose level?**
 - A) Repeat the fasting blood glucose measurement on another day
 - B) Order a glycosylated hemoglobin level
 - C) Perform an oral glucose tolerance test
 - D) Follow up with a fasting blood glucose measurement in 1 year
- 2. A second fasting glucose measurement for this patient is 157 mg/dL. All of the following studies would be helpful at this time EXCEPT:**
 - A) Electrocardiography
 - B) Fasting lipid panel
 - C) 24-Hour urine cortisol level
 - D) Glycosylated hemoglobin level

Questions 3 and 4 refer to the following laboratory studies.

The patient's total cholesterol level is 290 mg/dL, and his low-density lipoprotein and triglyceride levels are increased. His high-density lipoprotein level is 31 mg/dL. Based on his laboratory results, the patient is diagnosed with type 2 diabetes. He receives diabetes

education and dietary counseling. At this time, his ophthalmoscopic examination and urinalysis are normal, and no microalbuminuria is present. Results from an exercise stress test are normal.

The patient returns for follow-up testing 4 months later. He continues to smoke but claims he has been compliant with his diet; however, his weight is unchanged. His glycosylated hemoglobin level has increased from 7.2 mg/dL at baseline to 7.5 mg/dL.

He returns again for follow-up 7 months later. His blood pressure is now 150/80 mmHg. Repeated laboratory testing reveals a fasting blood glucose level of 210 mg/dL. His glycosylated hemoglobin level has increased to 8.2 mg/dL.

- 3. Which therapeutic measure would be most appropriate at this time?**
 - A) Begin therapy with insulin
 - B) Begin therapy with metformin
 - C) Begin therapy with acarbose
 - D) Try 6 more months of behavior modification
- 4. Which of the following statements is TRUE?**
 - A) A standardized diet is essential for all patients with diabetes
 - B) Poorly controlled diabetic patients should be encouraged to exercise vigorously to improve glucose control
 - C) Meticulous glucose control with multiple insulin injections per day based on the Diabetes Control and Complications Trial results should be universally prescribed
 - D) None of the above

(turn page for answers)

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EXPLANATION OF ANSWERS

- 1. (A) Repeat the fasting blood glucose measurement on another day.** The patient's fasting plasma glucose level is 126 mg/dL or more. Repeating the test to confirm the level would establish the diagnosis of diabetes. This patient's symptoms suggest that he may have had hyperglycemia for many months. Potential answer C (ie, perform an oral glucose tolerance test) is not necessarily incorrect, but oral glucose testing is no longer routinely ordered.
- 2. (C) 24-Hour urine cortisol level.** This patient's diagnosis is type 2 diabetes. A baseline glycosylated hemoglobin (HbA_{1c}) level would be helpful now in monitoring therapy. In addition, the patient has serious risk factors for coronary artery disease. Baseline electrocardiography and perhaps an exercise stress test would be useful. There is no reason to evaluate the patient for Cushing's syndrome or to look for secondary causes of hypertension at this time.
- 3. (B) Begin therapy with metformin.** The patient is failing diet and lifestyle modifications. His HbA_{1c} level has increased. At this time, pharmacotherapy is indicated. He is obese and has hypertension and hyperlipidemia, all of which strongly suggest insulin resistance; thus, metformin is a logical therapeutic choice. Medication therapy should be directed at improving

his insulin resistance at this time. A response to metformin may demonstrate some improvement of the other abnormalities associated with insulin resistance. Acarbose is appropriate for persons with mild fasting hyperglycemia and postprandial hyperglycemia.

- 4. (D) None of the above.** None of these statements (ie, "A standardized diet is essential for all patients with diabetes;" "Poorly controlled diabetic patients should be encouraged to exercise vigorously to improve glucose control;" and "Meticulous glucose control with multiple insulin injections per day based on the Diabetes Control and Complications Trial results should be universally prescribed") is true. Care of the diabetic patient must be individualized based on management goals. Medical, social, and psychological factors influence the management of diabetic patients. It is inappropriate for physicians to encourage vigorous exercise to improve glucose control. Meticulous glucose control should be considered only in selected, highly motivated patients with realistic treatment goals.

Adapted from Simons RJ, O'Bryan TA, Masters PA: Diabetes mellitus; A case study in diabetic ketoacidosis. Hospital Physician Internal Medicine Board Review Manual 1998;5(4).

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