Challenging Cases in Endocrinology: December 2016

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Question 1

- A 64 year old male comes to see you in your office for an initial visit. He has had type 2 diabetes for 10 years, hypertension and hyperlipidemia. He is taking metformin, a GLP-1 receptor agonist and sulfonylurea, a statin, ACEI and thiazide. His BP is 135/80, BMI 30 kg/m², and he has no clinical evidence of end organ complications of diabetes.

- Relevant biochemical data is as follows:
  - HbA1c 7.8%
  - Urine albumin/creatinine 130 mg/g
  - eGFR 50 ml/min; LFTs normal
Which of the following statements is correct?

1. Lowering the HbA1c to less than 7.0% will lower the risk of a cardiovascular event over the next 3 years
2. Lowering the HbA1c to less than 7.0% will reduce the risk for progression of nephropathy
3. Lowering BP to less than 130/80 will NOT reduce the risk for progression of nephropathy
4. Lowering the HbA1c to less than 7.0% may increase risk for death
A 25 year old male with type 1 diabetes of 10 years’ duration presents to you complaining of increased frequency of hypoglycemia and fatigue. There has been no change in his insulin regimen, exercise pattern or meal plan. Clinical examination reveals increased skin pigmentation, orthostatic hypotension, and no evidence of end organ complications of diabetes.
All of the following investigations would be appropriate *except*:

1. 24 hour urine free cortisol
2. 9.00 am plasma cortisol
3. Electrolytes
4. Plasma ACTH
5. TSH
Question 3

• A 58 year old female is seen for her routine physical examination. She has mild hypertension controlled on an ACEI, and mild hyperlipidemia controlled on a statin. She weighs 170 lb and her height is 66 inches (BMI 28). Her fasting glucose is 105 mg/dL and her A1c is 6.0%. Which of the following statements is correct?
Question 3

1. Weight loss of about 12 lbs with regular exercise will reduce the risk of her developing diabetes by almost 60%
2. Metformin will reduce the risk of her developing diabetes by about 30%
3. Rosiglitazone therapy will reduce the risk of progression to diabetes by 60%
4. Acarbose use will reduce the risk of developing diabetes by 25%
5. All of the above are correct
Question 4

A 55 year old female is seen in your office complaining of increase in weight, easy bruising and facial hirsutism. Clinical evaluation reveals an overweight female with centripetal distribution of fat, pigmented striae and supraclavicular fat pads. BP is 140/100 and fasting glucose is 140 mg/dL.

What is the most appropriate next test to do?
Question 4

1. Overnight (1 mg) dexamethasone suppression test
2. Measure 9:00 am plasma cortisol
3. High dose (8mg) dexamethasone suppression test?
4. MRI of adrenal gland
Question 5

- A 48 year old female with longstanding stable type 1 diabetes and hypothyroidism is seen for routine follow up. She is taking levothyroxine 112 mcg daily. As part of her evaluation you check thyroid function tests, which reveal the following:
  - TSH 25 uU/ml (normal 0.35 – 5)
  - Free T4 0.8 ng/dL (normal 0.9 -1.8)

- You review her previous thyroid function tests and note that her TSH has been stable and within the normal range for the past 4 years on the current dose of levothyroxine
Question 5

• Which of the following might explain the increase in TSH?

1. She is taking an iron supplements together with her levothyroxine
2. She is taking a multivitamin with her levothyroxine
3. She is taking a calcium supplement with her levothyroxine
4. She has developed celiac disease
5. All of the above
Question 6

A 75 year old female is seen for evaluation of an episode of diaphoresis and confusion which occurred at the end of a 24 hour fast. She added that she had occasionally experienced similar symptoms when she skipped breakfast on previous occasions. She is found to have a random glucose of 40 mg/dL in your office (6 hours after her last meal).

All of the following tests would be indicated at the time of the visit, except:
Question 6

1. Serum insulin
2. Serum growth hormone
3. Serum cortisol
4. C-Peptide
5. Urine screen for sulfonylureas
Question 7

• A 49 year old female is seen for a routine check up and is found to have a serum calcium (corrected) of 11.2 mg/dL (9 – 10.5). The PTH is < 10 pmol/L (10 – 60). She is asymptomatic. Her BMI is 23 kg/m². BP is 125/75. Neck examination is normal. Thyroid examination is normal. Remainder of the examination is unremarkable.
Question 7

Which of the following tests are *least* appropriate:

1. Small parts ultrasound of the neck
2. Chest X Ray
3. 24 hour urine calcium
4. Serum vitamin D and 1,25 (OH)$_2$ concentrations
A 78-year-old female with type 2 DM is seen for a routine follow up visit. She is currently taking metformin 1000 mg daily and glimepiride 4 mg daily. Her HbA1c is 8.4%. BMI is 26 kg/m². Her urine albumin is within normal. Serum creatinine is 1.3 and eGFR 42 ml/min.
Question 8

• Which of the following medications could you add to improve glycemic control?

1. Sitagliptin 100 mg daily
2. Linagliptin 5 mg daily
3. Empagliflozin 10 mg daily
4. None of the above
A 66 year old male with type 2 diabetes of 3 years duration is seen for evaluation of erectile dysfunction. His diabetes is well controlled on diet, exercise and metformin (HbA1c of 6.5%). He takes no other medications. On examination he is found to have small testes. Serum testosterone is 140 mg/dL (normal 270 – 870). LH and FSH are 2.2 mIU/ml and 1.6 mIU/mL respectively (normal 1.3 – 13 and 0.9 – 15 respectively ). Which of the following would be the most appropriate next step:
Question 9

1. Start treatment with testosterone
2. Prescribe a phosphodiesterase-5 inhibitor
3. Measure serum prolactin
4. Obtain a penile doppler study
Acromegaly may be associated with the following:

1. Diabetes mellitus
2. Cardiomyopathy
3. Increased risk of colonic polyps
4. Sleep apnea
5. All of the above
A 23 year old female is seen in your office complaining of secondary amenorrhea. Menarche occurred at the age of 14, but menses were never been regular. At the age of 18 she started taking an oral contraceptive, but stopped this (even though menses became regular) 2 years ago. She has had amenorrhea since. A pregnancy test is negative
Question 11

On examination she has a BMI of 24 kg/m$^2$. There is mild facial and abdominal hirsutism, and darkening of the skin at the back of her neck and in the axillae.
Which of the following tests is *most likely to be abnormal*?

1. Serum total and free testosterone
2. DHEA-S
3. FSH
4. Prolactin
5. TSH
Lab results reveal the following:

1. Total testosterone 180 ng/dL (normal less than 100)
2. DHEA-S 2420 pg/mL (normal less than 3400)
3. 17 OH progesterone 1.8 ng/dL (normal less than 100)
4. FSH 8 mIU/mL
5. Prolactin 10 ng/mL
What is the most likely diagnosis?

1. Polycystic ovarian syndrome due to severe insulin resistance
2. Arrhenoblastoma of the ovary
3. “Non classic” 21 hydroxylase deficiency
4. Premature ovarian failure
Question 12

A 53 year old male undergoes a CT scan for abdominal pain of uncertain etiology and is found to have a 2 cm nodule in the right adrenal gland. On examination he is overweight with a BMI of 28 and has a BP of 140/100
Question 12

Which of the following tests is least indicated?
1. Plasma aldosterone and renin
2. Serum K
3. Overnight 1 mg dexamethasone test
4. Fine needle aspiration of the nodule
5. Plasma metanephrines