



Kingdom of Bahrain
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Endocrinology

(Review)

Year 5 – Internal Medicine

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Questions

- **Case (1):**
 - **A 40 years old female presented to the hospital with progressive weight gain and uncontrolled diabetes. She gained 12 kg within the last year. She has HTN and DM2 (both are difficult to control).**
 - **What is your next (what do you want to do?)**
 - Physical examination to look for complications of diabetes and hypertension and to look for signs of Cushing syndrome (as you are suspecting it). On examination, patient was found to have central obesity, thin extremities, moon face, hirsutism, acne and frontal balding. Blood pressure was 158/95 mmHg and random blood sugar was 18 mmol/L.
 - **What is your working diagnosis?**
 - Cushing syndrome.
 - **What tests are you going to order for this patient?**
 - 24 hours urinary cortisol (it was elevated in this patient).
 - Low-dose dexamethasone suppression test (there was no suppression).
 - Midnight salivary cortisol.

Questions

- **Case (1):**
 - **After you get the results of previous test which showed ↑ 24 hours urinary cortisol and no suppression with low-dose dexamethasone, What is your next step?**
 - To know the etiology of this elevated cortisol (is it from adrenal glands “Cushing syndrome” or from pituitary gland “Cushing disease”). This is done by checking ACTH level.
 - If ACTH is low, you should do CT/MRI of adrenal glands (this patient had left adrenal adenoma).
 - If ACTH is high, you should do MRI of pituitary.
 - **How are you going to manage this patient?**
 - Surgical excision of left adrenal adenoma.
 - You will need to set this patient on cortisol (why?) → because right adrenal gland will be atrophied by that time. Continue treatment until the gland regains its function.

Questions

- **Case (2):**
 - **A 23 years old male complaining of anorexia, nausea and vomiting, fatigue and dizziness on standing for several months? His blood pressure is towards the lower side.**
 - **What are your differentials?**
 - As this patient is presenting with non-specific manifestations, he might have a chronic infection or malignancy or adrenal insufficiency (which you will consider here as this is a case related to endocrinology).
 - **What is an important signs that you might find on physical examination of this patient?**
 - Hyperpigmentation in sun-exposed areas of the skin and in mucous membranes (especially the gums). You should check for orthostatic hypotension especially is the blood pressure of the patient is really low.

Questions

- **Case (2):**

- **This patient has hyperpigmentation. His electrolytes were as following:**

- Na: hyponatremia.
- K: hyperkalemia.
- Ca: hypercalcemia.
- Glucose: hypoglycemia.

- **What diagnostic test are you going to order?**

- ACTH-stimulation test (synacthen test). In primary adrenal insufficiency, basal ACTH is elevated (because there is no negative feedback from adrenals). When injecting ACTH, cortisol level will not increase and this will confirm our diagnosis.

- **How are you going to manage this patient?**

- Hydrocortisone.
- In addition to replacement of aldosterone (by giving fludricortisone).

If this patient presents to the emergency with shock, you must manage him with 0.9% NaCl and high dose of IV hydrocortisone (100 mg) but no mineralocorticoid replacement will be needed because glucocorticoids have the same effect of mineralocorticoids at high levels.

Questions

- **Case (2):**
 - **How are you going to counsel this patient?**
 - Tell him not to stop medications by his own.
 - Tell him that he needs to increase the dose of his medications at time of stress (infection, surgery... etc).
 - These patients have to own a medical ID regarding their condition for fast intervention at emergency conditions.

Questions

- **Case (3):**
 - **A 36 years old female was diagnosed recently hypertension and she is not on treatment yet. She is not obese and has no abdominal bruits. Laboratory investigations showed the following:**
 - Na: hypernatremia.
 - K: hypokalemia.
 - Creatinine: normal.
 - **What is your working diagnosis?**
 - This patient has no risk factors. Therefore, you have to think of secondary causes of hypertension (and in this case, endocrine causes of hypertension). In this patient, you are suspecting primary hyperaldosteronism.
 - **What are your screening tests which you will order?**
 - Plasma Aldosterone Concentration (PAC): elevated.
 - Plasma Renin Activity (PRA): decreased.
- Thus a positive screen is a PAC/PRA ratio $> 20:1$ and a PAC > 15 .

Questions

- **Case (3):**
 - **What imaging would you request?**
 - CT/MRI of adrenals expecting to find a unilateral adrenal adenoma or nodule (less likely to be bilateral).
 - **What is the preferred anti-hypertensive to be given for this patient?**
 - Potassium-sparing diuretics (spironolactone).
 - Surgical removal of the adenoma.

Questions

- **Case (4):**
 - **A 35 years old male who presents with headache, palpitations and sweating. His blood pressure was found to be 170/90 mmHg and he has no family history of hypertension.**
 - **What is your working diagnosis?**
 - Pheochromocytoma.
 - **What screening tests are you going to order?**
 - Urine metanephrines: elevated.
 - Urine catecholamines: elevated.
 - **What is the anti-hypertensive of choice for this patient?**
 - You have to start with α -blockers (such as phentolamine).
 - **What medications you are not going to start first in this patient?**
 - B-blockers.
 - **What is your definitive treatment?**
 - Surgical removal of the tumor.

Questions

- **Case (5):**

- **A 16 years old girl presenting with painful spasms of her hand and peri-oral numbness.**
- **What is the most important blood test you will request?**
 - Calcium level (why?) → because you are suspecting hypocalcemia due to hypoparathyroidism.
- **Laboratory investigations showed:**
 - Hypocalcemia.
 - Hyperphosphatemia.
- **What is the most important ECG finding that you expect to see in this patient?**
 - Prolonged QT-interval.
- **What is the acute management of this patient?**
 - IV calcium gluconate. When patient is going to be discharged, you will set her on (active) vitamin D (as she doesn't have PTH which is needed to activate vitamin D) + calcium supplements.
- **What other blood tests are you going to order for this patient?**
 - PTH (it is decreased as the patient has hypoparathyroidism).
 - Vitamin D.
 - Mg.
 - Renal function test.
- **Mention 3 causes of decreased PTH.**
 - Thyroidectomy.
 - Neck irradiation.
 - Hypomagnesemia.

Questions

- **Case (6):**
 - **A 30 years old female presents with tiredness, cold-intolerance, nausea and amenorrhea for 6 months. She delivered a baby girl 6 months ago. She requested blood transfusion as she had post-partum bleeding. She has been unable to breastfeed.**
 - **What do you suspect?**
 - Hypopituitarism most likely due to Sheehan's syndrome.
 - **What tests are you going to order?**
 - LH, FSH and estradiol: all of the 3 were decreased in this patient.
 - ACTH stimulation test.
 - TSH and fT4. In this patient, TSH was normal while fT4 was decreased (normal TSH with decreased fT4 is abnormal and always indicating a problem at the level of pituitary gland).
 - Prolactin: decreased.
 - IGF-1.

Questions

- **Case (6):**
 - **What other investigations are you going to request?**
 - MRI of pituitary gland (which did not show the presence of adenoma).
 - **How are you going to manage this patient?**
 - Always start with hydrocortisone in such patients (most important to be replaced).
 - L-thyroxine.
 - Estrogen and progesterone (you will add progesterone because uterus is present in this patient).

Questions

- **Case (7):**
 - **A 45 years old male presented with erectile dysfunction and loss of libido for the past 2 years. He noticed difficulty in crossing lanes when driving lately.**
 - **What initial tests are you going to order?**
 - LH and testosterone.
 - Prolactin level (as this patient is complaining of a visual defect it most probably indicates the presence of macro pituitary adenoma compressing on optic chiasma. Males usually have macro prolactinoma at time of presentation.
 - **Laboratory investigations showed the following:**
 - LH: decreased.
 - Testosterone: decreased.
 - Prolactin: increased.
 - TSH: normal.
 - fT4: normal.
- Keep in mind that primary hypoparathyroidism can result in hyperprolactinemia

Questions

- **Case (7):**
 - **What is the next investigation to be ordered?**
 - MRI of pituitary gland (which showed a 14 mm pituitary adenoma).
 - **What do you call the visual defect in this patient?**
 - Bitemporal hemianopia.
 - **How are you going to manage this patient?**
 - Surgical removal of the macroadenoma.
 - Dopamine agonists: bromocriptine or cabergoline.

Questions

- **Case (8):**
 - **A 40 years old female presented with polyuria and polydypsia for several months of duration. Patient has no other symptoms. Her uncle has diabetes.**
 - **What are your differentials?**
 - Diabetes mellitus.
 - Diabetes insipidus.
 - Psychogenic polydypsia.
 - **What is the initial quick test which you will do for this patient?**
 - Urine glucose (it was negative with ↓ specific gravity and a 24 hours urine volume of 9 liters). Sodium, urea and creatinine were all normal.
 - **What is your next step?**
 - Water deprivation test. In patients with diabetes insipidus, urine volume remains high despite volume depletion. Then, you will administer ADH to the patient:
 - If urine volume decreases: central diabetes insipidus.
 - If urine volume remains high: nephrogenic diabetes insipidus.
 - **This patient has central diabetes insipidus, how are you going to manage her?**
 - Desmopressin (intranasally).

Questions

- **Case (9):**
 - **A 20 years old male presented with abdominal pain, nausea and vomiting for 2 days duration. In addition, he has polyuria, polydypsia and he lost 4 kg of his weight in the past 4 weeks. On examination, patient was found to have tachycardia, tachypnea and his blood pressure was on the lower side. There is no significant family history.**
 - **What is your working diagnosis?**
 - Diabetic Ketoacidosis (DKA): a complication of type-1 diabetes.
 - **Laboratory investigations were as following:**
 - Urine dipstick: (++) glucose, (++) ketones.
 - Blood sugar: 24 mmol/L
 - ABG: pH of 7.5
 - Na = 130 (it is low due to hyperglycemia which results in dilutional hyponatremia).
 - K = 6 (it is high due to insulin deficiency and acidosis).
 - Cl = 96
 - HCO₃ = 12
 - **What are you going to do next regarding the above results?**
 - Calculate anion gap.

Questions

- **Case (9):**
 - **What is an additional bedside test that you must request?**
 - ECG (due to hyperkalemia).
 - **How are you going to manage this patient?**
 - IV fluid (normal saline; 1 liter/1 hour then 1 liter over 2 hours).
 - Regular insulin (0.1 unit/kg/hour).
 - Monitor glucose and potassium levels. Potassium level will start to decrease and you have to replace it once you insure there is urine output or K level reaches 5 (= when it enters the normal range)... don't wait further until hypokalemia occurs.
 - When blood glucose reaches 200 → fluid is changed to dextrose.

Good Luck!
Wish You All The Best 😊