Cerebellum
Get the balance right

Integrated – Respiratory-Endocrine 03-09-2025

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1. A 45-year-old woman is admitted to the intensive care unit due to severe sepsis caused by a ruptured abdominal abscess. She has been receiving high-dose intravenous corticosteroids for hypotension management over the past three days. On examination, she is alert but appears critically ill. Laboratory results are as follows:
TSH: 1.2 μU/mL (normal range: 0.4–4.0 μU/mL)
Free T4: 1.1 ng/dL (normal range: 0.8–1.8 ng/dL)
Free T3: 0.6 pg/mL (normal range: 2.0–4.4 pg/mL)
Which of the following is the most likely explanation for these findings?

A. Chronic lymphocytic thyroiditis

B. Drug-induced hypothyroidism

C. Subclinical hypothyroidism

D. Euthyroid sick syndrome

2. A 40-year-old woman presents with a 3-month history of fatigue, weight loss, salt craving, and dizziness upon standing. She has no significant medical history and takes no medications. Her mother was recently diagnosed with hypothyroidism. On examination, her blood pressure is 100/70 mm Hg supine and 80/50 mm Hg standing. Laboratory results reveal the following:
Sodium 129 meq/l
Potassium 5.9 meq/l
Chloride 100 meq/l
Bicarbonate 21 meq/l
Creatinine 1.4 mg/dl
BUN 38mg/dl
Which of the following in circulating hormone levels are expected in this patient?

A. Cortisol low, Aldosterone low, ADH high, Norepinephrine high
B. Cortisol normal, Aldosterone low, ADH normal, Norepinephrine normal
C. Cortisol low, Aldosterone low, ADH normal, Norepinephrine normal
D. Cortisol high, Aldosterone low, ADH high, Norepinephrine high

3. A 68-year-old postmenopausal woman presents for evaluation of her low bone density noted during a routine screening. She is started on oral risedronate to address her bone loss. What is the primary mechanism through which this medication improves bone density?

A. Stimulation of osteoblast activity

B. Decreased stimulation of RANK ligand (RANKL)

C. Increased intestinal calcium absorption

D. Increased osteoclast apoptosis

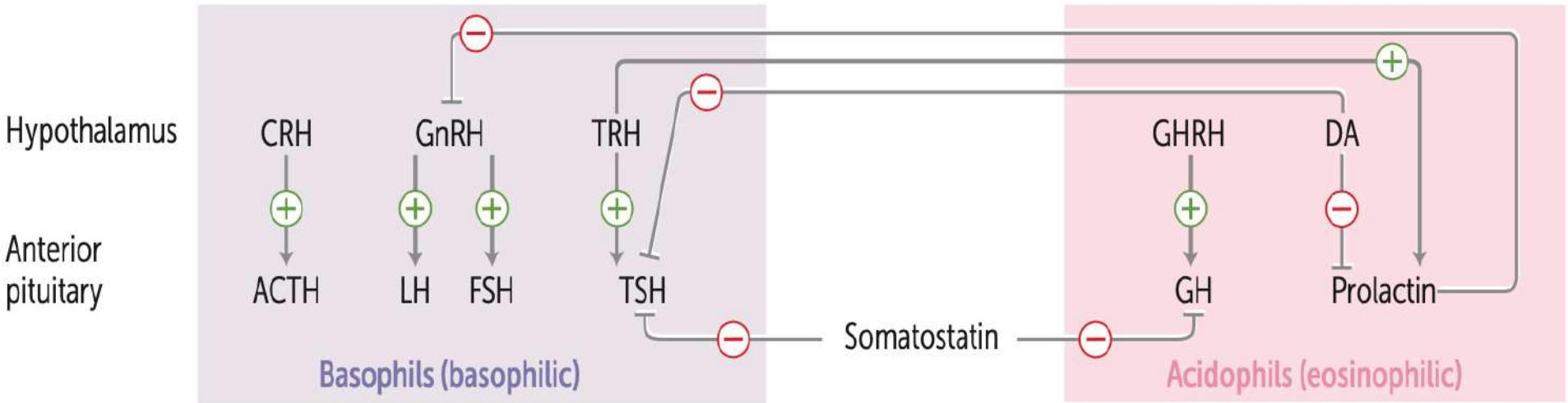
4. A 28-year-old woman comes to the OPD due to a 4-month history of amenorrhea. She has also had a whitish nipple discharge from both breasts. The patient has taken several pregnancy tests at home that have been negative. She has also had increased fatigue, depressed mood, and weight gain over this time. The patient has had no headaches or vision changes. On physical examination, there is thinning of the outer third of the eyebrows. The thyroid is enlarged and nontender to palpation. The skin appears dry. Her thyroxine (T4) levels are low, TSH is elevated, and antithyroid peroxidase antibodies are positive. Prolactin levels are 30 ng/ml. Which of the following is the most likely mechanism causing this patient's elevated prolactin level?

A. Activation of lactotrophs by antithyroid peroxidase antibodies

B. Binding of dopamine receptors by antithyroid peroxidase antibodies

C. Inhibition of dopamine release by TSH

D. Stimulation of lactotrophs by thyrotropin-releasing hormone (TRH)


Hypothalamus
Anterior pituitary
CRH
GnRH
TRH
GHRH
DA
ACTH
LH
FSH
TSH
GH
Prolactin
Somatostatin
Basophils (basophilic)
Acidophils (eosinophilic)

5. A 45-year-old woman comes to the OPD for follow-up of type 2 diabetes mellitus. The patient is taking the maximum dose of metformin. Her hemoglobinA1c is 7.7%. Blood pressure is 134/86 mm Hg, and pulse is 72/min. BMI is 33 kg/m2. Family history is significant for osteoporosis in mother. The results of other laboratory tests are normal. After discussion, a sodium-glucose cotransporter-2 inhibitor is added to the patient's drug regimen. Which of the following is the most likely additional effect of the newly prescribed medication?

A. Decreased blood pressure

B. Increased bone mineral density

C. Increased fluid retention

D. Increased postprandial satiety

6. A 45-year-old man is brought to the emergency department after being found unconscious at home. He has a history of diabetes mellitus and reports recurrent episodes of hypoglycemia. His wife mentions that he has been trying a new "natural" supplement along with his prescribed insulin. On arrival, his blood glucose is 45 mg/dL. Laboratory tests reveal high serum C-peptide levels. Which of the following is the most likely cause of his hypoglycemia?

A. Sulfonylurea overdose

B. Exogenous insulin in supplement

C. Insulinoma

D. GLP-1 agonist

7. A study is conducted to assess the effect of parathyroid hormone (PTH) on bone remodeling. Half of the study subjects receive intermittent PTH injections and the other half receive a continuous infusion of PTH. The results show that the effects on bone metabolism of intermittent PTH injections are different from those of continuous infusion. Which of the following is most likely to be the predominant bone effect with intermittent injections?

A. Increased activity of RANKL

B. Increased levels of osteoprotegerin

C. Osteoclast apoptosis

D. Stimulation of osteoblast activity

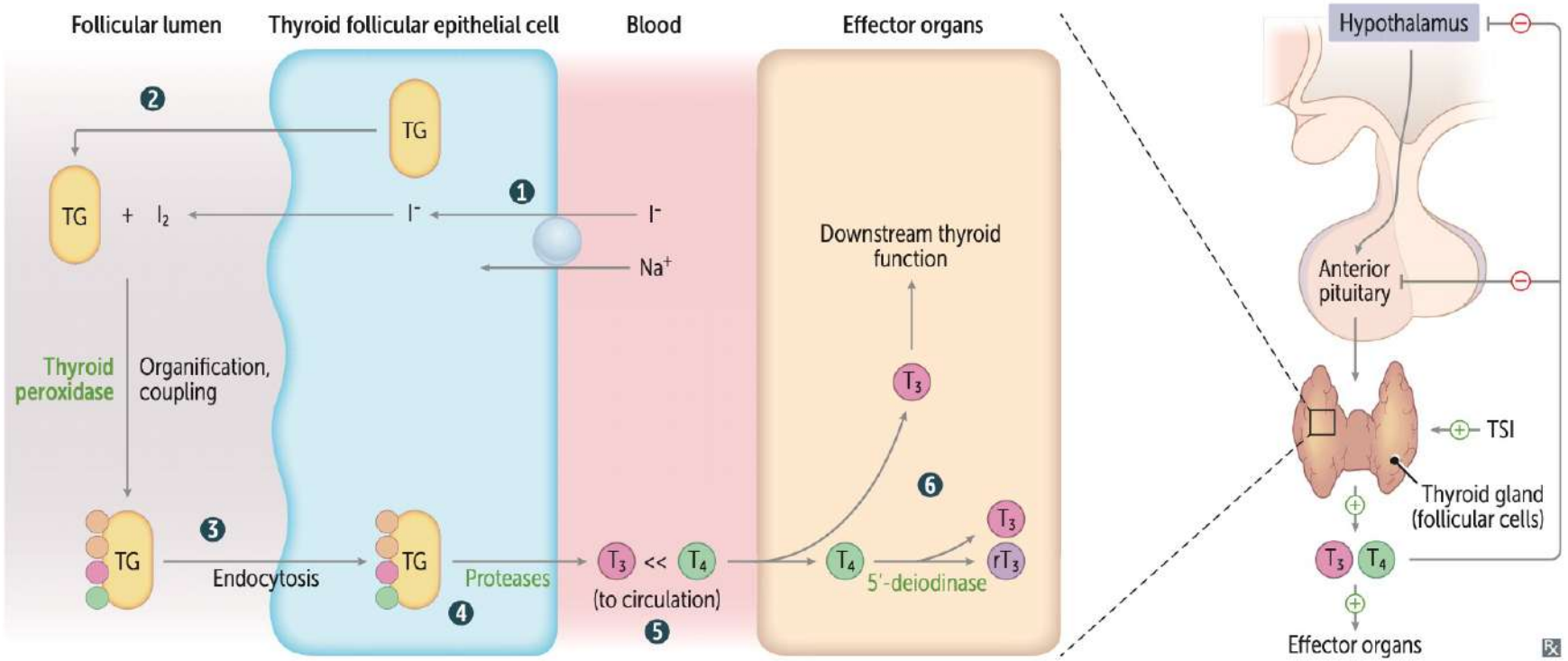
8. A 35-year-old woman presents to the clinic with complaints of weight loss, heat intolerance, palpitations, and insomnia over the past 4 months. Her vital signs are blood pressure 140/85 mm Hg, pulse 110/min, and regular. On examination, the thyroid gland is diffusely enlarged and non-tender. Laboratory studies reveal decreased serum TSH and elevated free thyroxine (T4) levels. Methimazole is initiated as treatment. Which of the following processes is most likely inhibited by this treatment?

A. Iodide uptake by the thyroid gland

B. Coupling of iodotyrosine

C. Peripheral conversion of T4 to T3

D. Colloid production



- **Brain maturation**
- **Bone growth** (synergism with GH and IGF-1)
- **β-adrenergic effects**: ↑ β_1 receptors in heart → ↑ CO, HR, SV, contractility; β-blockers alleviate adrenergic symptoms in thyrotoxicosis
- **Basal metabolic rate ↑** (via ↑ Na^+/K^+-ATPase → ↑ O_2 consumption, RR, body temperature)
- **Blood sugar** (↑ glycogenolysis, gluconeogenesis)
- **Break down lipids** (↑ lipolysis)
- Stimulates surfactant synthesis in **Babies**

9. A 29-year-old woman comes to the OPD due to hair loss. The patient has fatigue and decreased libido, and her menstrual cycles have not returned since her delivery 8 months ago. The thyroid is nontender. Laboratory results show decreased serum TSH and free thyroxine (T4) levels. Which of the following is the most likely diagnosis in this patient?

A. Chronic autoimmune thyroiditis

B. Graves disease

C. Postpartum thyroiditis

D. Secondary hypothyroidism

10. A 31-year-old woman comes to the AIIMS OPD due to a 6.8-kg weight gain over the last few months. The patient also has experienced weakness and cannot lift weights hat she was able to lift before the onset of her symptoms. On examination, blood pressure is 160/100 mm Hg and pulse is 88/min and regular. Neurologic examination shows proximal muscle weakness. Dark terminal hair is present on the lower abdomen. Fasting laboratory results are as follows:
Sodium-142 mEq/L
Potassium-3.6 mEq/L
Chloride-98 mEq/L
Bicarbonate-28 mEq/L
Calcium-9.2 mg/dL
TSH-2.2 mIU/L (N-0.5 to 5.0 mIU/L)
Which of the following is the most appropriate next step in evaluating this patient's condition?

A. Early-morning cortisol level
B. Overnight low-dose dexamethasone suppression test
C. Serum ACTH level
D. Cosyntropin test

11. Many GPCR receptors act via an increase in cAMP. The steps involved in this mechanism are given below. Which of the following is the correct sequence of events in the cAMP signal transduction pathway?

1. Activation of adenylate cyclase
2. Activation of PKA
3. Conversion of ATP to cAMP
4. Phosphorylation of target proteins

A. 1, 2, 3 and 4

B. 1, 3, 2 and 4

C. 1, 3, 4 and 2

D. 4, 2, 1 and 3

12. A 40-year-old smoker who is a known case of hypertension was on enalapril and hydrochlorothiazide. He had an episode of hemoptysis and on evaluation, he was found to have bronchogenic carcinoma with brain metastasis. His lab values were Na = 124mg / d*L creatinine= 2.8 mg%, blood sugar= 112 mg/dL, blood urea= 24 mg/dL, serum osmolality= 255 mOsm, urine osmolality= 120 mOsm, 24-hour urinary sodium= 110, and BP = 150/90 mmHg. Which of the following is the most probable diagnosis of the low sodium values in him?

A. SIADH

B. Diuretic induced hyponatremia

C. Diabetes insipidus

D. Pseudohyponatremia

- Hyponatremia: Serum sodium less than 135 mmol/L.
- Hypo-osmolality: Serum osmolality less than 275 mOsm/kg.
- Urine osmolality: Elevated above 100 mOsm/kg despite hyponatremia.
- Urine sodium concentration: Greater than 40 mmol/L with normal salt intake.
- Clinical euvolemia: No signs of volume depletion (no orthostatic hypotension, tachycardia, dry mucous membranes) and no signs of fluid overload (no edema, ascites, or heart failure).
- Exclusion of other causes: Normal adrenal and thyroid function, no recent diuretic use, no renal failure, and no conditions causing hypovolemia or hypervolemia.
- Correction with fluid restriction: Hyponatremia improves with fluid restriction.

13. All of the following are criteria for diagnosis of DKA except:

A. Glucose > 250 mg/dL
B. Arterial pH < 7.3
C. Anion gap > 12
D. Potassium < 3.5 mEq/L

14. A 15-year-old girl is brought to the emergency department due to confusion, abdominal pain, and vomiting for the past two days. Her parents report that she has been excessively thirsty and urinating frequently over the last few weeks. On examination, her vital signs are: temperature 37.2°C, pulse 110/min, BP 90/60 mm Hg, respiratory rate 28/min. Laboratory investigations reveal: glucose 320 mg/dL, sodium 132 meq/L, potassium 5.2 meq/L, bicarbonate 12 meq/L, arterial pH 7.25, urinalysis positive for urine ketones. Which of the following factors most likely contributed to the development of this patient's condition?

A. Excessive caloric intake

B. Genetic polymorphisms in HLA genes

C. Pancreatic beta-cell amyloid deposition

D. Islet leukocytic infiltration

15. An elderly patient with type II diabetes presents with altered sensorium. He has not been eating or drinking well for the past few weeks. There are no complaints of nausea or abdominal pain. His blood sugar level is 800 mg/dL. All of the following are true regarding this condition, except:

A. Serum osmolality > 350 mOsm/L

B. High mortality is associated

C. HAGMA is associated

D. Pre-renal azotemia is seen

16. A 30-year-old woman, having lost her newborn, is producing breast milk, which risks developing into a breast abscess due to milk stasis and incomplete emptying. Which drug can prevent this complication?

A. Mifepristone

B. Cabergoline

C. Bromocriptine

D. Metoclopramide

17. A 65-year-old woman presents to the ER with altered sensorium, non-pitting edema, hypothermia, bradycardia, and hypotension. What is the most likely diagnosis?

A. Head injury

B. Cardiogenic shock

C. Adrenal insufficiency

D. Myxedema coma

18. Which of the following act via the IP3-DAG Messenger System?

A. Angiotensin II on vascular smooth muscle and Vasopressin via V1 receptor on vascular smooth muscle

B. Angiotensin II on vascular smooth muscle and Vasopressin via V2 receptor on epithelial cells

C. Angiotensin II on epithelial cells and Vasopressin via V1 receptor on vascular smooth muscle

D. Angiotensin II on epithelial cells and Vasopressin via V2 receptor on epithelial cells

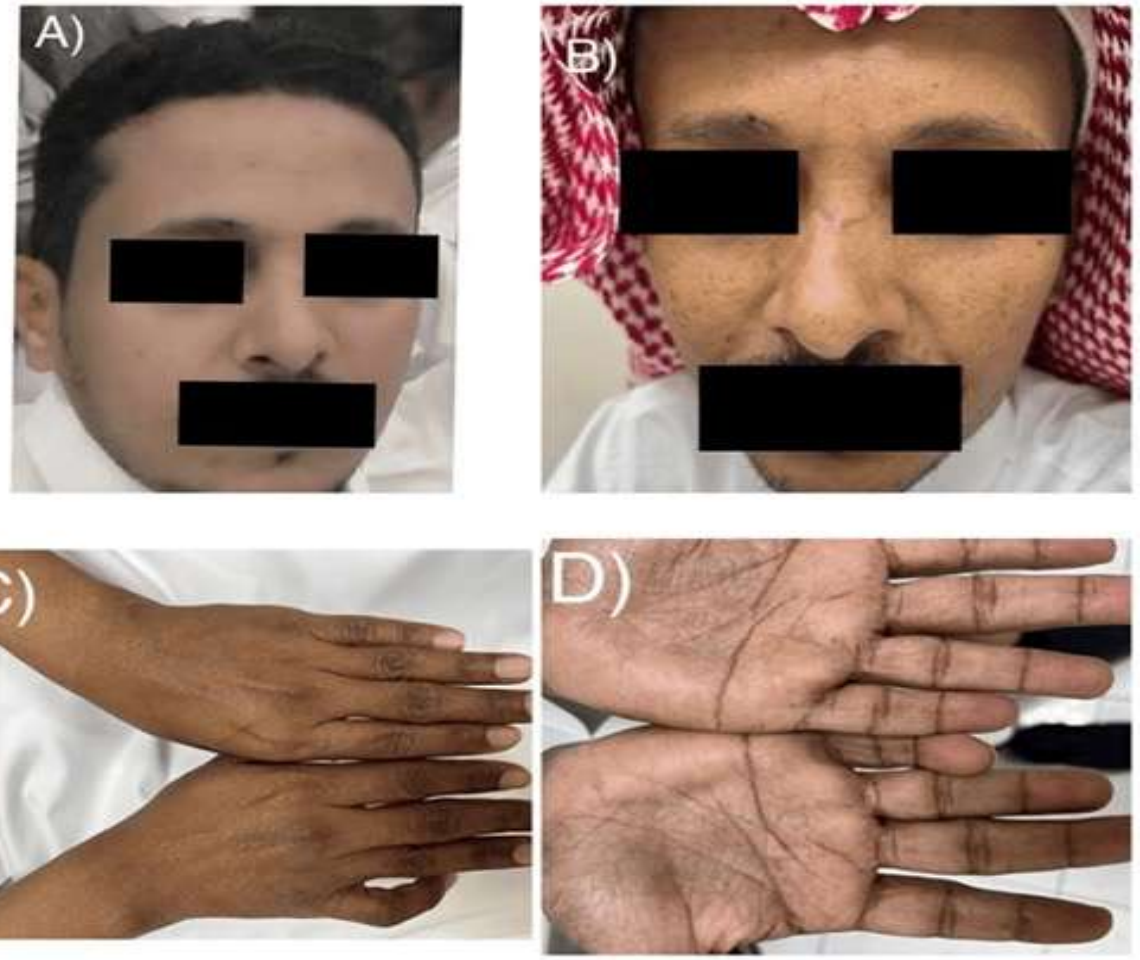
19. A 40-year-old man presents with abdominal pain, nausea, and dizziness for the past few weeks. His investigations reveal hyponatremia and hyperkalemia. He also complains of skin changes as seen in the image below (A before 3 yrs; B, C,D at presentation). Which of the following is not a feature of this condition?

A. Insulin resistance

B. Metabolic acidosis

C. Decreased androgen

D. Decreased cortisol



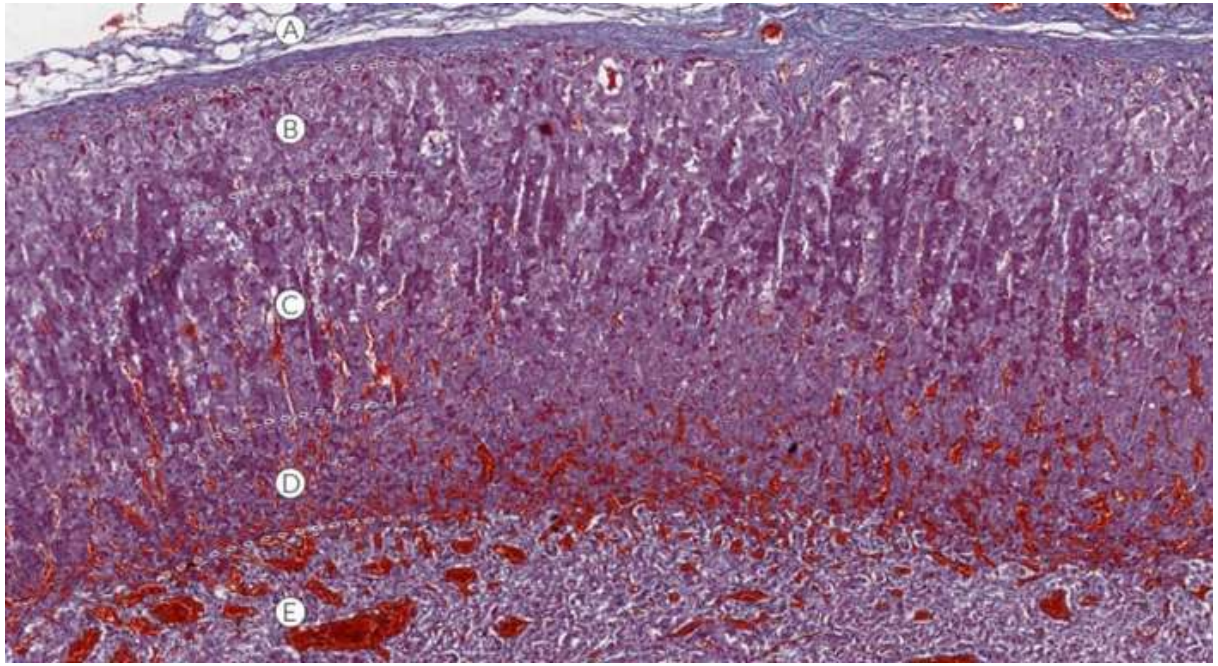
20. A 42-year-old man comes to the physician for a follow-up examination. His blood pressure was 146/91 mm Hg at his appointment 1 month ago; subsequent home blood pressure measurements have ranged from 135/83 mm Hg to 156/96 mm Hg. His blood pressure today is 141/85 mm Hg. Pharmacotherapy with lisinopril is initiated. Administration of this drug is most likely to result in decreased activity of which of the following sections of a normal adrenal gland?

A. A

B. B

C. C

D. D



21. An 65-year-old female patient, with a recent history of a distal radius fracture, undergoes an assessment of bone mineral density. A DEXA scan shows a T-score of -2.6. Which of the following medications is not used for the management of this condition?

A. Zoledronate

B. Denosumab

C. Cinacalcet

D. Romosozumab

22. A 6-year-old girl is brought to the OPD for evaluation of short stature. Her parents have noticed that she bears little resemblance to her 2 older siblings. Other findings include low-set ears, a high arched palate, a webbed neck, and cubitus valgus. Chromosomal analysis reveals a 45, XO karyotype. The patient is started on a medication to improve growth and normalize her height. Which of the following intracellular pathways is stimulated by the medication used in this patient?

A. Binding of activated receptors to DNA to modify transcription

B. Cyclic AMP-Protein kinase A pathway

C. Diacylglycerol-Protein kinase C pathway

D. JAK-STAT pathway

23. A 52-year-old, post-menopausal woman comes to the OPD for a follow-up appointment. Six months ago, the patient was evaluated for recurrent, brief episodes of excessive warmth and sweating, which were interfering with her usual activities. Thyroid hormone levels were normal, and the patient was subsequently diagnosed with menopausal hot flashes. Treatment with estrogen-containing hormone replacement therapy was begun with significant symptom improvement. Which of the following most likely occurred in this patient as a result of her medication use?

A. Decreased conversion of T4 to T3

B. Decreased thyroid iodine uptake

C. Decreased TSH level

D. Increased total T4 level

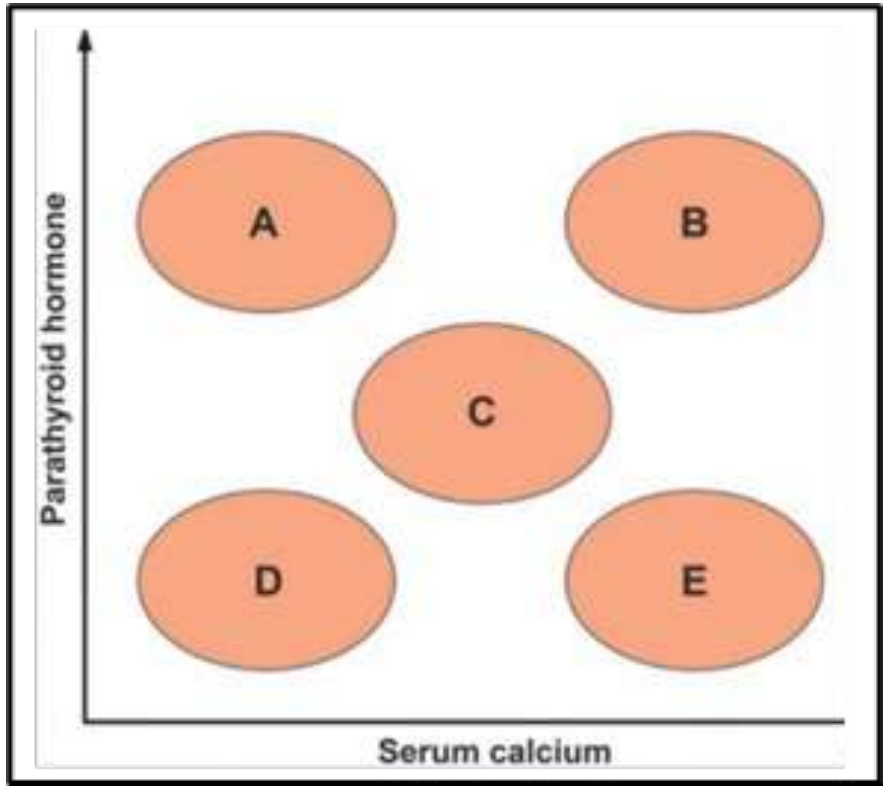
24. A 64-year-old man comes to the OPD with fatigue. He has hypertension and poorly controlled diabetes complicated by nephropathy and peripheral neuropathy. His renal function has declined steadily over the last few years. On the graph below, area "C" shows the normal relationship between serum concentrations of free calcium and parathyroid hormone. Which of the following areas most likely represents this patient's current metabolic state?

A. A

B. B

C. C

D. E



25. 50-year-old man is brought to the emergency department due to a severe, sudden-onset headache with loss of vision in bilateral temporal fields that started an hour ago. The patient reports that he has had mild headaches and decreased libido over the past 3 months. Shortly after being admitted to the hospital, he becomes acutely hypotensive and loses consciousness. Which of the following is most likely to be found on autopsy?

A. Acute hemorrhage in the pituitary gland

B. Bleeding within the putamen

C. Dissection of the internal carotid artery

D. Ischemic necrosis of the pituitary gland

26. A 60-year-old woman is diagnosed with type II diabetes mellitus. She has a history of chronic kidney disease. Which of the following statement is correct about the management of this patient?

A. Metformin is contraindicated in all stages of CKD

B. Pioglitazone is avoided as it is exclusively metabolized by kidneys

C. Glipizide can be used in renal disease

D. Linagliptin can be used only after dose reduction

OHG

Agent	Mechanism of action	Side effects
Sulfonylureas Chlorpropamide,Glipizide, Glyburide Meglitinides Repaglinide, Nateglinide	Increases insulin secretion by inhibiting B-cell K+ ATP channels	Hypoglycemia , Weight gain Chlorpropamide:
Biguanides Metformin	Stimulates AMP kinase, decreasing insulin resistance Useful in CV risk mortality	Lactic acidosis, Weight loss, Vit B12 deficiency, Diarrhea Max reduction in HbA1c
Thiazolidinediones Pioglitazone Rosiglitazone	Activates transcription regulator PPAR-g, decreasing insulin resistance	Weight gain, Heart failure, Hepatotoxic, Fractures Risk of bladder cancer - MI-
GLP-1 agonists Exenatide, Liraglutide, Tirazepatide-SC Semaglutide-Oral / SC DPP4 inhibitors : ORAL Sitagliptin, Saxagliptin, Linagliptin	Increases glucose-dependent insulin secretion, decreases glucagon secretion, delays gastric emptying Useful in CV risk mortality GLP-2 agonist:	Increase satiety, Weight loss Pancreatitis – MTC Nasopharyngitis- DPP4 - : CI in renal failure except:
Amylin Analogue Pramlintide	Decreases glucagon secretion, delays gastric emptying	Increase satiety
α-glucoside inhibitors Acarbose , Miglitol	Reduces intestinal disaccharide absorption	Diarrhea, Flatulence CI in IBD
SGLT2 Inhibitors Canagliflozin, Dapagliflozin	Increases renal glucose excretion Useful in CV risk mortality	Urinary tract infections , Polyuria (osmotic diuresis) Weight loss

27. A 52-year-old female with diabetes mellitus has experienced a decrease in her HbA1c levels from 7.6 to 6.7 after starting a new oral medication. Laboratory tests show that she has high levels of GIP and GLP-1 and low levels of glucagon. Which of the following oral drugs was most likely administered to this patient?

A. Voglibose

B. Alogliptin

C. Pramlintide

D. Liraglutide

28. A 40-year-old male presents with increased thirst and increased frequency and volume of urination. His random blood sugar was 205 mg/dl. What appropriate investigations should be done?

i) HbA1c
ii) Urine ACR
iii) Echocardiography
iv) Fundoscopy
v) ECG
vi) Serum protein electrophoresis

A. i, ii, iii, v

B. i, ii, iii, vi

C. i, ii, iii, v

D. i, ii, iv, v

29. A 50-year-old man comes to the OPD following transsphenoidal resection of a growth hormone-secreting pituitary adenoma. Three months ago, the patient was diagnosed with acromegaly. MRI of the pituitary showed a 14 mm sellar mass pressing on the optic chiasm and extending into the right cavernous sinus. The surgeon was able to only partially resect the pituitary mass because of the extension into the right cavernous sinus. Medical therapy for acromegaly with octreotide is planned. Which of the following changes are likely to occur following octreotide treatment in this patient?

A. GH low, IGF-1 low, adenoma size low

B. GH low, IGF-1 low, adenoma size unchanged

C. GH low, IGF-1 unchanged, adenoma size low

D. GH unchanged, IGF-1 low, adenoma size unchanged

30. Two days after vaginal delivery of a healthy newborn at term, a 32-year-old woman, gravida 2, para 2, is unable to breastfeed. Her labor was complicated by antepartum hemorrhage and she received two units of packed red blood cells. Her pulse is 99/min and blood pressure is 90/55 mm Hg. Further evaluation of this patient is most likely to show which of the following sets of serum findings?

A. ACTH low, Aldosterone low, Cortisol low

B. ACTH low, Aldosterone high, Cortisol low

C. ACTH high, Aldosterone normal, Cortisol low

D. ACTH low, Aldosterone normal, Cortisol low

31. Which of the following pairs of drugs and its indications is matched incorrectly?

A. Bromocriptine – Treatment of precocious puberty

B. Octreotide – Treatment of diarrhea associated with vasoactive intestinal peptide tumors

C. Desmopressin – Treatment of diabetes insipidus

D. Leuprolide – Treatment of infertility

32. 53-year-old man comes to the physician complaining of increased urinary frequency for the past 4 weeks. He has no burning with urination, urgency, or difficulty initiating urination. He wakes up several times at night to urinate. His mouth feels dry all the time and he drinks fluids almost every hour to alleviate his thirst. The patient's medications include hydrochlorothiazide and amlodipine for hypertension. His sister was diagnosed with diabetes mellitus at a young age. His blood pressure is 120/76 mm Hg, pulse 85/min, respirations 15/min. His body mass index is 32 kg/m². Laboratory results: Blood glucose 93 mg/dL, Serum sodium 150 mEq/L, Serum potassium 4.1 mEq/L, Bicarbonate 24 mEq/L, BUN 21 mg/dL, Creatinine 1.1 mg/dL, Uric acid 10.1 mg/dL, Serum osmolality 314 mOsm/kg, Urine osmolality 124 mOsm/kg. Which of the following is most consistent with this patient's findings?

A. Central Diabetes insipidus

B. Nephrogenic DI

C. Primary polydipsia

D. Syndrome of inappropriate antidiuretic hormone

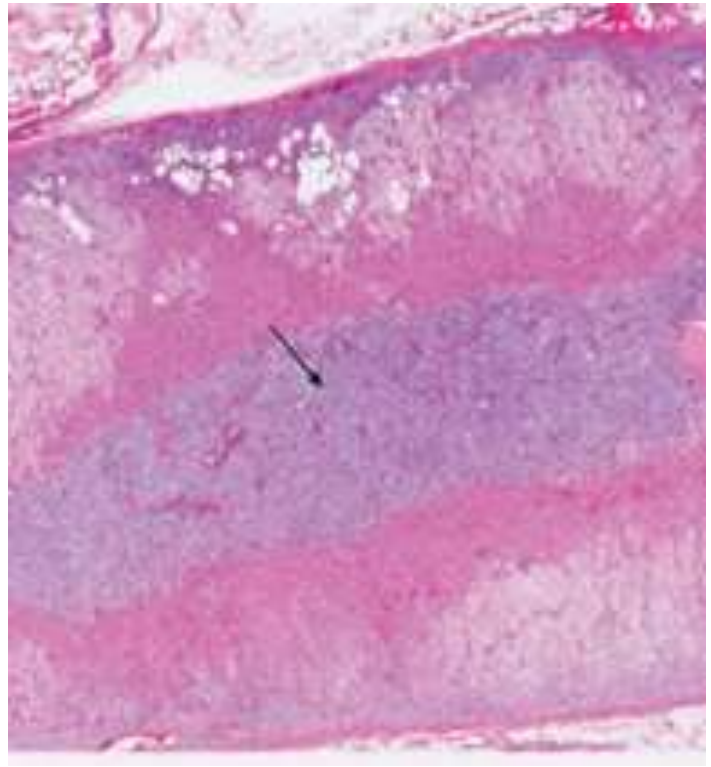
33. The cells marked in the image of adrenal biopsy are directly activated by?

A. Acetylcholine

B. ACTH

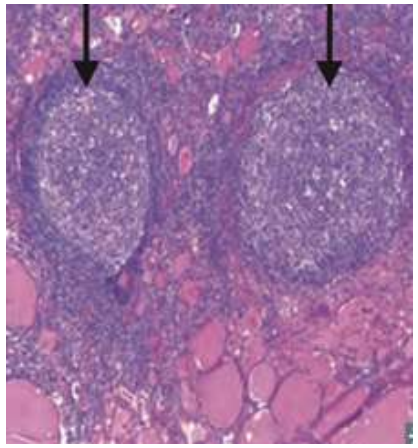
C. Angiotensin II

D. Epinephrine

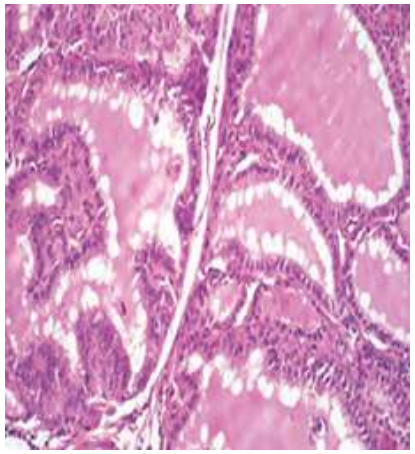


34. 51-year-old woman comes to the OPD due to progressively worsening fatigue, weight gain, and constipation for the past 6 months. Physical examination shows mild, diffuse enlargement of the thyroid gland. Biopsy of this patient's thyroid is most likely to show which of the following findings?

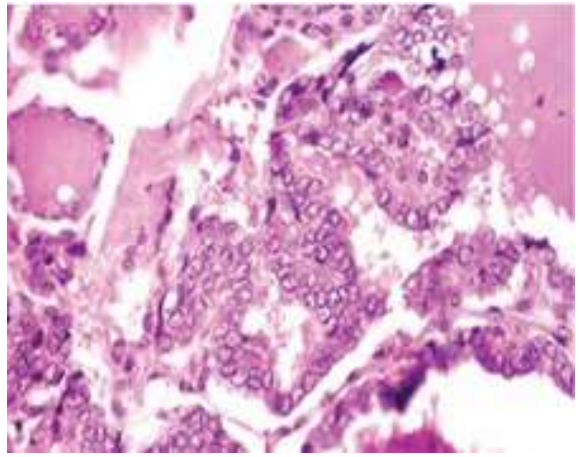
a)



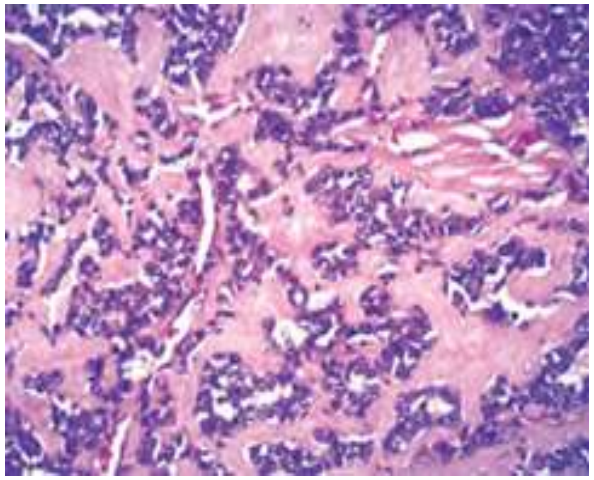
b)



c)



d)



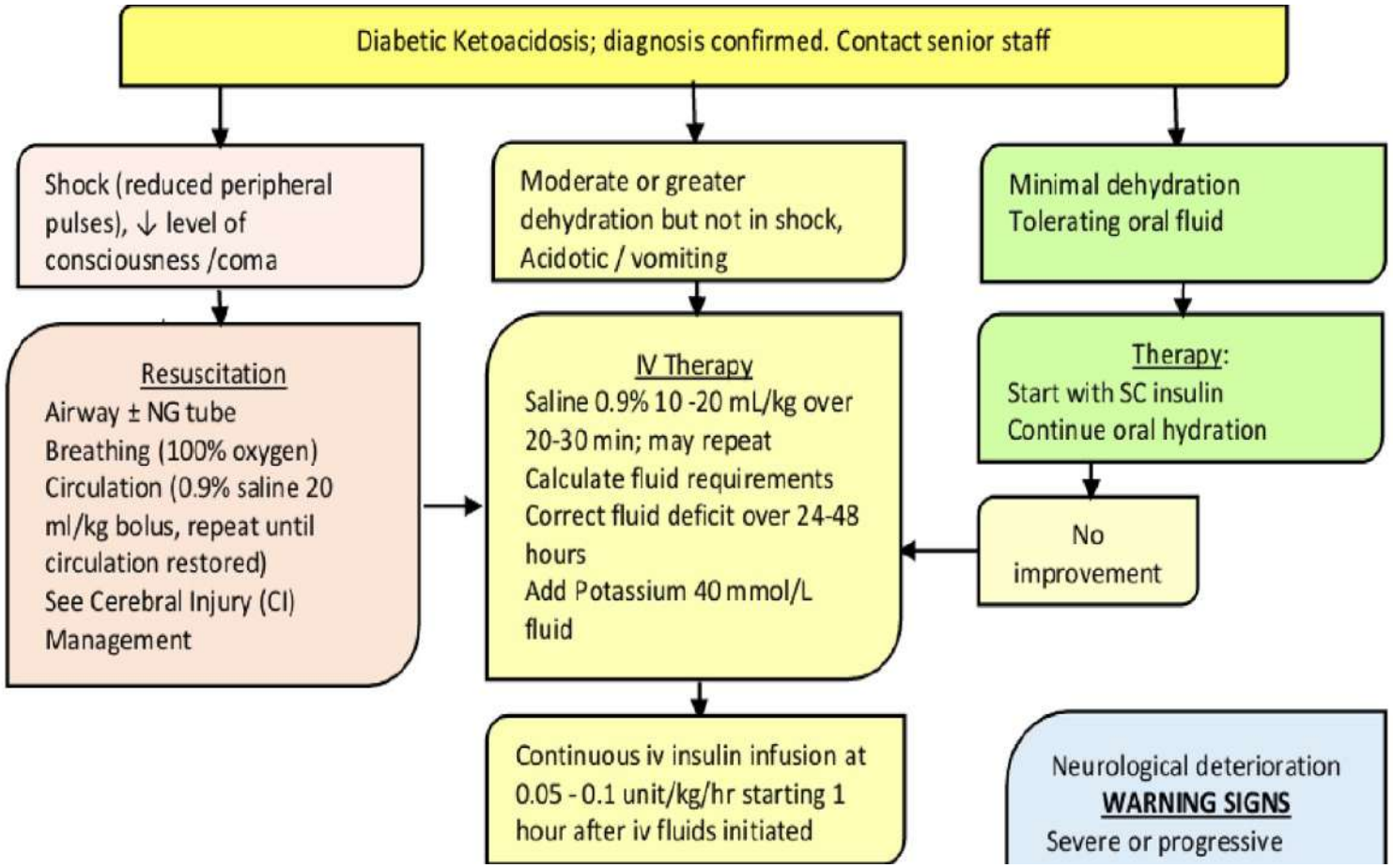
35. A 12-year-old child who is known to have type 1 diabetes mellitus presents with confusion and drowsiness. Her mother says that she seems to be breathing very fast. On examination, mucous membranes are dry and blood pressure is 70/50 mm Hg. Random blood glucose is 415 mg/dl and urine ketones are 4+. What is the next best step in management?

A. 2-3 L of normal saline over 1-3 hours

B. Insulin infusion at 0.1 units/kg/hour

C. Arterial blood gas

D. Insulin bolus of 0.1 units/kg given IV


Diabetic Ketoacidosis; diagnosis confirmed. Contact senior staff
Shock (reduced peripheral pulses), ↓ level of consciousness /coma
Moderate or greater dehydration but not in shock, Acidotic / vomiting
Minimal dehydration
Tolerating oral fluid
Resuscitation
Airway ± NG tube
Breathing (100% oxygen)
Circulation (0.9% saline 20 ml/kg bolus, repeat until circulation restored)
See Cerebral Injury (CI) Management
IV Therapy
Saline 0.9% 10 -20 mL/kg over 20-30 min; may repeat
Calculate fluid requirements
Correct fluid deficit over 24-48 hours
Add Potassium 40 mmol/L fluid
Therapy:
Start with SC insulin
Continue oral hydration
No improvement
Continuous iv insulin infusion at 0.05 - 0.1 unit/kg/hr starting 1 hour after iv fluids initiated
Neurological deterioration
WARNING SIGNS
Severe or progressive

36. A 6-week-old term boy is brought to the OPD due to increased fussiness and poor weight gain. The patient has several wet diapers per day. His anterior fontanelle is flat and mucous membranes are dry. Laboratory results include Sodium 148 mEq/L, Potassium 3.5 mEq/L, Antidiuretic hormone: increased, Urinalysis shows a specific gravity of 1.002. Which of the following is the most appropriate treatment for this patient's condition?

A. Desmopressin

B. Hydrochlorothiazide

C. Hydrocortisone

D. Insulin

37. A 45-year-old man reports coarsening of his facial features over several years. In addition, he reports low libido and decreased energy. Physical examination shows frontal bossing and enlarged hands. Which of the following screening tests should be ordered?

A. 24-Hour UFC

B. S. ACTH

C. Fasting GH levels

D. S. IGF-1

38. Which of the following is not associated with pseudohypoparathyroidism?

A. Low calcium

B. Low PTH

C. Short 4th and 5th metacarpals

D. Short stature

- Type 1a: Most common; PTH resistance plus physical features of Albright Hereditary Osteodystrophy (AHO) (short stature, round face, short fingers, subcutaneous ossifications).
- Type 1b: Mainly kidney PTH resistance without AHO phenotype.
- Type 1c: Similar to 1a but normal Gs alpha activity.
- Type 2: Normal cAMP response but impaired phosphate excretion

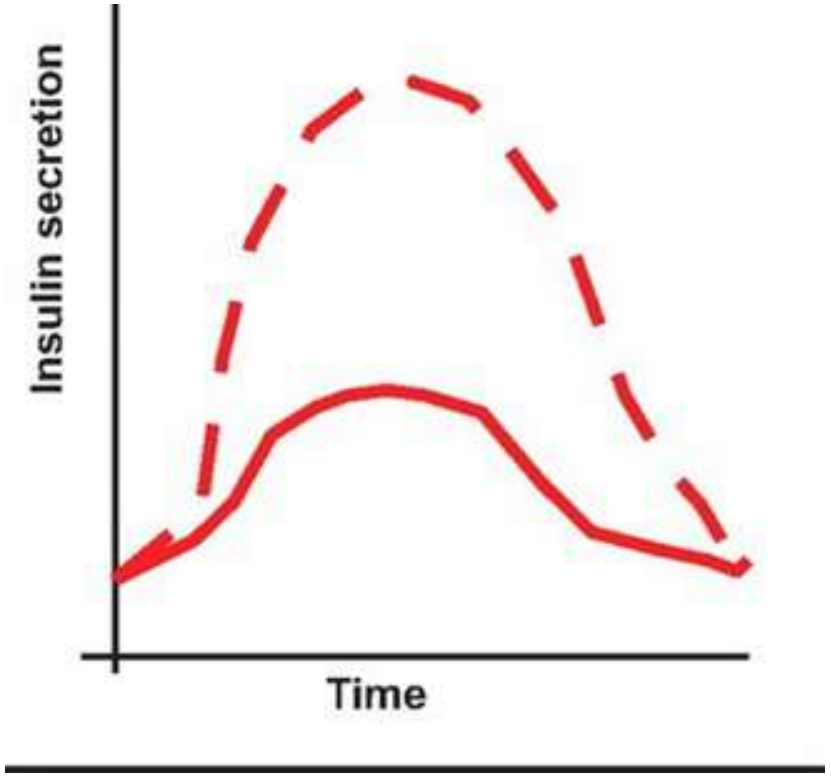
39. Researchers measure the serum insulin levels of healthy volunteers after equivalent loads of oral (dotted line) and intravenous glucose (solid line). The following curves are observed. Which of the following endogenous substances best explains the difference between the curves?

A. Insulin-like growth factor-1

B. Glucagon-like peptide-1

C. Somatostatin

D. Secretin



40. A 34-year-old man comes to the physician because of blurry vision and fatigue for 2 months. During this period, he has also had occasional bleeding from his gums after brushing his teeth. One month ago, he was diagnosed with deep vein thrombosis after returning from an overseas business meeting. His pulse is 118/min, respirations are 19/min, and blood pressure is 149/91 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 97%. Examination shows bluish discoloration of the lips. The tip of the spleen is palpable 1 cm below the left costal margin. Sensory examination of the hands shows paraesthesia. Hemoglobin concentration is 18 g/dL, haematocrit is 65%, leukocytes are 15,000/uL, and platelets are 470,000/uL. His serum erythropoietin concentration is decreased. Activation of which of the following is the most likely underlying cause of this patient's condition?

A. Receptor tyrosine kinase

B. Cytokine receptor

C. Antiapoptotic molecule

D. Nonreceptor tyrosine kinase

41. A 15-year-old girl comes to the physician because of a 2-month history of progressive fatigue and weakness. She also reports recurrent headaches for 2 years, which have increased in severity and frequency. Her blood pressure is 185/95 mm Hg. Serum studies show a morning renin activity of 130 ng/mL per hour (N=1-4), a morning aldosterone concentration of 60 ng/dL (N=5-30), and a potassium concentration of 2.9 mEq/L. Further evaluation is most likely to show which of the following?

A. ACTH-producing growth in the pituitary gland

B. Increased urinary excretion of metanephrines

C. Pleomorphic modified smooth muscle cells in the renal cortex

D. Involution of zona glomerulosa of the adrenal gland

42. A woman comes with complaints of hyperpigmentation of her palms after an adrenalectomy. She also has new onset vision deficits. What is the likely diagnosis?

A. Nelson syndrome

B. Sheehan syndrome

C. Conn's syndrome

D. Addison's disease

43. A 68-year-old man comes to the physician for a follow-up examination. He has type 2 diabetes mellitus, hypertension, and chronic kidney disease. Medications include insulin, metoprolol, and atorvastatin. Physical examination shows pitting edema of both ankles. Serum creatinine concentration is 4.5 mg/Dl. Which of the following sets of serum findings is most likely in this patient?

A. PTH increased, vit D decreased, Ca increased, Po4 decreased

B. PTH increased, vit D decreased, Ca decreased, Po4 increased

C. PTH decreased, vit D increased, Ca increased, Po4 decreased

D. PTH decreased, vit D decreased, Ca decreased, Po4 increased

44. Which of the following anti-diabetic drug is associated with unexplained diarrhea?

A. Pioglitazone

B. Pramlintide

C. Glimepiride

D. Metformin

45.Which of the following growth hormone analogue is not used for treatment of GH deficiency but is used in the treatment of HIV-associated lipodystrophy?

A. Tesamorelin

B. Sermorelin

C. Somatropin

D. Pegvisomant

46. An 8-year-old boy was referred to a pediatric endocrinologist because of growth retardation. Lab tests showed increased serum growth hormone levels but very low serum levels of insulin-like growth factor 1 (IGF-1). Further exams led to the diagnosis of Laron dwarfism. Which of the following drugs would be most appropriate for this boy?

A. Somatropin

B. Octreotide

C. Mecasermin

D. Oxandrolone

47. Sodium iodide symport is present in all of the following except:

A. Pituitary

B. Placenta

C. Salivary gland

D. Thyroid

48. A 26-year-old man developed sudden severe abdominal pain. On physical examination, he had marked abdominal tenderness and guarding. Laboratory studies showed calcium 12.2 mg/dL; phosphorus 2.6 mg/dL; creatinine 1.1 mg/dL; and parathyroid hormone 62 pg/mL (normal: 9-60 pg/mL). During surgery, four enlarged parathyroid glands were found and excised, with re-implantation of one half of one gland. After the surgery, his calcium concentration returned to normal. Three years later, he had an episode of upper gastrointestinal hemorrhage. An endoscopy and biopsy specimen showed multiple benign gastric ulcerations. Abdominal MRI indicated multiple 1- to 2-cm mass lesions in the pancreas. Which of the following additional neoplasm lesions is he most likely to have?

A. Adrenal pheochromocytoma

B. Endometrial carcinoma

C. Pituitary adenoma

D. Thyroid medullary carcinoma

49. In Type 1 Diabetes Mellitus, what is the feature of stage 3 beta cell destruction?

A. Autoimmune +ve Normoglycemic presymptomatic

B. Autoimmune +ve dysglycemic symptomatic

C. Autoimmune -ve Normoglycemic presymptomatic

D. Autoimmune -ve dysglycemic presymptomatic

Stage	Autoantibodies	Blood Glucose	Symptoms	Beta Cell Status
Stage 1	≥2	Normal	None	Autoimmune attack starts
Stage 2	≥2	Abnormal (dysglycemia)	None	Significant beta-cell loss
Stage 3	Present or variable	Hyperglycemia	Present (classic symptoms)	Severe beta-cell loss

50. A 29-year-old man presents with headaches, fatigue, visual disturbances. He has sarcoidosis, mild hypercalcemia, and MRI shows a mass in hypothalamus and pituitary stalk. Which of the following pituitary hormones is most likely elevated in this patient?

A. ACTH

B. Growth hormone

C. Prolactin

D. Thyrotropin

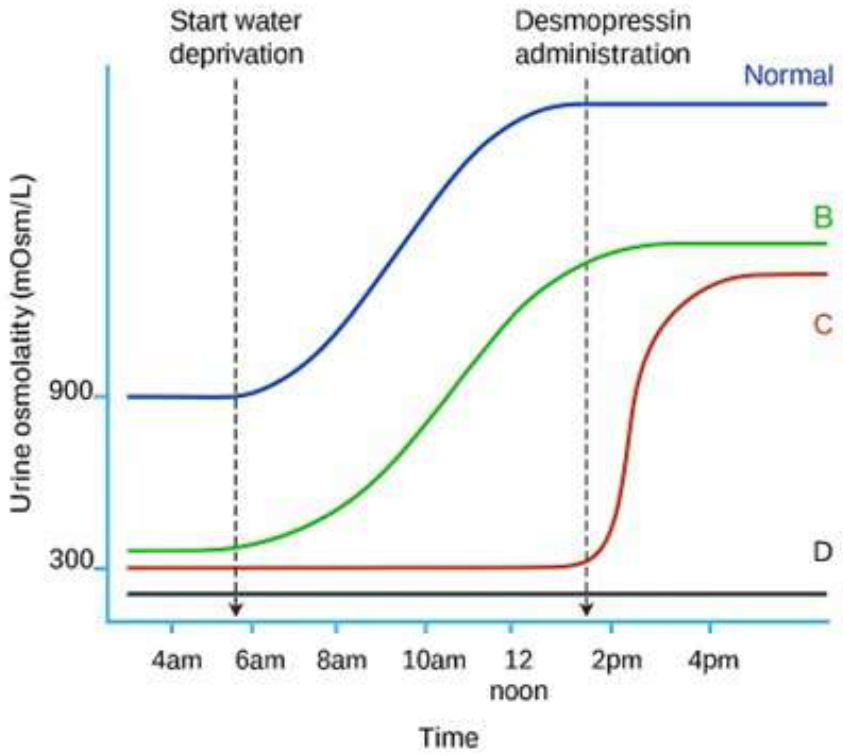
51. Identify the correct pair?

A. B- Normal

B. C- Primary polydipsia

C. D- Nephrogenic DI

D. B- Central DI



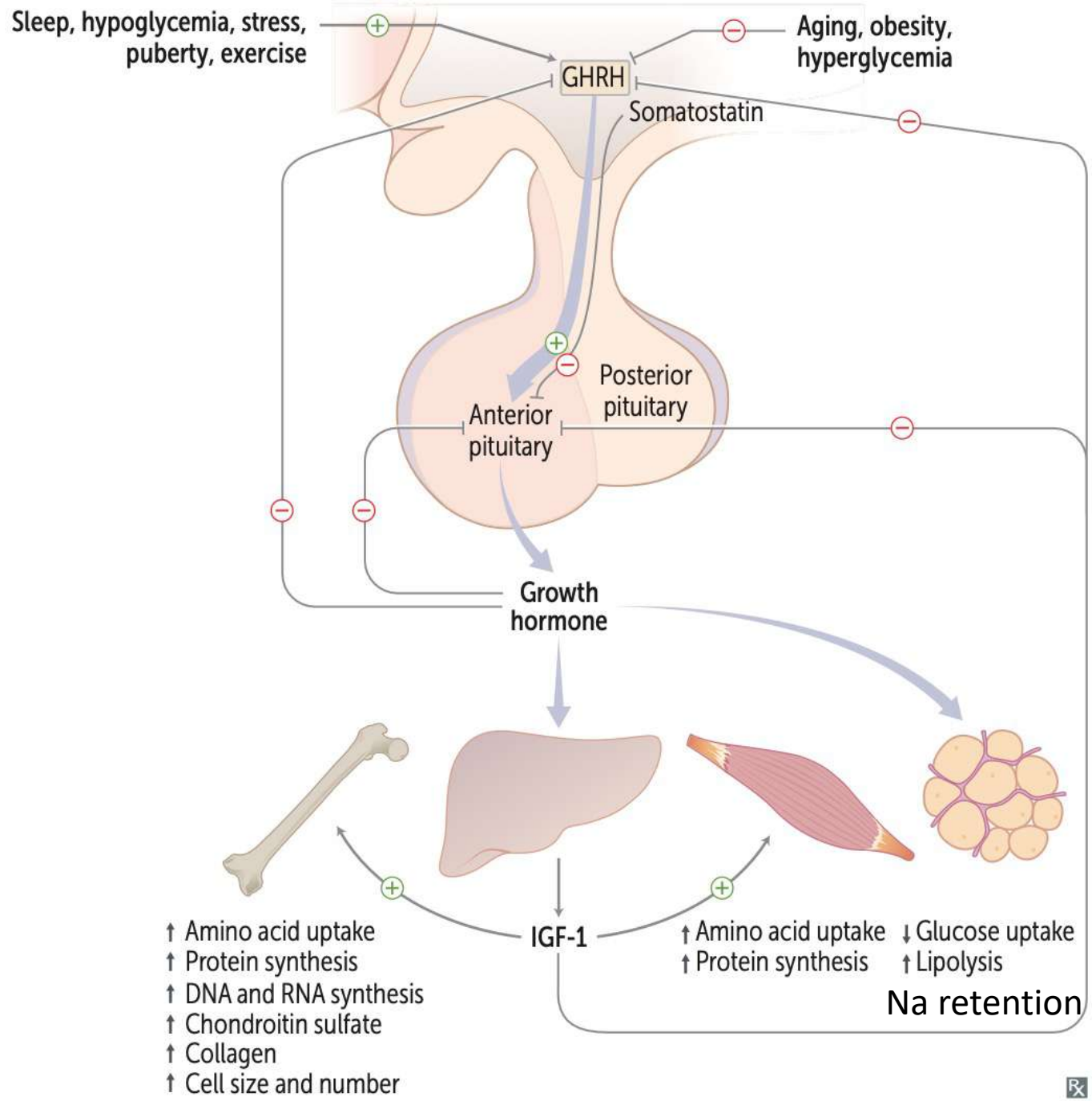
52. Which function of growth hormone (GH) is specifically mediated via IGF-1?

A. Sodium retention

B. Lipolysis

C. Reduced insulin sensitivity

D. Anti-lipolysis


Sleep, hypoglycemia, stress, puberty, exercise
Aging, obesity, hyperglycemia
GHRH
Somatostatin
Posterior pituitary
Anterior pituitary
Growth hormone
IGF-1
↑ Amino acid uptake
↑ Protein synthesis
↑ DNA and RNA synthesis
↑ Chondroitin sulfate
↑ Collagen
↑ Cell size and number
↑ Amino acid uptake
↑ Protein synthesis
↓ Glucose uptake
↑ Lipolysis
Na retention

53. A 33-year-old man collapses during a family vacation. At the hospital, blood pressure is 86/52 mmHg and random blood sugar is 49 mg/dl. His wife says he has been on treatment for Addison's disease for two years but had forgotten his medication for the trip. What is the drug of choice for this patient?

A. Dexamethasone

B. Fludrocortisone

C. Norepinephrine

D. Hydrocortisone

54. A 53-year-old woman is brought to the emergency department after she collapsed suddenly while standing. She also reports left-sided chest pain. Legacy effect (metabolic memory) in diabetes mellitus refers to which of the following observations?

A. Early intensive glycemic control has long-term benefits on microvascular and macrovascular complications, even if strict control is not maintained later.

B. Good glycemic control only in longstanding disease prevents complications.

C. Early detection and management of dyslipidemia completely prevents metabolic memory.

D. High HbA1c in longstanding disease has no effect on future complications.

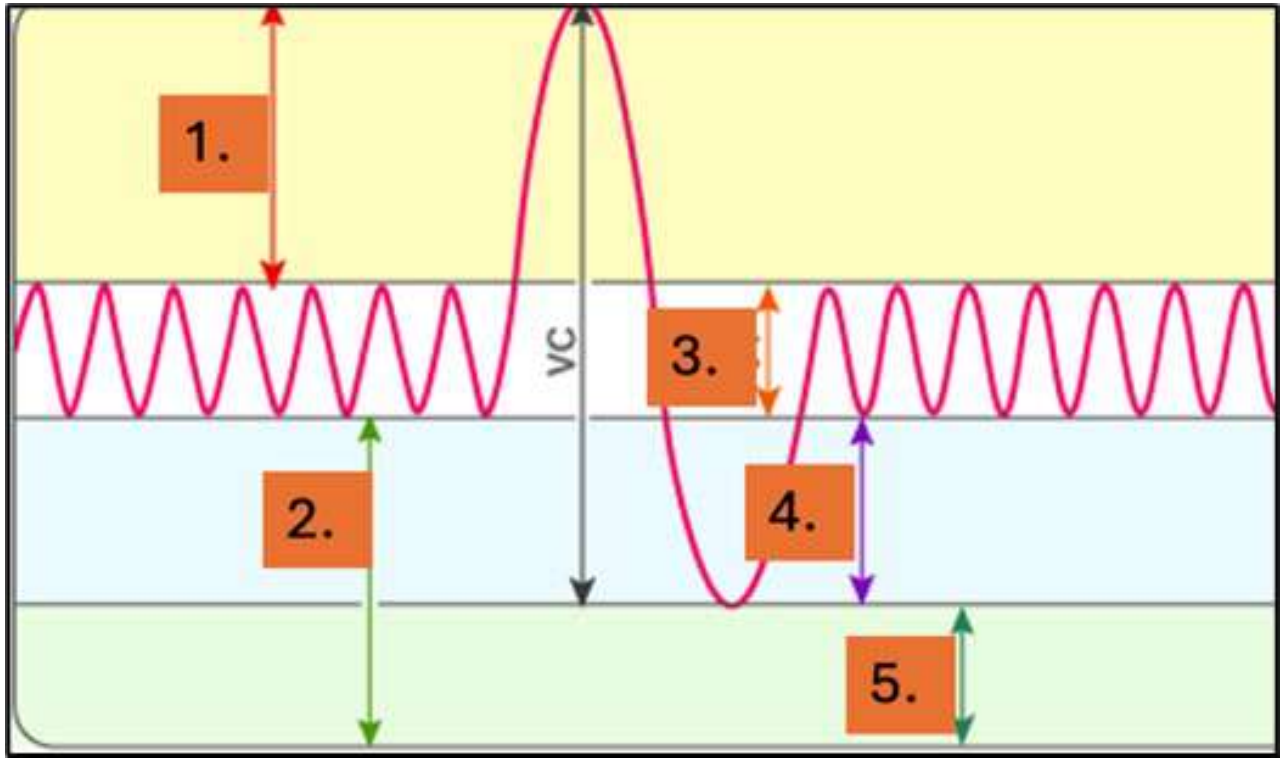
55. The image below demonstrates normal lung volumes and capacities. Which of the following changes is unlikely in a “pink puffer”?

A. 2 is increased

B. 1+2+3 is decreased

C. 5 is increased

D. 1+3+4 is decreased



56. A 50-year-old chronic smoker presented with mild recurrent hemoptysis without fever or weight loss. The chest X-ray appears normal and the sputum is negative for AFB. Which of the following is the next best step?

A. MRI

B. Fiberoptic bronchoscopy

C. HRCT thorax

D. Rigid bronchoscopy

57. A 45-year-old patient came with hypoxemia and a normal alveolar-arterial oxygen gradient. What can be the cause?

A. Right to left shunt
B. Ventilation/Perfusion mismatch
C. Hypoventilation
D. Alveolar membrane damage

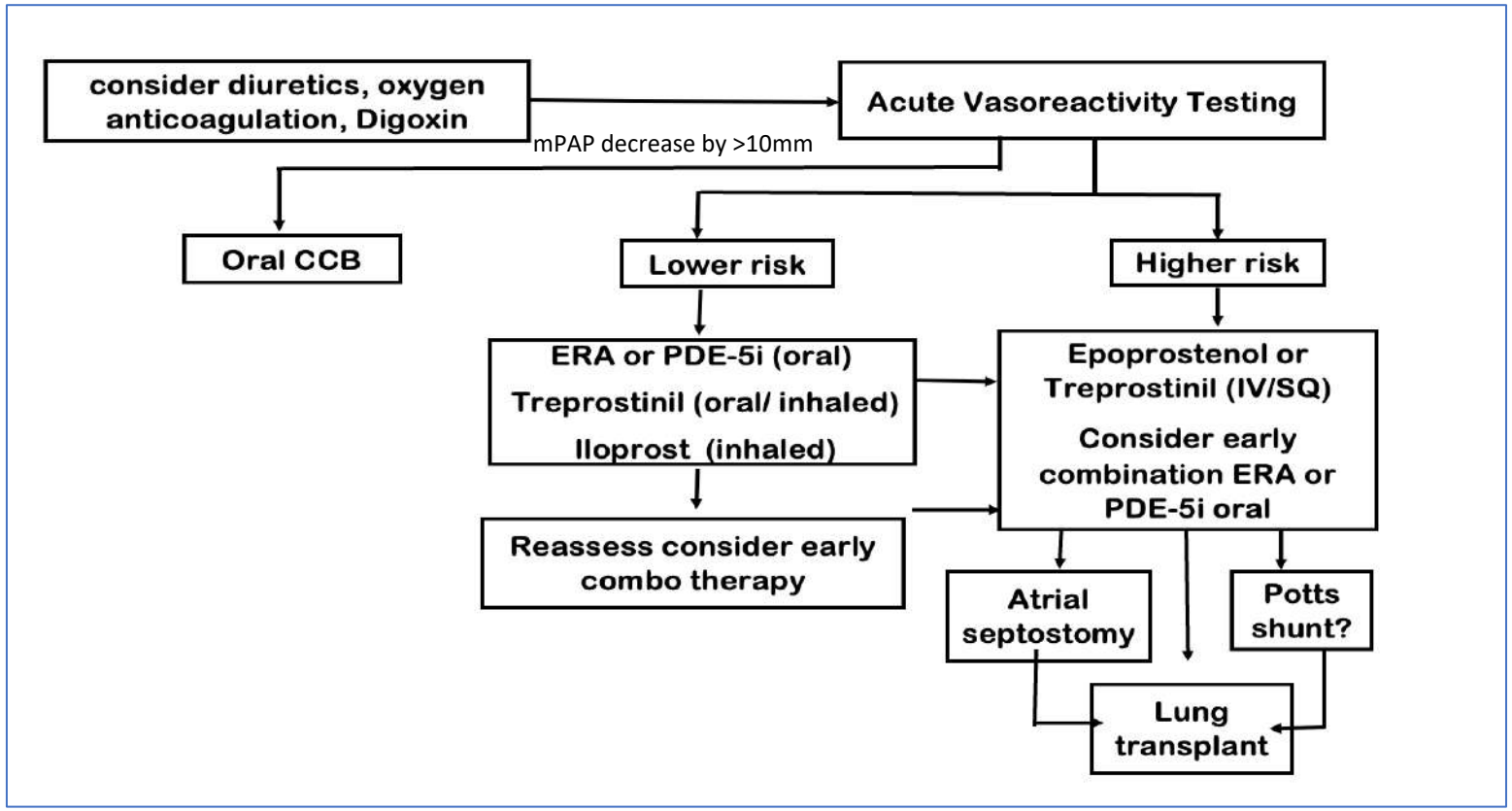
58. A 45-year-old female patient with class II pulmonary hypertension presents with a positive vasoreactivity test. Which of the following is used in the next step of management?

A. Iloprost

B. Ambrisentan

C. Nifedipine

D. Epoprostenol


consider diuretics, oxygen anticoagulation, Digoxin
Acute Vasoreactivity Testing
mPAP decrease by >10mm
Oral CCB
Lower risk
Higher risk
ERA or PDE-5i (oral)
Treprostinil (oral/ inhaled)
Iloprost (inhaled)
Epoprostenol or Treprostinil (IV/SQ)
Consider early combination ERA or PDE-5i oral
Reassess consider early combo therapy
Atrial septostomy
Potts shunt?
Lung transplant

59. A patient in emergency admitted to ICU based on the appropriate score with the following CXR presentation. What is the treatment of choice in this patient?

A. Mechanical ventilation

B. Ceftriaxone plus azithromycin

C. Amoxicillin plus clavulanic acid

D. LMW heparin

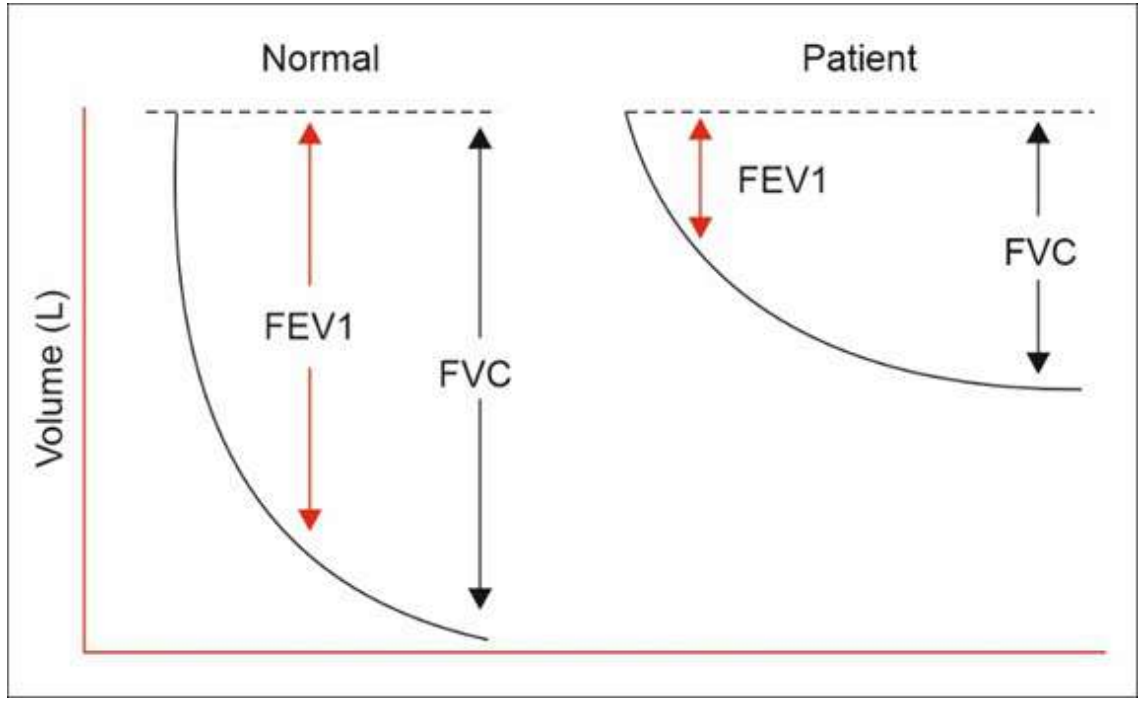
60. The given image shows a normal graph on the left and the patient's graph on the right. Which of the following diagnoses can be inferred from the graph?

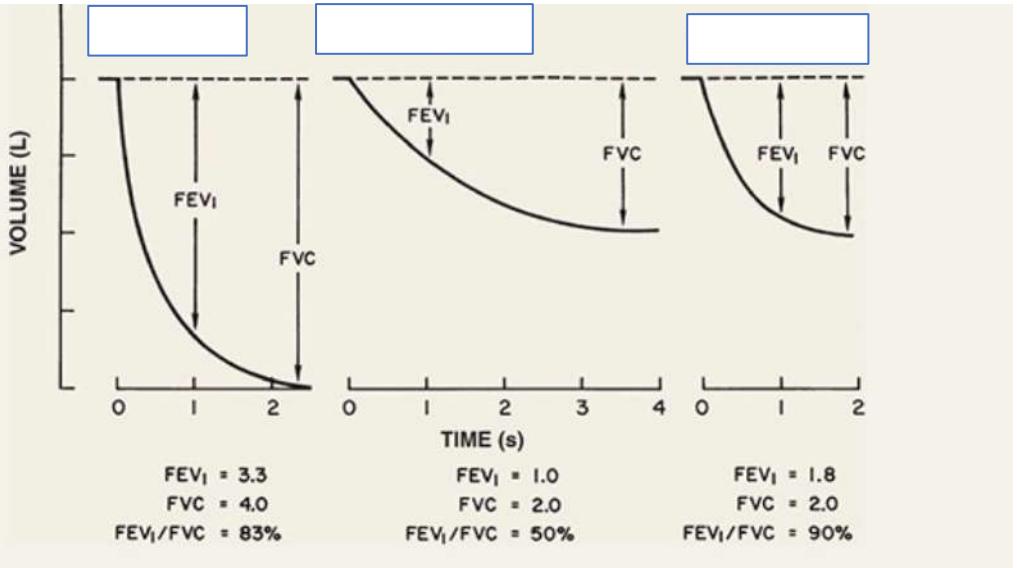
A. Chest wall neuromuscular disease

B. Sarcoidosis

C. Idiopathic pulmonary fibrosis

D. Bronchiectasis




VOLUME (L)
FEV1
FVC
FEV1
FVC
FEV1
FVC
0
1
2
0
1
2
3
4
0
1
2
TIME (s)
FEV1 = 3.3
FVC = 4.0
FEV1/FVC = 83%
FEV1 = 1.0
FVC = 2.0
FEV1/FVC = 50%
FEV1 = 1.8
FVC = 2.0
FEV1/FVC = 90%

61. A 40-year-old male presented to OPD with complaints of excessive daytime sleepiness, and his wife also complains that he snores a lot at night during sleep. Which of the following is incorrect regarding his condition?

A. Increased tone of the pharyngeal muscles worsens obstruction

B. Fall of oxygen saturation triggers waking episodes at night

C. Episodes of apnea increase work of breathing

D. PaO2 is normal during the day

62. A 30-year-old patient presents with fever, cough, and tenacious white sputum. Which of the following should be used for treatment?

A. Syrup Dextromethorphan with bromhexine

B. Syrup Codeine

C. Syrup Dextromethorphan

D. Syrup Bromhexine

63. A 35-year-old man comes to the clinic for evaluation of exertional dyspnea and dry cough for 8 months. Oxygen saturation on room air while lying down is 96% and drops to 88% after 6 minutes of walking. Examination shows fine crackles in both lower lungs. Chest x-ray reveals reticular densities in both lung fields. Lung biopsy shows an infiltration of inflammatory cells, predominantly lymphocytes, as well as poorly formed noncaseating granulomas and moderate alveolar septal fibrosis. Which of the following is the most likely diagnosis?

A. Bronchial asthma

B. Chronic bronchitis

C. Hypersensitivity pneumonitis

D. Idiopathic pulmonary fibrosis

64. A 64-year-old man comes to the OPD due to worsening dyspnea on exertion for the past 3 months. The patient has had a nonproductive cough but no chest pain, fever, or chills. He was diagnosed with hypertension several years ago but takes no medications. Physical examination shows bilateral inspiratory crackles as well as dullness to percussion and decreased breath sounds at the right lung base. Chest x-ray reveals a right-sided pleural effusion. Which of the following pleuropulmonary changes are most likely present in this patient?

A. Vascular hydrostatic pressure increased, Oncotic pressure increased, lymphatic flow normal

B. Vascular hydrostatic pressure normal, Oncotic pressure normal, lymphatic flow decreased

C. Vascular hydrostatic pressure increased, Oncotic pressure normal, lymphatic flow increased

D. Vascular hydrostatic pressure normal, Oncotic pressure decreased, lymphatic flow increased

65. A 45-year-old man presents with progressive shortness of breath over the past few years. He has no history of smoking and works as an accountant. Physical examination reveals diminished breath sounds and hyperresonance to percussion. A chest X-ray shows basilar emphysema. His liver function tests are mildly elevated. Which of the following properties correlate with the histopathology staining in this condition?

A. Periodic Acid Schiff - Positive, Diastase - Sensitive

B. Periodic Acid Schiff - Positive, Diastase - Resistant

C. Periodic Acid Schiff - Negative, Diastase - Sensitive

D. Periodic Acid Schiff - Negative, Diastase - Sensitive

66. Arrange the following in ascending order of their normal values:

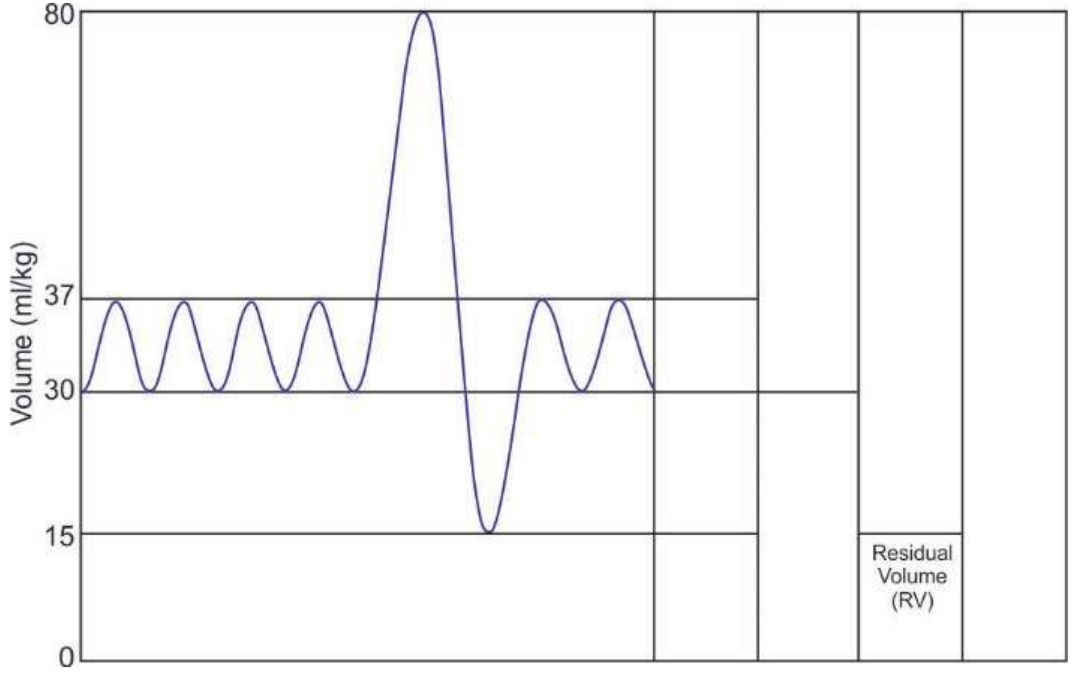
1. Vital capacity
2. Functional residual capacity (FRC)
3. Inspiratory capacity
4. Tidal volume

A. 1-2-3-4

B. 1-4-2-3

C. 4-3-1-2

D. 4-2-3-1



67. A 24-year-old male who is a known case of bronchial asthma presented for a routine follow-up. PFT was done earlier—his FEV1 was 70%, which improved to 83% after bronchodilator nebulization. He was already on MDI Albuterol daily. On questioning, it seems like he is being symptomatic for at least 2 times per week and is waking up in the nights due to symptoms at least once per week. On examination, there are scattered rhonchi. What should be done?

A. Add Fluticasone MDI two times a day

B. Shift to MDI Salmeterol two times a day

C. Add Prednisolone 10mg

D. Continue the current management

68. A 66-year-old man comes to the office due to increasing shortness of breath over the past 3 weeks. He has had a nonproductive cough for several months, which he attributes to allergies, but also notes a 9-kg unintentional weight loss over this time. He has a 50-pack-year smoking history. Chest x-ray is shown below. Which of the following would be the expected physical examination finding over the right lower chest?

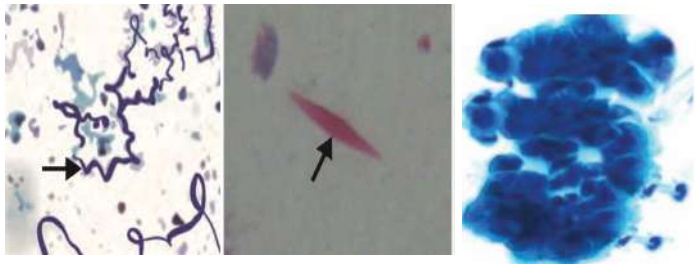
A. Bronchial breath sounds

B. Decreased tactile fremitus

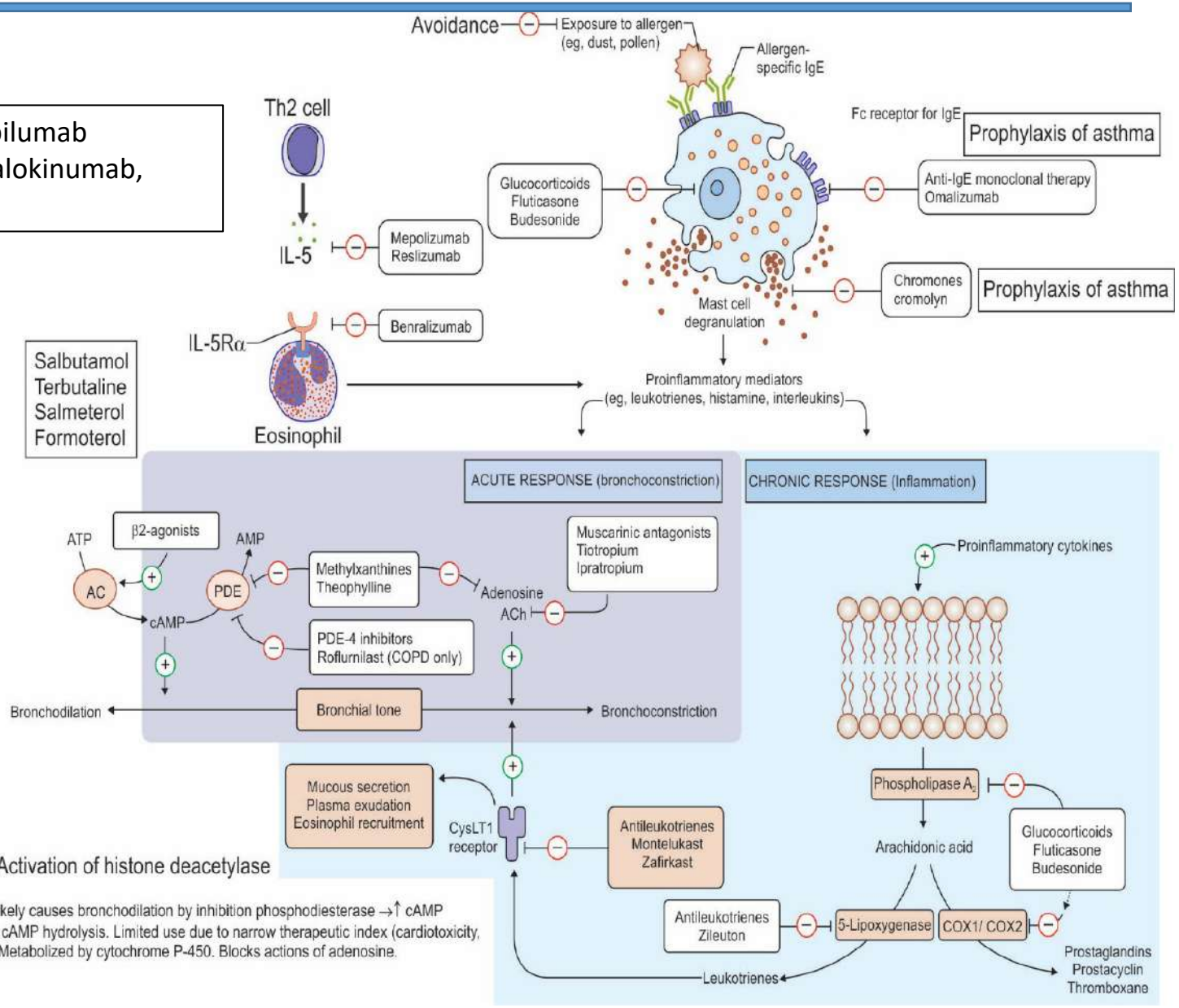
C. Fine inspiratory crackles

D. Increased resonance on percussion

Asthma



IL-4 inhibitor: Dupilumab
IL-13 inhibitor: Tralokinumab, Lebrikizumab



Step1,2: Symptoms <5d/week:
LD-ICS-Formoterol as needed
Step 3: Most days/ >1/week nighttime:
LD-ICS-Formoterol
Step 4: Low lung function:
MD-ICS-Formoterol
Step 5: Add LAMA + HD-ICS + Anti-IgE/IL5

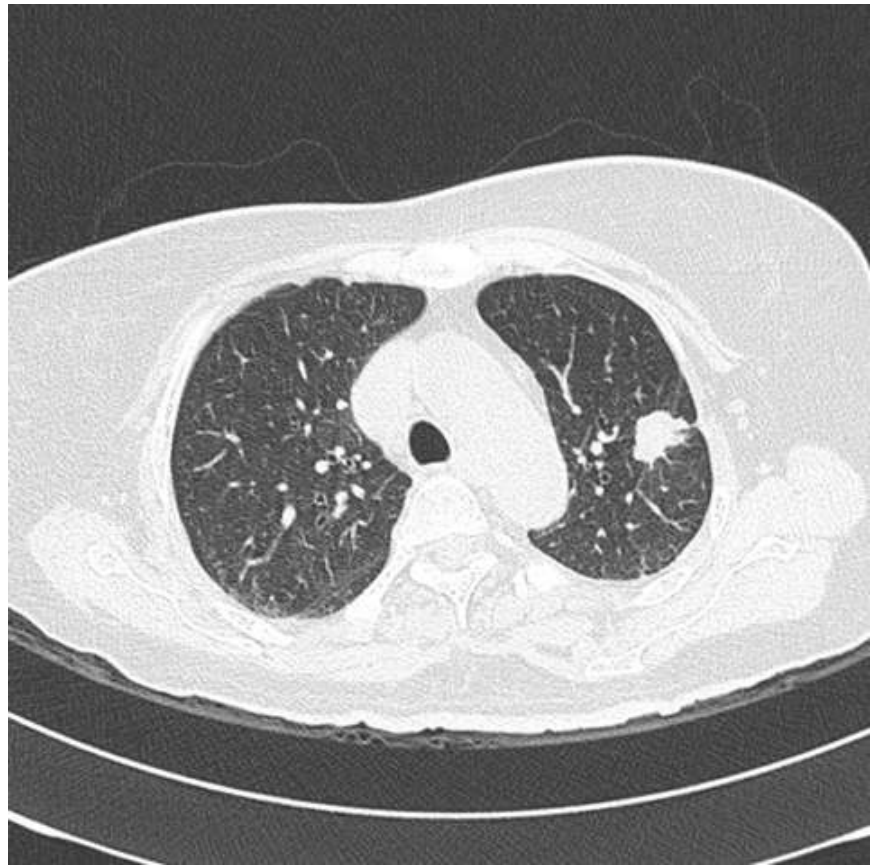
69. A 55-year-old chronic smoker presents with weight loss, hemoptysis and TTF-1 positivity. What is the possible diagnosis?

A. Squamous cell carcinoma

B. Small cell carcinoma

C. Adenocarcinoma

D. Large cell carcinoma



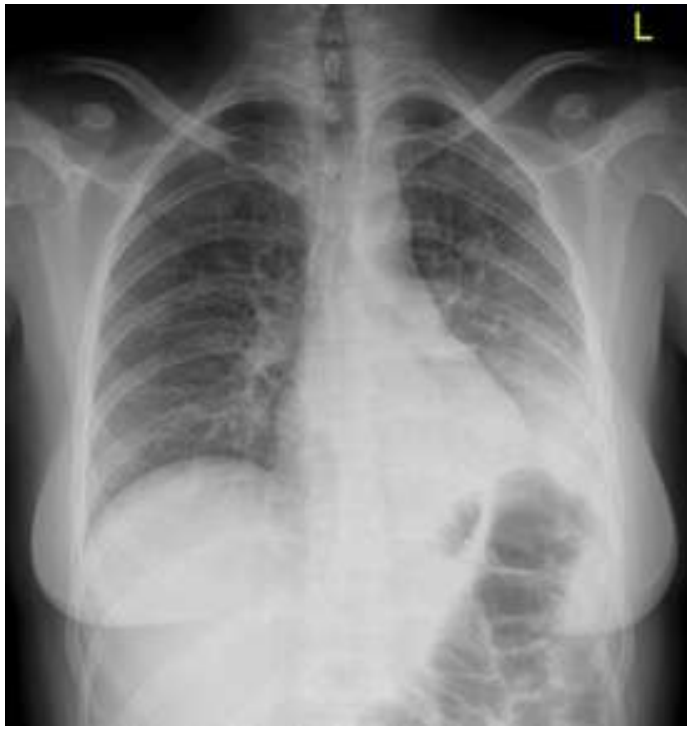
70. What is the route of dissemination of the following disease?

A. Air-borne
B. Feco-oral
C. Droplet
D. Hematogeneous

71. A 36-year-old woman is referred for evaluation because of hematuria and hemoptysis since 2 weeks. DLCO is 120% of normal with normal lung volumes. What is the likely diagnosis in this patient?

A. Pulmonary hypertension
B. Asthma
C. Wegener's granulomatosis
D. Microscopic polyangiitis

72. 64-year-old man comes to the emergency department due to 2 days of fever, chills, productive cough. The patient has a history of hypertension, hyperlipidemia, and type 2 diabetes mellitus. Oxygen saturation is 94% on room air when lying on his right side but drops to 89% when he lies on his left. Dullness to percussion and bronchial breath sounds are present on the left side. Imaging is shown here. Which of the following pathophysiologic mechanisms in the left lung is most responsible for the drop in oxygen saturation after the change in position?



A. Dead space ventilation

B. Effort dependent hypoventilation

C. Hypoxic vasoconstriction

D. Intrapulmonary shunting

73. A 38-year-old man comes to the OPD with reports of dyspnea on exertion and decreased exercise tolerance. His medical history is unremarkable, and he has no history of childhood asthma or cough. The patient has gained almost 30kg over the past 4 years due to a sedentary lifestyle. He currently has a BMI of 41 kg/m2. His respiratory rate is 22/min and pulse oximetry is 93% on room air at rest. Physical examination is notable for central obesity. Lungs are clear on auscultation bilaterally. Which of the following changes are most likely to be seen on pulmonary function testing in this patient?

A. FEV1 low, FVC low, RV normal, TLC low

B. FEV1 low, FVC low, RV high, TLC high

C. FEV1 high, FVC low, RV normal, TLC low

D. FEV1 low, FVC low, RV high, TLC low

74. All of the following are true about theophylline except:

A. PDE 4 inhibition: Bronchodilation
B. Deactivation of histone deacetylase: Anti-inflammatory
C. PDE 3 inhibition: Cardiac effects
D. Adenosine antagonism: Diuresis

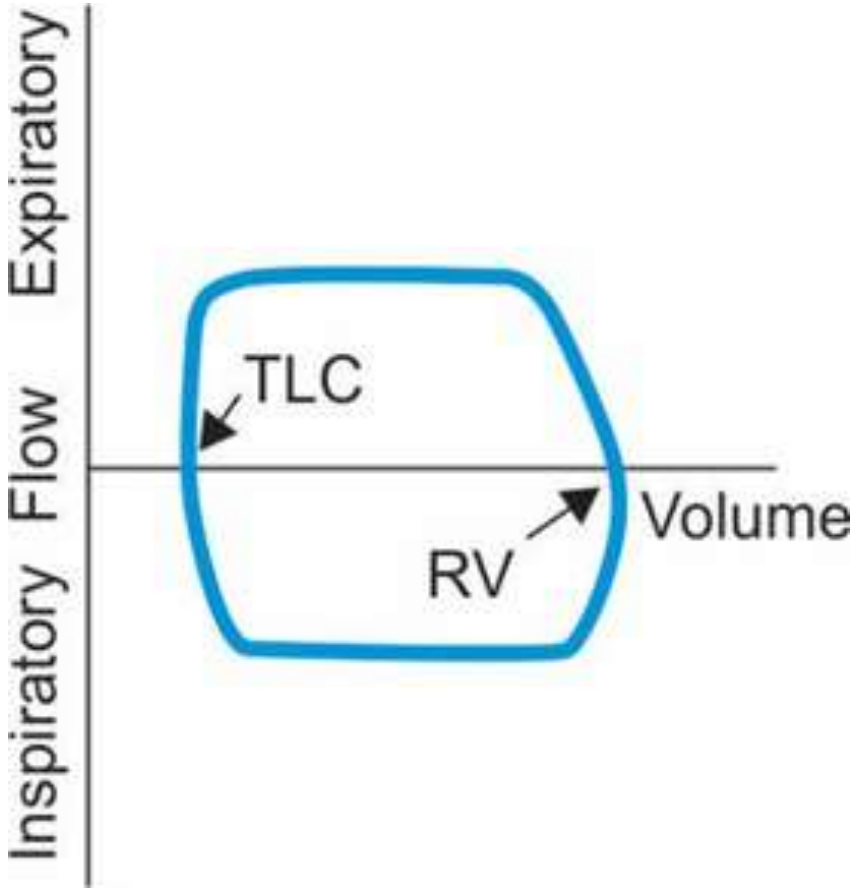
75. 65-year-old man presents with progressive dyspnoea & pulmonary function testing was done. FEV1 is 2.5 L (78% predicted), FVC is 4.00 L (94% predicted), and the FEV1/FVC ratio is 62.5%. The flow-volume curve is shown. What is the most likely cause?

A. Aspirated foreign body

B. U/L vocal cord paralysis

C. Subglottic stenosis

D. COPD



76. A 63-year-old woman is brought to the emergency department because of a 2-day history of severe epigastric pain and nausea. She has a 20-year history of alcohol use disorder. Nine hours after admission, she becomes increasingly dyspneic and tachypneic. Pulse oximetry on supplemental oxygen shows an oxygen saturation of 81%. Physical examination shows diffuse lung crackles, marked epigastric tenderness, and a periumbilical hematoma. Laboratory studies show normal brain natriuretic peptide. An x-ray of the chest shows bilateral opacities in the lower lung fields. Which of the following pathomechanisms best explains this patient's pulmonary findings?

A. Alveolocapillary membrane leakage

B. Intrapulmonary left-to-right shunt

C. Increased production of surfactant

D. Embolic obstruction of pulmonary arteries

77. A woman came in with complaints of excessive daytime sleepiness and difficulties in concentration and memory persisting for a year. During the examination, her Body Mass Index (BMI) was measured at 43 kg/m2, and her blood pressure (BP) was recorded as 170/98 mmHg. Arterial Blood Gas (ABG) analysis was performed while she was awake, and the results are as follows. Based on the provided information, what is the probable diagnosis?
PaO_2 – 70 mmHg
$PaCO_2$ – 53 mmHg
HCO_3^- – 33 mmHg

A. Obesity hypoventilation syndrome
B. Obstructive sleep apnea
C. Central sleep apnea
D. Narcolepsy

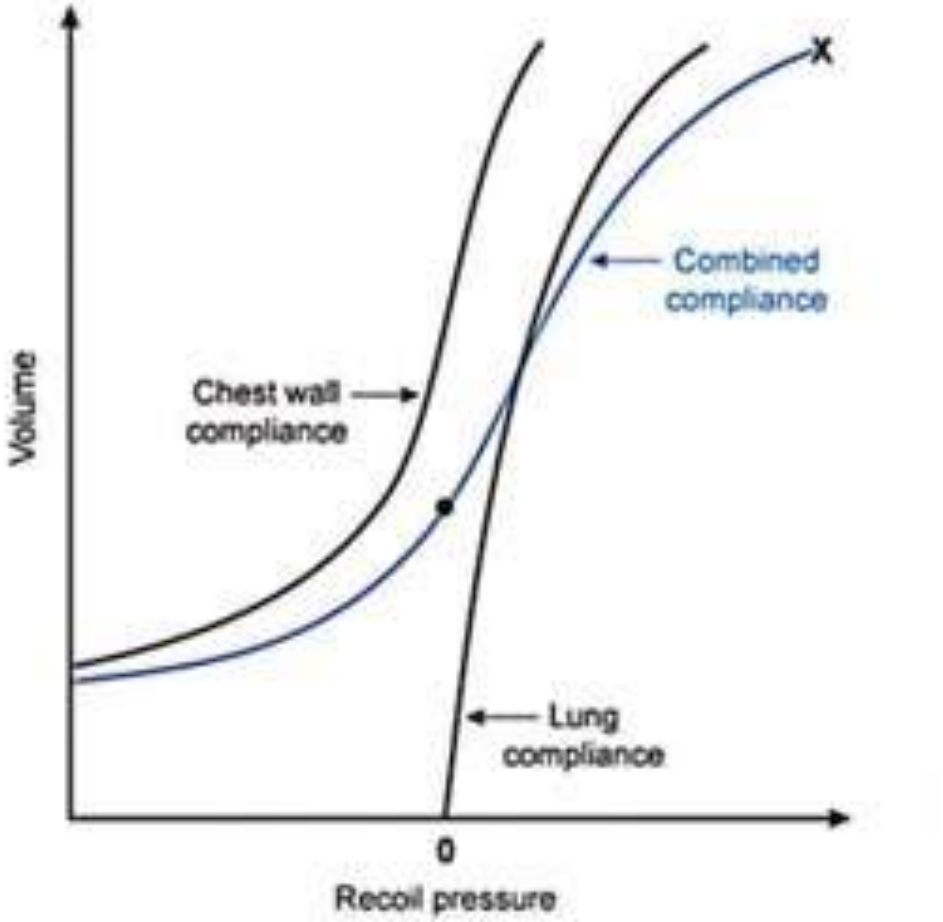
78. The combined compliance of the lung and chest wall of a healthy individual is measured and plotted as shown below. It is noted that the intrapleural pressure at the end of maximal inspiration is -8 cm H20 (marked x). Which of the following is the best estimate of the intrapleural pressure at the point marked by the black dot?

A. +10 cm H2O

B. + 5 cm H2O

C. -5cm H20

D. 0cm H20



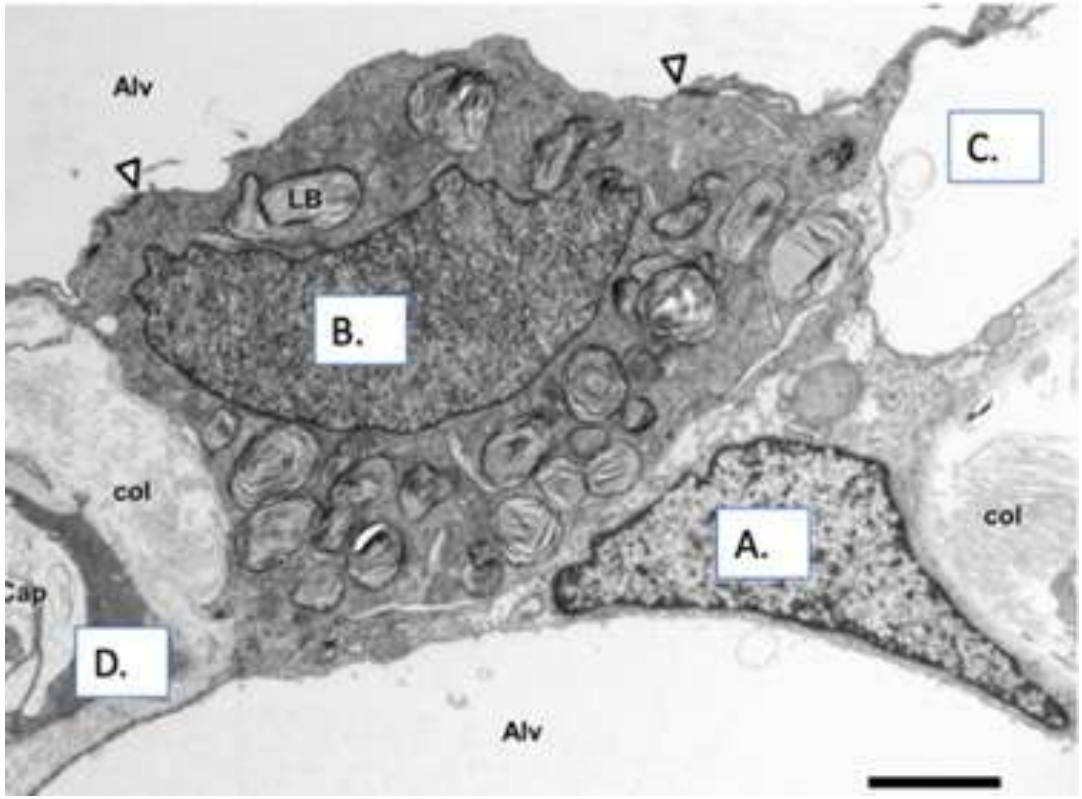
79. Physicians conduct a series of animal experiments to determine pulmonary tissue regeneration capacity. During one of the experiments, lung alveoli are exposed to NO2 and massive necrosis of the epithelial lining ensues. Histologic examination of the injured tissues a month later shows partial recovery of the alveolar epithelial lining. This regenerated tissue is most likely derived from which of the following cells?

A. A

B. B

C. C

D. D



80. A 70-year-old woman has been enrolled in a longitudinal research study on aging for the last 30 years. Medical history is significant for osteoporosis; she has developed moderate kyphosis due to gradual loss of vertebral body height. She is otherwise active and healthy with no additional medical issues. She has never smoked. Compared to her physiology testing done years ago, which of the following changes is most consistent with normal aging in 1) lung compliance, 2) total respiratory system compliance and 3) physiologic dead space respectively?

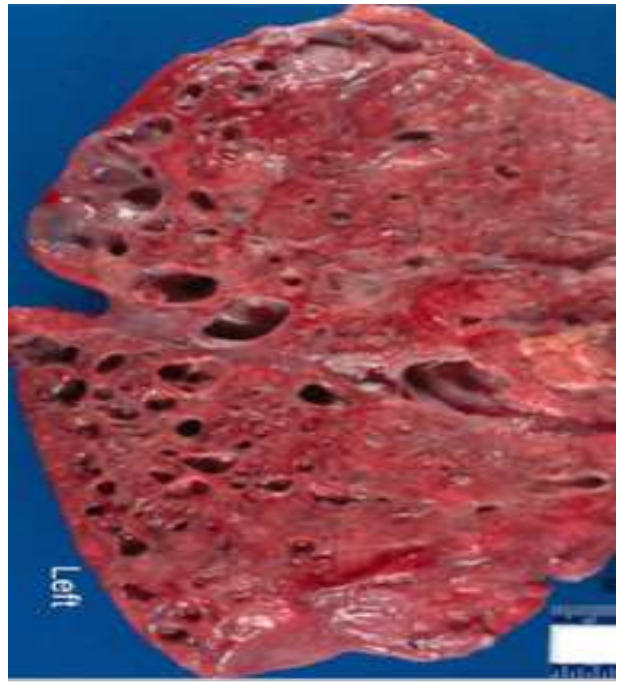
A. Increase, decrease, increase

B. Increase, increase, increase

C. Increase, unchanged, decrease

D. Decrease, decrease, increase

81. A 17-year-old girl is brought to the emergency department due to hemoptysis and severe respiratory distress. The patient has been on several oral antibiotics for pneumonia over the past week and has required numerous similar treatments in the past. Pulmonary examination reveals diffusely reduced air flow, rales, and intercostal retractions. Despite aggressive management, the patient ultimately expires. An autopsy is performed and a gross lung specimen is shown in the image below:
Which of the following is the most likely etiology of this patient's hemoptysis?



A. Bleeding from hypertrophied bronchial arteries
B. Blood loss from hypertrophied pulmonary arteries
C. Diffuse alveolar hemorrhage due to vasculitis
D. Formation of a fistula between the tracheobronchial tree and aorta

82. A 53-year-old woman underwent hip replacement surgery. A week after the surgery, the patient developed swelling of the legs associated with pain on palpation. Her heart rate is 70 beats per min. There is no history of hemoptysis or significant weight loss. There is no previous history of pulmonary embolism. What is the risk of developing pulmonary embolism in the patient based on Well's score?

A. Low

B. High

C. Moderate

D. Cannot comment without d-dimer values

Clinical Feature	Points
Active cancer (treatment ongoing or within last 6 months)	+1
Paralysis, paresis, or recent plaster immobilization of the lower extremities	+1
Recently bedridden for ≥3 days or major surgery within 12 weeks	+1
Localized tenderness along the deep venous system	+1
Entire leg swollen	+1
Calf swelling ≥3 cm larger than the asymptomatic side (measured 10 cm below tibial tuberosity)	+1
Pitting edema confined to symptomatic leg	+1
Collateral superficial veins (non-varicose)	+1
Previous documented DVT	+1
Alternative diagnosis at least as likely as DVT	-2

Clinical Variable	Points
Clinical signs and symptoms of deep vein thrombosis (DVT)	3.0
PE is the most likely diagnosis or equally likely	3.0
Heart rate > 100 beats per minute	1.5
Immobilization (≥3 days) or surgery in the past 4 weeks	1.5
Previous DVT or PE	1.5
Hemoptysis	1.0
Malignancy (currently or treated in the last 6 months)	1.0

Interpretation
- Low probability: ≤0 points
- Moderate probability: 1-2 points
- High probability: ≥3 points

- PE unlikely: ≤4 points
- PE likely: >4 points

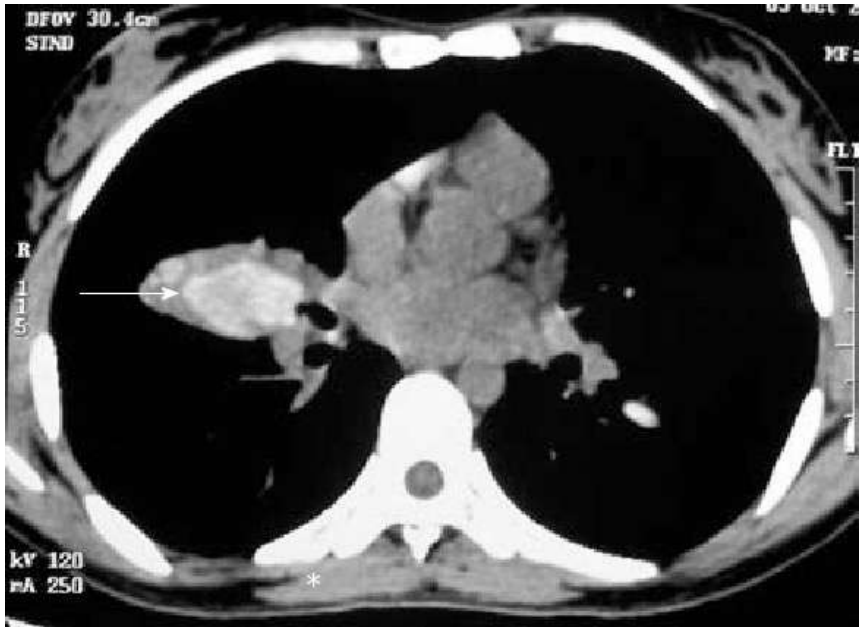
83. A 34-year-old woman comes to the office for evaluation of recurrent transient pulmonary infiltrates. The patient has a history of bronchial asthma and has had several exacerbations over the past few years, particularly during the winter months. Her medications include albuterol as needed and medium-dose inhaled glucocorticoids. Complete blood count shows eosinophilia. A chest CT scan reveals proximal bronchiectasis. This patient's condition is most likely related to colonization with which of the following?

A. Adenovirus

B. Aspergillus fumigatus

C. Strongyloides

D. Paragonimus


DFOV 30.4cm
STND
R
kV 120
mA 250

84. A 55-year-old woman with a history of Crohn disease is admitted to the hospital due to perforated appendicitis. The patient quickly develops respiratory difficulty, and acute respiratory distress syndrome is diagnosed. She is intubated and mechanically ventilated with positive pressure ventilation. She is intermittently placed in the prone position while mechanically ventilated. Which of the following is most likely to occur due to this position change?

A. Alveolar hyperdistention

B. Decreased cardiac output

C. Decreased functional residual capacity

D. Improved ventilation-perfusion matching

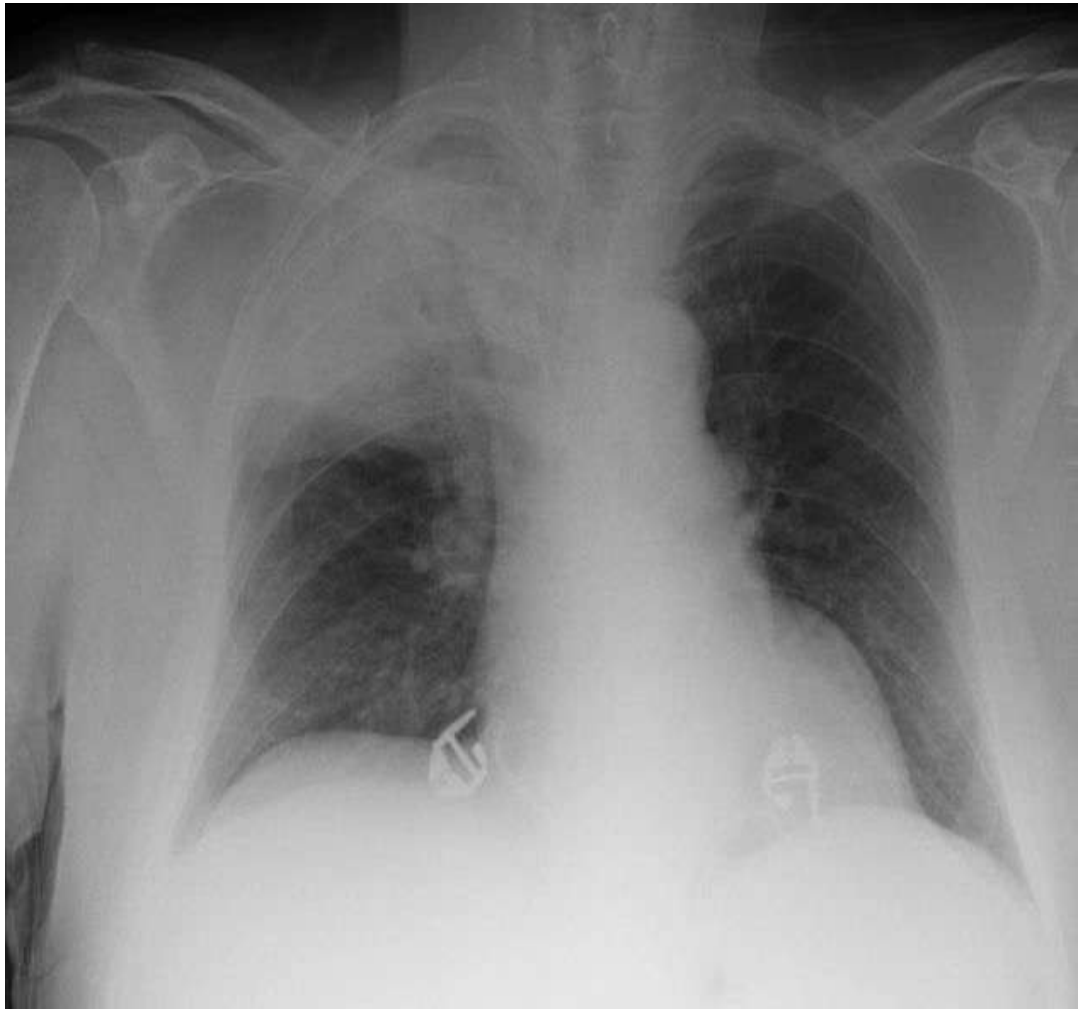
85. A 15-year-old girl is admitted for fever, cough, and malaise for the past two days. She has no history of sick contacts, and all her immunizations are up to date. Her leukocyte count is 21,000/mm with 7% band forms. Upright chest x-ray findings are shown in the image below. Which of the following is the most likely location of the pathologic process in this patient?

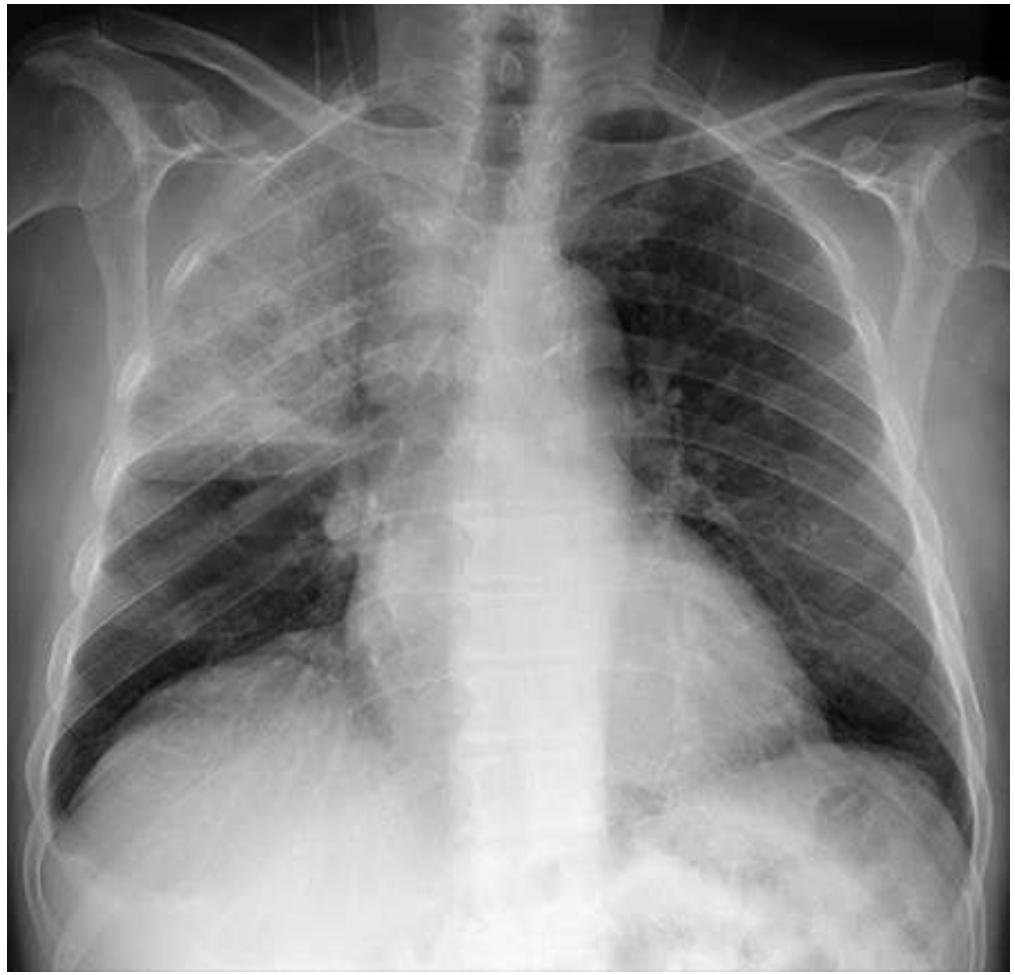
A. Left lower lung lobe

B. Left pleural space

C. Right middle lung lobe

D. Right upper lobe





86. 60-year-old man is brought to the emergency department following a motor vehicle collision. He is comatose and unable to provide any information. Multiple blunt injuries of the torso and abdomen are present. Review of the patient's medical record reveals a history of right upper lobe cavitary tuberculosis that was effectively treated several years ago. A representative slice of the chest CT, shown in the image below, redemonstrates his known right upper lobe cavity. Which of the following best describes this patient's condition?

A. Allergic inflammation

B. Chronic colonization

C. Invasive malignancy

D. Heterotopic calcification

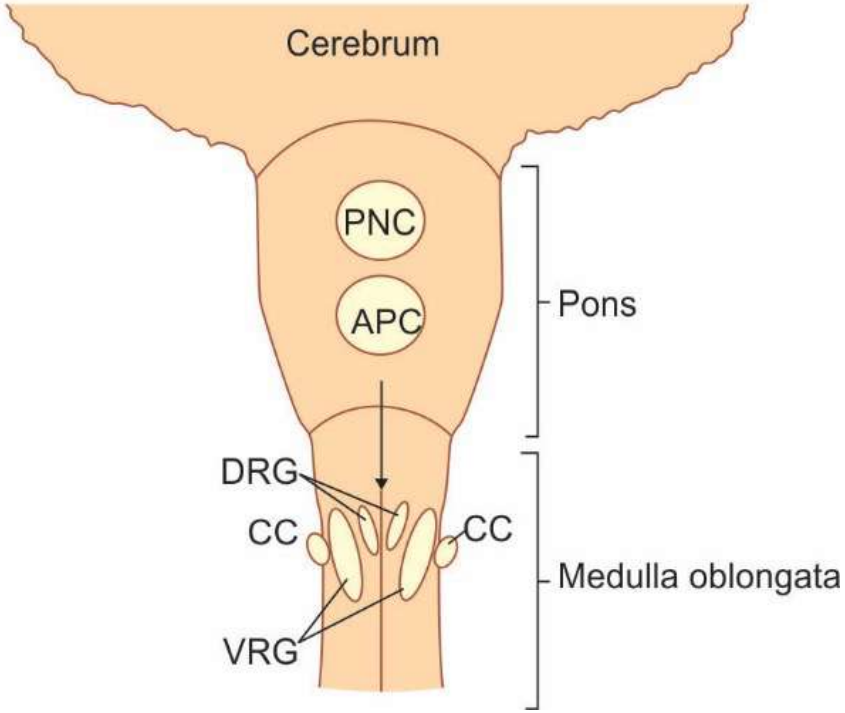
87. A 16-year-old girl with a head injury from a car accident was brought to the emergency department by ambulance. On exam, she had a respiratory rate of 8 breaths per minute, and a prolonged duration of inhalation was noted. Damage to which of the following groups of neurons in the brainstem is most likely responsible for this abnormal respiration?

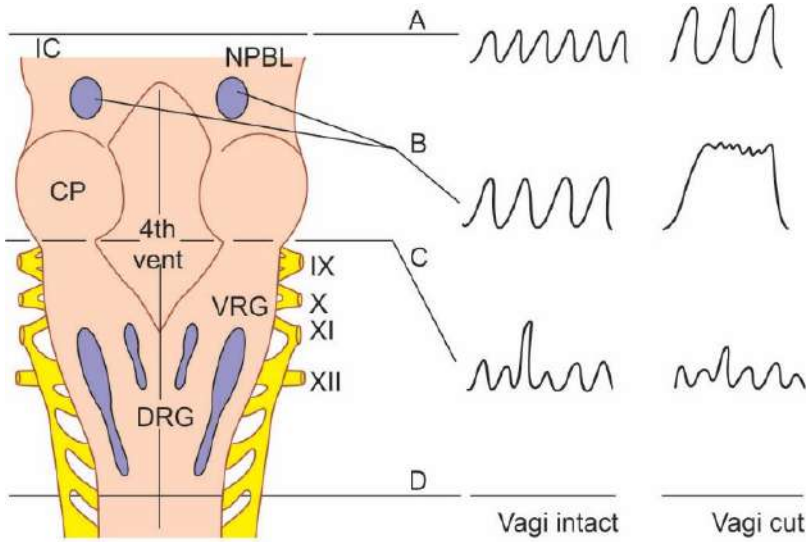
A. Dorsal respiratory group

B. Nucleus tractus solitarius

C. Pneumotaxic center

D. Vasomotor center





Transection	Effect
ABOVE PONS	X intact: X cut:
MID-PONS	X intact: X cut:
PONS-MEDULLA	
BELOW MEDULLA	

88. A 76-year-old man is brought to the emergency department after being involved in a motor vehicle collision. He is found to have a laceration of the spleen and is taken for emergent laparotomy. During surgery, the patient goes into cardiac arrest and dies, despite aggressive resuscitation efforts. Autopsy examination is performed and shows areas of thickening inside the chest wall as shown below. The lung examination shows fibrosis of the lower lobes. Pathologic examination of these fibrotic areas is most likely to reveal which of the following findings?

A. Alveolar hyaline membranes

B. Birefringent silicate particles

C. Carbon-laden macrophages

D. Ferruginous bodies

89. A 58-year-old man comes to the OPD due to exertional dyspnea and cough. His symptoms started 6 months ago and have progressively worsened. Other medical conditions include peptic ulcer disease, and rheumatoid arthritis. The patient had taken medication for rheumatoid arthritis for many years but stopped a year ago, as the drug failed to improve his worsening hand arthritis. Chest x-ray is shown in the image below. Which of the following is the most likely explanation for this patient's pulmonary symptoms?

A. Bilateral atelectasis

B. Left ventricular failure

C. Obstructive lung disease

D. Pulmonary fibrosis

90. A 1-hour-old boy born at 29 weeks gestation via cesarean delivery due to maternal preeclampsia with severe features, is admitted to the neonatal intensive care unit for respiratory failure. Which of the following best describes the condition of this patient's lungs compared to a normal neonate?

A. Compliance low, FRC high, Airway resistance high

B. Compliance low, FRC low, Airway resistance high

C. Compliance high, FRC high, Airway resistance high

D. Compliance high, FRC high, Airway resistance low

91. A 23-year-old woman with asthma is brought to the emergency department because of shortness of breath and wheezing for 20 minutes. She is unable to speak more than a few words at a time. Treatment with high-dose continuous inhaled albuterol is begun. This patient is at increased risk for which of the following adverse effects?

A. Miosis

B. Hypoglycemia

C. Hypokalemia

D. Bradycardia

92. A 17-year-old girl presents to the clinic with headache, fatigue, fever, and a persistent dry cough. She reports that the symptoms began 2 weeks ago during a school trip. A chest X-ray reveals diffuse interstitial infiltrates. Laboratory testing shows hemolytic anemia with elevated reticulocyte count. Blood samples drawn into anticoagulated tubes are stored on ice, and visible clumping is observed when cold. Which of the following pathogens is the most likely cause of this patient's condition?

A. Legionella pneumophila

B. Klebsiella pneumoniae

C. Haemophilus influenzae

D. Mycoplasma pneumoniae

93. Which of the following statements about Ciclesonide is incorrect?

A. Oral candidiasis is common with its use.

B. It has fewer side effects than other inhalational corticosteroids.

C. It is a prodrug activated by bronchial esterase.

D. It has comparable efficacy to other inhalational corticosteroids.

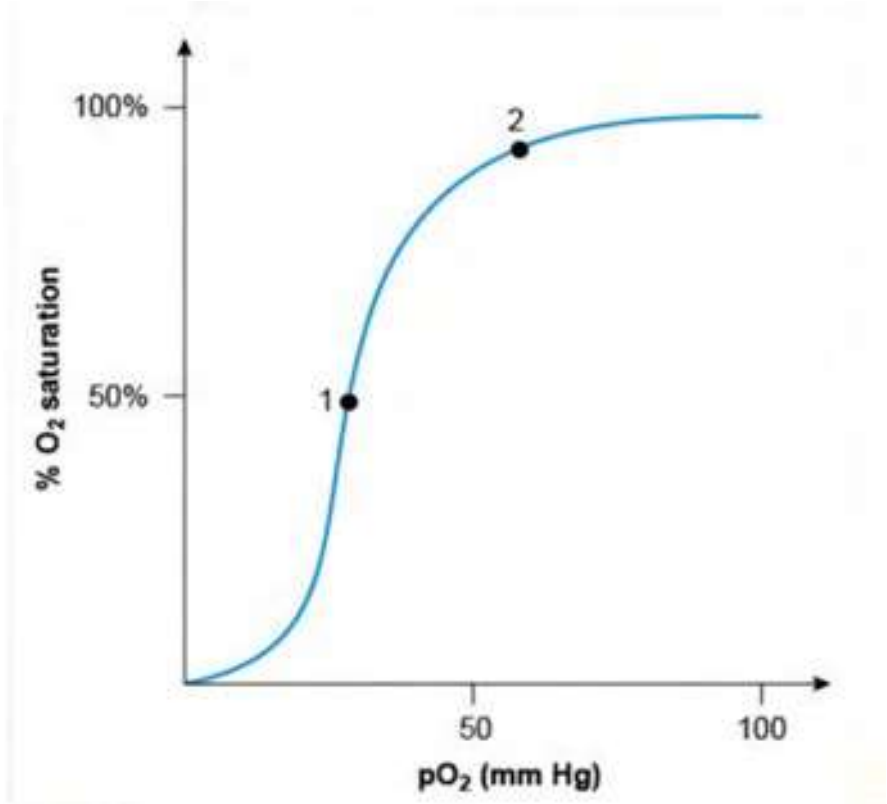
94. Physiologists studying hemoglobin function in patients with respiratory disorders are evaluating changes associated with oxygen loading and unloading. During the transition from point 1 to point 2 on the graph shown below, hemoglobin molecules are most likely to release which of the following?

A. Chloride

B. Oxygen

C. Phosphate

D. Protons



95. All are advantages of the Hering-Breuer reflex, except:

A. Prevents overinflation during deep inspiration
B. Promotes high lung volumes for efficient gas exchange
C. Prevents atelectasis during expiration
D. Reduces unnecessary energy expenditure

1. **Overstretched lungs**
2. **Stretch receptors**
   (Visceral pleura, bronchi, alveoli)
   ↓ *Impulses through vagus nerve*
3. **Respiratory center**
   (Inhibits inspiratory center)
4. **Inspiration is stopped**

96. All of the following increase lung compliance, except:

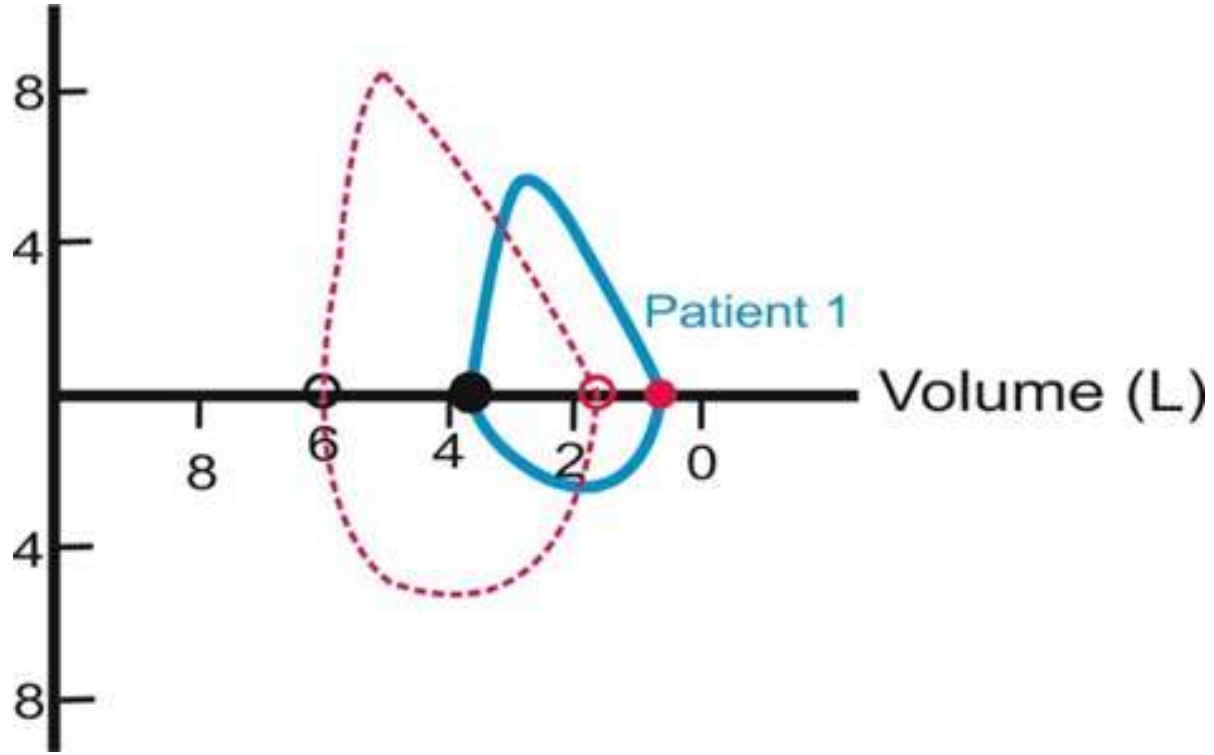
A. Pulmonary emphysema
B. Normal aging
C. Inspiration
D. Saline-filled lung inflation

97. For MDR-RR TB, what is the indication of short course bedaquiline?

A. Resistance to rifampicin and sensitive to fluoroquinolones
B. Extrapulmonary TB like tubercular meningitis
C. Mutation only to INH A and kat G gene
D. Rifampicin sensitive

98. The flow volume curve after spirometry in patient 1 is given below. the most likely diagnosis in this patient is?

A. Vocal cord palsy
B. Bronchial asthma
C. Morbid obesity
D. Emphysema



99. Her blood pressure is 86/50 mm Hg and pulse is 120/min and regular. Pulse oximetry shows 80% on room air. She is diaphoretic and tachypneic. Jugular venous pressure is 13 cm H2O. Further workup in this patient would most likely show which of the following?

A. Cannon a waves on JVP

B. Raised troponin levels

C. Mediastinal widening

D. Filling defect in PA on CTPA

100. A 60-year-old man with a 35 pack-year history of smoking presented for a routine check-up. His brother was diagnosed with lung cancer at a similar age. Which of the following would be preferred to screen him for lung cancer?

A. High resolution CT

B. Chest X-Ray

C. CECT

D. Low dose CT

Thank You

Cerebellum
Get the balance right

Integrated – Respiratory-Endocrine 03-09-2025

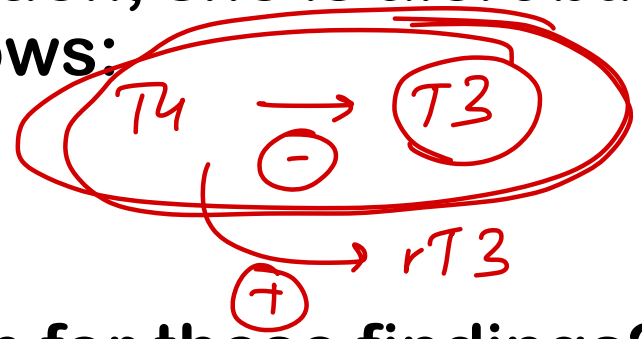
Dr. Zainab Vora

1. A 45-year-old woman is admitted to the intensive care unit due to severe sepsis caused by a ruptured abdominal abscess. She has been receiving high-dose intravenous corticosteroids for hypotension management over the past three days. On examination, she is alert but appears critically ill. Laboratory results are as follows:

TSH: 1.2 µU/mL (normal range: 0.4–4.0 µU/mL)

Free T4: 1.1 ng/dL (normal range: 0.8–1.8 ng/dL)

Free T3: 0.6 pg/mL (normal range: 2.0–4.4 pg/mL)



Which of the following is the most likely explanation for these findings?

A. Chronic lymphocytic thyroiditis

B. Drug-induced hypothyroidism

C. Subclinical hypothyroidism

D. Euthyroid sick syndrome

TSH ↑ — T3 ↓ T4 ↑ N

TSH ↑

2. A 40-year-old woman presents with a 3-month history of fatigue, weight loss, salt craving, and dizziness upon standing. She has no significant medical history and takes no medications. Her mother was recently diagnosed with hypothyroidism. On examination, her blood pressure is 100/70 mm Hg supine and 80/50 mm Hg standing. Laboratory results reveal the following:

Sodium 129 meq/l
Potassium 5.9 meq/l
Chloride 100 meq/l
Bicarbonate 21 meq/l
Creatinine 1.4 mg/dl
BUN 38mg/dl

Which of the following in circulating hormone levels are expected in this patient?

A. Cortisol low, Aldosterone low, ADH high, Norepinephrine high
B. Cortisol normal, Aldosterone low, ADH normal, Norepinephrine normal
C. Cortisol low, Aldosterone low, ADH normal, Norepinephrine normal
D. Cortisol high, Aldosterone low, ADH high, Norepinephrine high

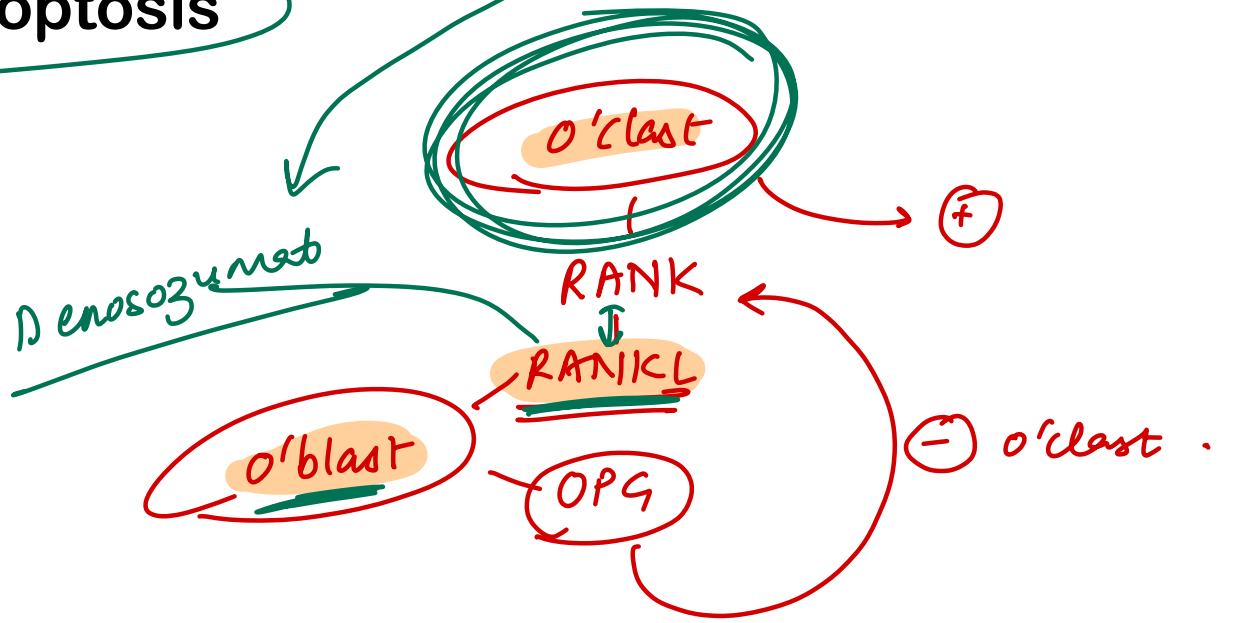
3. A 68-year-old postmenopausal woman presents for evaluation of her low bone density noted during a routine screening. She is started on oral risedronate to address her bone loss. What is the primary mechanism through which this medication improves bone density?

A. Stimulation of osteoblast activity

B. Decreased stimulation of RANK ligand (RANKL)

C. Increased intestinal calcium absorption

D. Increased osteoclast apoptosis



4. A 28-year-old woman comes to the OPD due to a 4-month history of amenorrhea. She has also had a whitish nipple discharge from both breasts. The patient has taken several pregnancy tests at home that have been negative. She has also had increased fatigue, depressed mood, and weight gain over this time. The patient has had no headaches or vision changes. On physical examination, there is thinning of the outer third of the eyebrows. The thyroid is enlarged and nontender to palpation. The skin appears dry. Her thyroxine (T4) levels are low, TSH is elevated, and antithyroid peroxidase antibodies are positive. Prolactin levels are 30 ng/ml. Which of the following is the most likely mechanism causing this patient's elevated prolactin level?

A. Activation of lactotrophs by antithyroid peroxidase antibodies

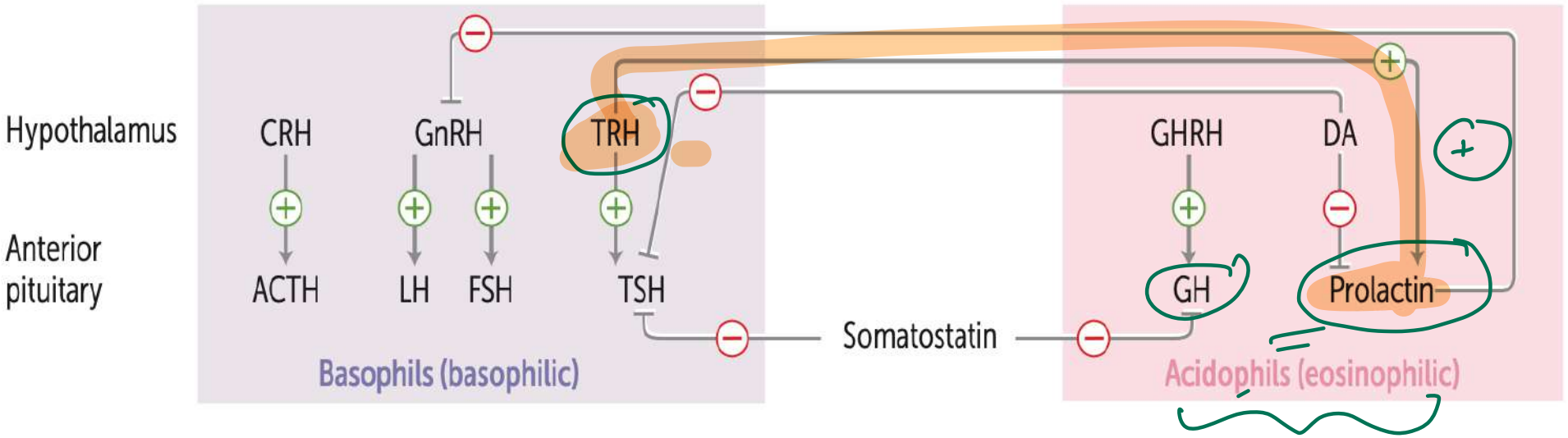
B. Binding of dopamine receptors by antithyroid peroxidase antibodies

C. Inhibition of dopamine release by TSH

D. Stimulation of lactotrophs by thyrotropin-releasing hormone (TRH)

Drug / CKD / Hypothyroidism / Pregn

D2 (−)


Hypothalamus
Anterior pituitary
CRH
GnRH
TRH
GHRH
DA
ACTH
LH
FSH
TSH
GH
Prolactin
Somatostatin
Basophils (basophilic)
Acidophils (eosinophilic)

5. A 45-year-old woman comes to the OPD for follow-up of type 2 diabetes mellitus. The patient is taking the maximum dose of metformin. Her hemoglobinA1c is 7.7%. Blood pressure is 134/86 mm Hg, and pulse is 72/min. BMI is 33 kg/m2. Family history is significant for osteoporosis in mother. The results of other laboratory tests are normal. After discussion, a sodium-glucose cotransporter-2 inhibitor is added to the patient's drug regimen. Which of the following is the most likely additional effect of the newly prescribed medication?

A. Decreased blood pressure ↓ intravasc vol ↓ CV mortality

B. Increased bone mineral density XX

C. Increased fluid retention XX

D. Increased postprandial satiety XX

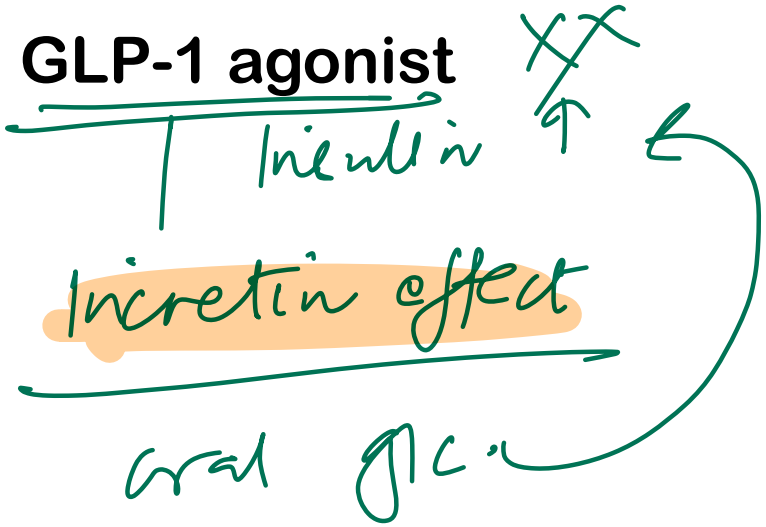
6. A 45-year-old man is brought to the emergency department after being found unconscious at home. He has a history of diabetes mellitus and reports recurrent episodes of hypoglycemia. His wife mentions that he has been trying a new "natural" supplement along with his prescribed insulin. On arrival, his blood glucose is 45 mg/dL. Laboratory tests reveal high serum C-peptide levels. Which of the following is the most likely cause of his hypoglycemia?

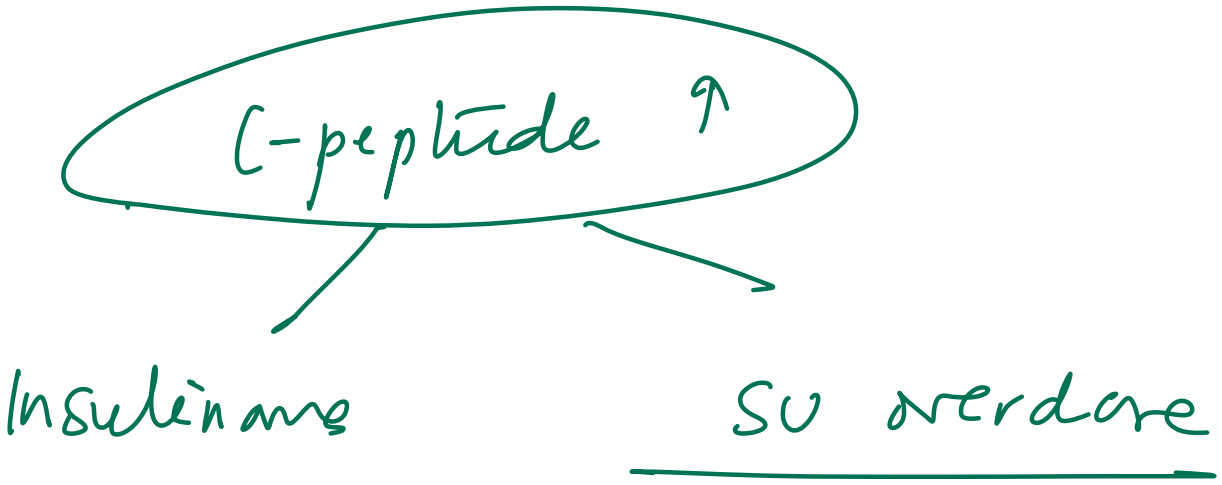
A. Sulfonylurea overdose

B. Exogenous insulin in supplement

C. Insulinoma

D. GLP-1 agonist





7. A study is conducted to assess the effect of parathyroid hormone (PTH) on bone remodeling. Half of the study subjects receive intermittent PTH injections and the other half receive a continuous infusion of PTH. The results show that the effects on bone metabolism of intermittent PTH injections are different from those of continuous infusion. Which of the following is most likely to be the predominant bone effect with intermittent injections?

A. Increased activity of RANKL
B. Increased levels of osteoprotegerin
C. Osteoclast apoptosis
D. Stimulation of osteoblast activity

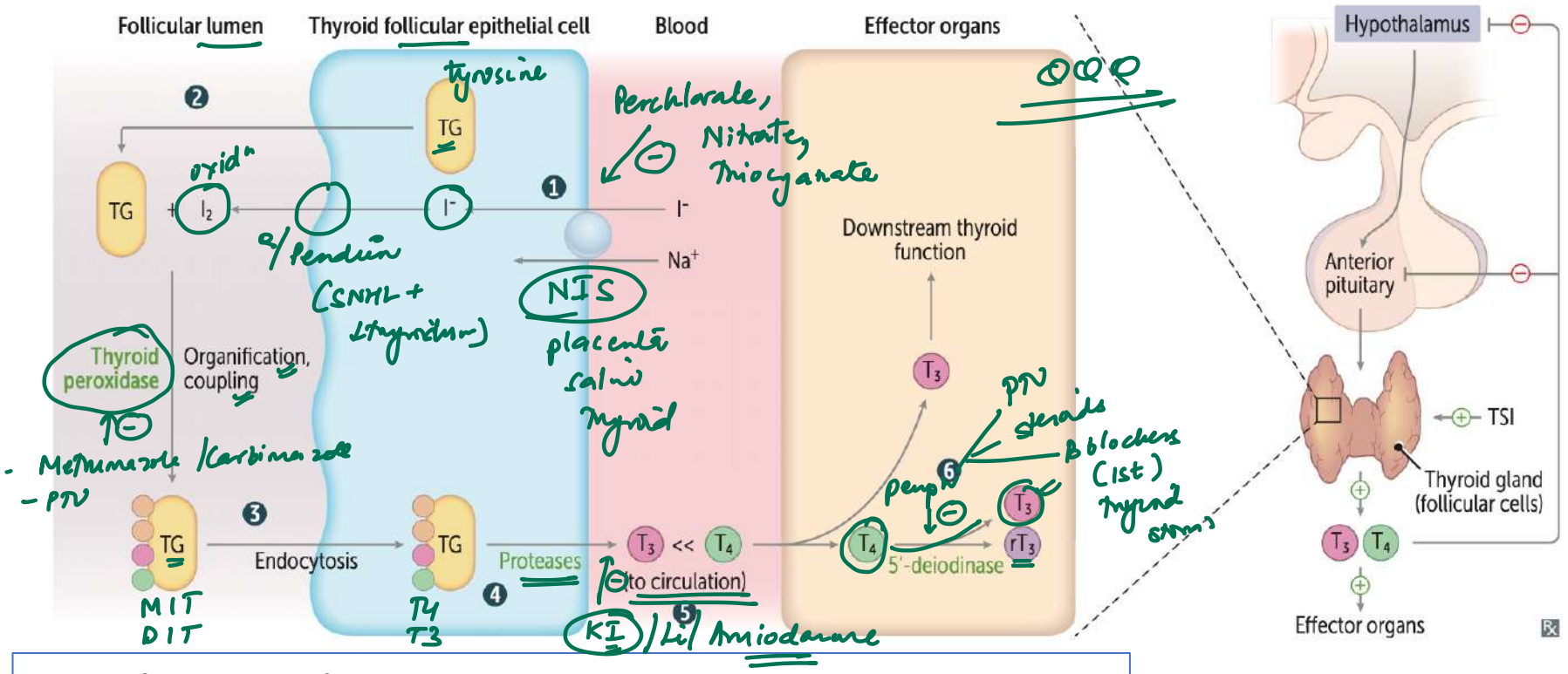
8. A 35-year-old woman presents to the clinic with complaints of weight loss, heat intolerance, palpitations, and insomnia over the past 4 months. Her vital signs are blood pressure 140/85 mm Hg, pulse 110/min, and regular. On examination, the thyroid gland is diffusely enlarged and non-tender. Laboratory studies reveal decreased serum TSH and elevated free thyroxine (T4) levels. Methimazole is initiated as treatment. Which of the following processes is most likely inhibited by this treatment?

A. Iodide uptake by the thyroid gland

B. Coupling of iodotyrosine

C. Peripheral conversion of T4 to T3

D. Colloid production



- **Brain maturation**
- **Bone growth** (synergism with GH and IGF-1)
- **β-adrenergic effects**: ↑ β_1 receptors in heart → ↑ CO, HR, SV, contractility; β-blockers alleviate adrenergic symptoms in thyrotoxicosis
- **Basal metabolic rate ↑** (via ↑ Na^+/K^+-ATPase → ↑ O_2 consumption, RR, body temperature)
- **Blood sugar** (↑ glycogenolysis, gluconeogenesis)
- **Break down lipids** (↑ lipolysis)
- Stimulates surfactant synthesis in **Babies**

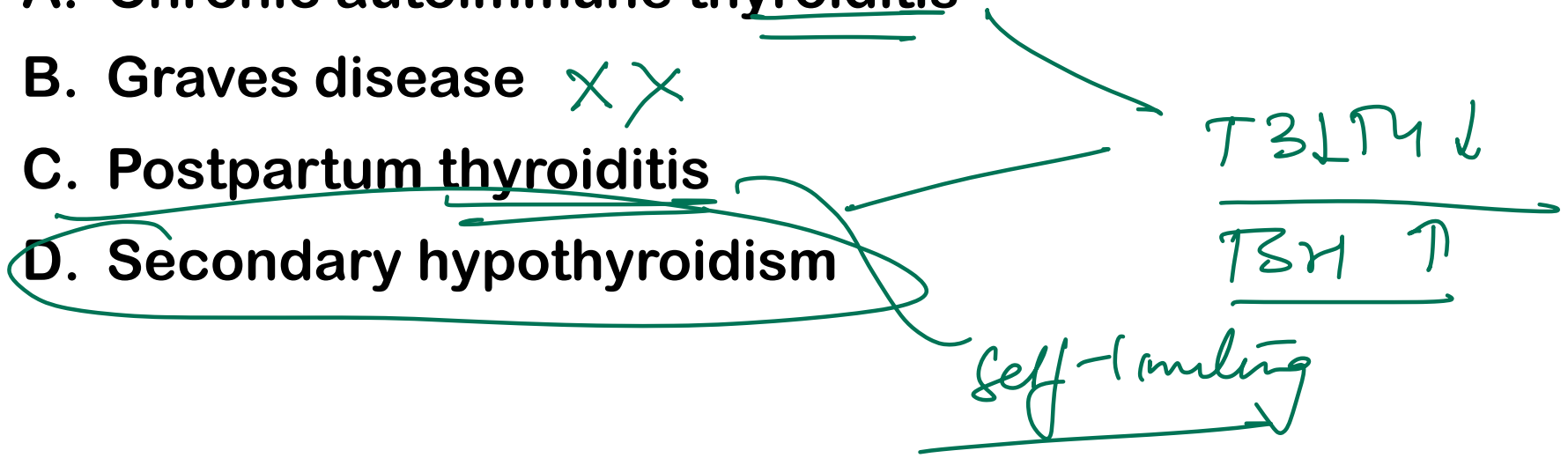
9. A 29-year-old woman comes to the OPD due to hair loss. The patient has fatigue and decreased libido, and her menstrual cycles have not returned since her delivery 8 months ago. The thyroid is nontender. Laboratory results show decreased serum TSH and free thyroxine (T4) levels. Which of the following is the most likely diagnosis in this patient?

A. Chronic autoimmune thyroiditis

B. Graves disease

C. Postpartum thyroiditis

D. Secondary hypothyroidism



10. A 31-year-old woman comes to the AIIMS OPD due to a 6.8-kg weight gain over the last few months. The patient also has experienced weakness and cannot lift weights hat she was able to lift before the onset of her symptoms. On examination, blood pressure is 160/100 mm Hg and pulse is 88/min and regular. Neurologic examination shows proximal muscle weakness. Dark terminal hair is present on the lower abdomen. Fasting laboratory results are as follows:

Sodium-142 mEq/L
Potassium-3.6 mEq/L
Chloride-98 mEq/L
Bicarbonate-28 mEq/L
Calcium-9.2 mg/dL
TSH-2.2 mIU/L (N-0.5 to 5.0 mIU/L)

Which of the following is the most appropriate next step in evaluating this patient's condition?

A. Early-morning cortisol level
B. Overnight low-dose dexamethasone suppression test
C. Serum ACTH level
D. Cosyntropin test

11. Many GPCR receptors act via an increase in cAMP. The steps involved in this mechanism are given below. Which of the following is the correct sequence of events in the cAMP signal transduction pathway?

1. Activation of adenylate cyclase
2. Activation of PKA
3. Conversion of ATP to cAMP
4. Phosphorylation of target proteins

A. 1, 2, 3 and 4

B. 1, 3, 2 and 4

C. 1, 3, 4 and 2

D. 4, 2, 1 and 3

2-4

12. A 40-year-old smoker who is a known case of hypertension was on enalapril and hydrochlorothiazide. He had an episode of hemoptysis and on evaluation, he was found to have bronchogenic carcinoma with brain metastasis. His lab values were Na = 124mg / d*L creatinine= 2.8 mg%, blood sugar= 112 mg/dL, blood urea= 24 mg/dL, serum osmolality= 255 mOsm, urine osmolality= 120 mOsm, 24-hour urinary sodium= 110, and BP = 150/90 mmHg. Which of the following is the most probable diagnosis of the low sodium values in him?

A. SIADH

B. Diuretic induced hyponatremia

C. Diabetes insipidus

D. Pseudohyponatremia → ↑ lipidemia / ↑ glycemia

E. Cerebral salt wasting - Hypovolemic ↓NaT

↓ Na

N UNa = 40

Schwartz – SIADH

- Hyponatremia: Serum sodium less than 135 mmol/L.
- Hypo-osmolality: Serum osmolality less than 275 mOsm/kg.
- Urine osmolality: Elevated above 100 mOsm/kg despite hyponatremia.
- Urine sodium concentration: Greater than 40 mmol/L with normal salt intake.
- Clinical euvolemia: No signs of volume depletion (no orthostatic hypotension, tachycardia, dry mucous membranes) and no signs of fluid overload (no edema, ascites, or heart failure).
- Exclusion of other causes: Normal adrenal and thyroid function, no recent diuretic use, no renal failure, and no conditions causing hypovolemia or hypervolemia.
- Correction with fluid restriction: Hyponatremia improves with fluid restriction.

Hypothyroidism e/o ad →

↓ Na^+ serum – euvolemia

aldosterone / ANP escape

13. All of the following are criteria for diagnosis of DKA except:

A. Glucose > 250 mg/dL ✓

B. Arterial pH < 7.3

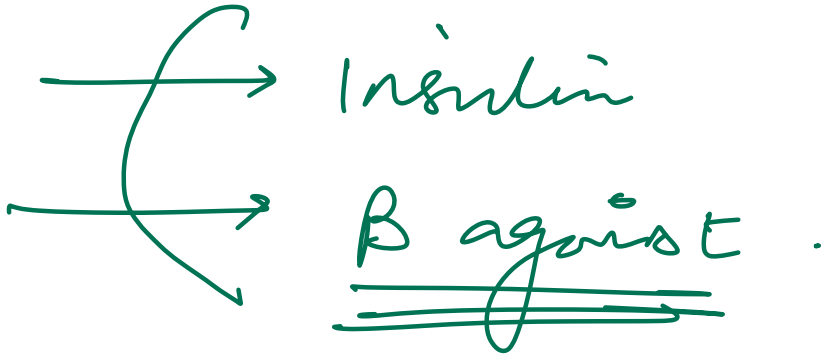
C. Anion gap > 12

D. Potassium < 3.5 mEq/L

hyp

↑ K^+ apparent.

body stores K^+ ↓



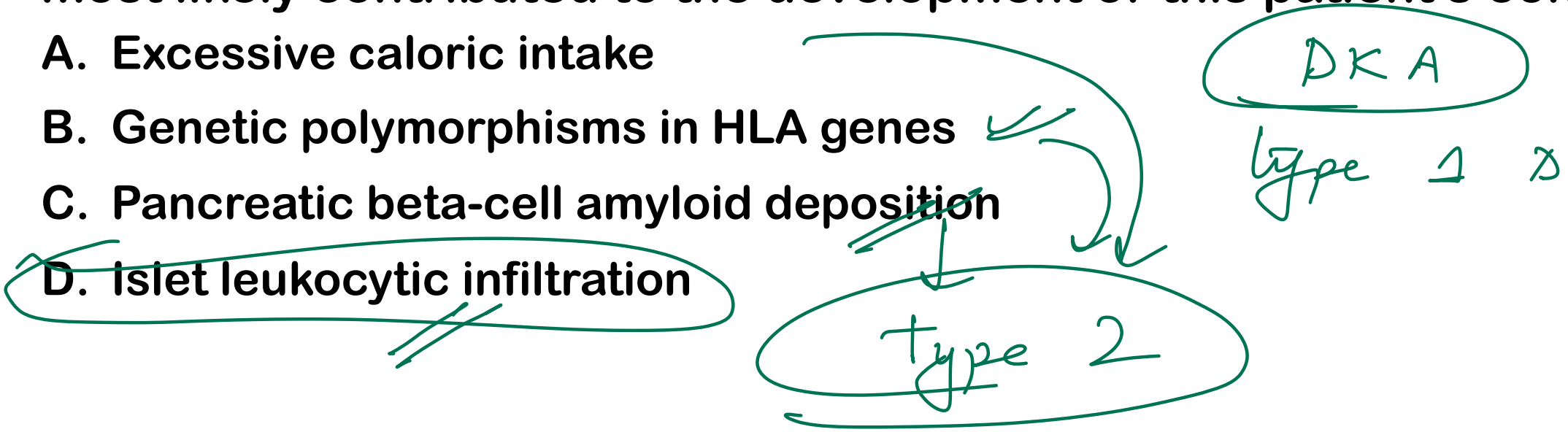
14. A 15-year-old girl is brought to the emergency department due to confusion, abdominal pain, and vomiting for the past two days. Her parents report that she has been excessively thirsty and urinating frequently over the last few weeks. On examination, her vital signs are: temperature 37.2°C, pulse 110/min, BP 90/60 mm Hg, respiratory rate 28/min. Laboratory investigations reveal: glucose 320 mg/dL, sodium 132 meq/L, potassium 5.2 meq/L, bicarbonate 12 meq/L, arterial pH 7.25, urinalysis positive for urine ketones. Which of the following factors most likely contributed to the development of this patient's condition?

A. Excessive caloric intake

B. Genetic polymorphisms in HLA genes

C. Pancreatic beta-cell amyloid deposition

D. Islet leukocytic infiltration



15. An elderly patient with type II diabetes presents with altered sensorium. He has not been eating or drinking well for the past few weeks. There are no complaints of nausea or abdominal pain. His blood sugar level is 800 mg/dL. All of the following are true regarding this condition, except:

A. Serum osmolality > 350 mOsm/L

B. High mortality is associated

C. HAGMA is associated

D. Pre-renal azotemia is seen

HHS

Cerebral edema

16. A 30-year-old woman, having lost her newborn, is producing breast milk, which risks developing into a breast abscess due to milk stasis and incomplete emptying. Which drug can prevent this complication?

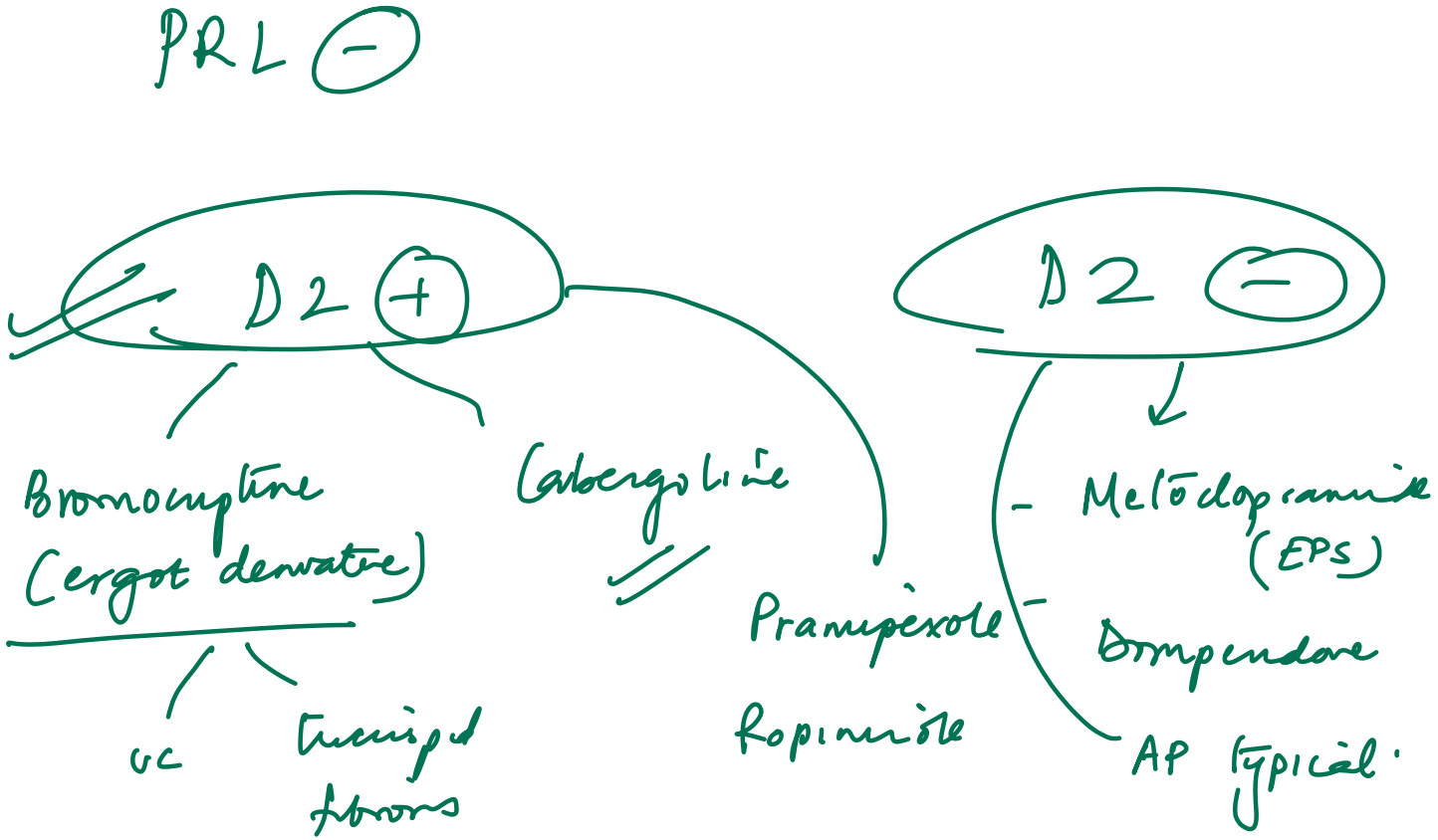
PYQ.

A. Mifepristone

B. Cabergoline

C. Bromocriptine

D. Metoclopramide XX



17. A 65-year-old woman presents to the ER with altered sensorium, non-pitting edema, hypothermia, bradycardia, and hypotension. What is the most likely diagnosis?

A. Head injury

B. Cardiogenic shock

C. Adrenal insufficiency

D. Myxedema coma

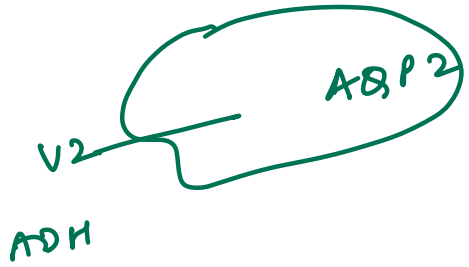
18. Which of the following act via the IP3-DAG Messenger System?

A. Angiotensin II on vascular smooth muscle and Vasopressin via V1 receptor on vascular smooth muscle

B. Angiotensin II on vascular smooth muscle and Vasopressin via V2 receptor on epithelial cells

C. Angiotensin II on epithelial cells and Vasopressin via V1 receptor on vascular smooth muscle

D. Angiotensin II on epithelial cells and Vasopressin via V2 receptor on epithelial cells



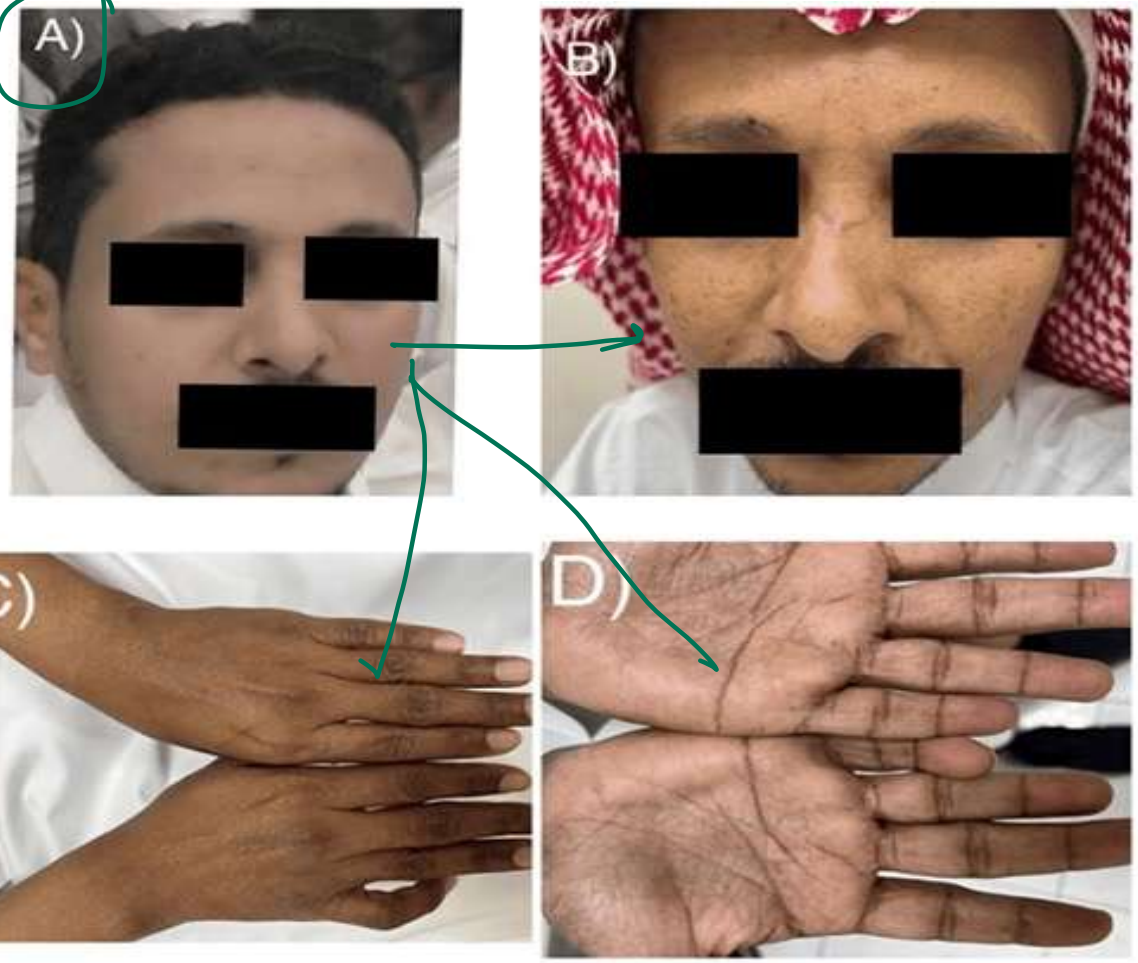
19. A 40-year-old man presents with abdominal pain, nausea, and dizziness for the past few weeks. His investigations reveal hyponatremia and hyperkalemia. He also complains of skin changes as seen in the image below (A before 3 yrs; B, C,D at presentation). Which of the following is not a feature of this condition?

A. Insulin resistance

B. Metabolic acidosis

C. Decreased androgen

D. Decreased cortisol



aldo ↓

↑pigment

MSH↑ ACTH↑ ↑adrenal androg.

POMC↑

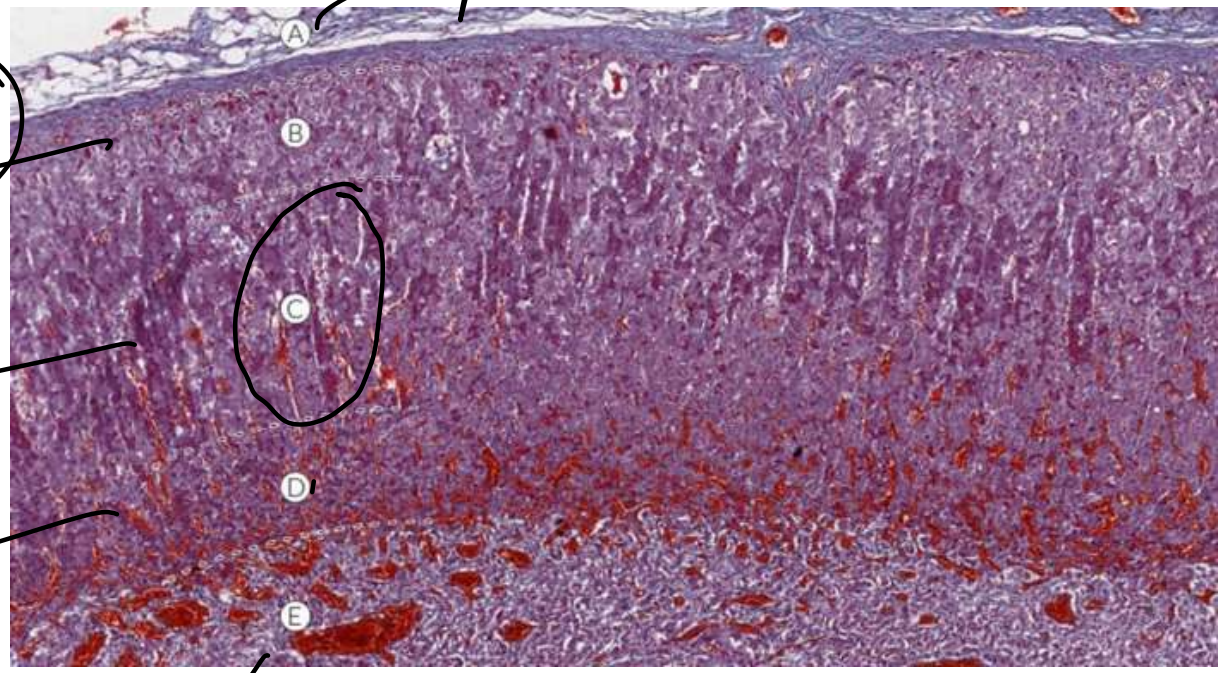
20. A 42-year-old man comes to the physician for a follow-up examination. His blood pressure was 146/91 mm Hg at his appointment 1 month ago; subsequent home blood pressure measurements have ranged from 135/83 mm Hg to 156/96 mm Hg. His blood pressure today is 141/85 mm Hg. Pharmacotherapy with lisinopril is initiated. Administration of this drug is most likely to result in decreased activity of which of the following sections of a normal adrenal gland?

A. A

B. B

C. C

D. D



21. An 65-year-old female patient, with a recent history of a distal radius fracture, undergoes an assessment of bone mineral density. A DEXA scan shows a T-score of -2.6. Which of the following medications is not used for the management of this condition?

A. Zoledronate ✓ DOC

B. Denosumab ✓

C. Cinacalcet ↑PTH

D. Romosozumab ✓

T-Score WHO

-1 to -2.5 - osteopenia

< -2.5 - osteoporosis

22. A 6-year-old girl is brought to the OPD for evaluation of short stature. Her parents have noticed that she bears little resemblance to her 2 older siblings. Other findings include low-set ears, a high arched palate, a webbed neck, and cubitus valgus. Chromosomal analysis reveals a 45, XO karyotype. The patient is started on a medication to improve growth and normalize her height. Which of the following intracellular pathways is stimulated by the medication used in this patient?

A. Binding of activated receptors to DNA to modify transcription

B. Cyclic AMP-Protein kinase A pathway

C. Diacylglycerol-Protein kinase C pathway

D. JAK-STAT pathway

GH

PIGGLET

23. A 52-year-old, post-menopausal woman comes to the OPD for a follow-up appointment. Six months ago, the patient was evaluated for recurrent, brief episodes of excessive warmth and sweating, which were interfering with her usual activities. Thyroid hormone levels were normal, and the patient was subsequently diagnosed with menopausal hot flashes. Treatment with estrogen-containing hormone replacement therapy was begun with significant symptom improvement. Which of the following most likely occurred in this patient as a result of her medication use?

pregnancy

A. Decreased conversion of T4 to T3

B. Decreased thyroid iodine uptake

C. Decreased TSH level (N)

D. Increased total T4 level

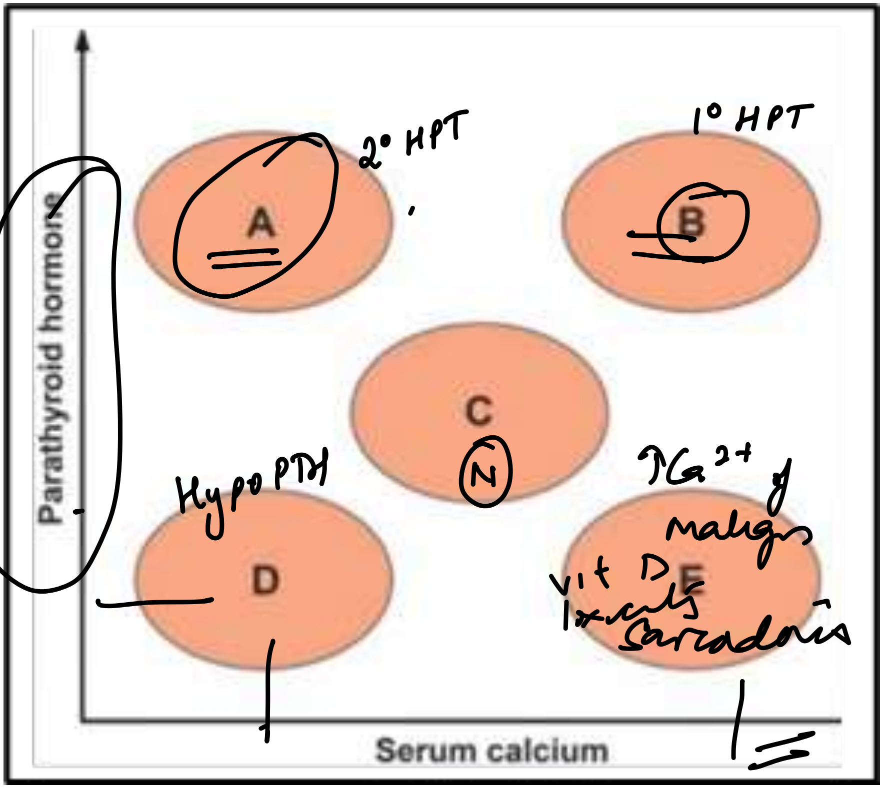
TBG ↑

Total T3 ↑ T4 ↑

free / TSH (N)

24. A 64-year-old man comes to the OPD with fatigue. He has hypertension and poorly controlled diabetes complicated by nephropathy and peripheral neuropathy. His renal function has declined steadily over the last few years. On the graph below, area "C" shows the normal relationship between serum concentrations of free calcium and parathyroid hormone. Which of the following areas most likely represents this patient's current metabolic state?

A. A
B. B
C. C
D. E



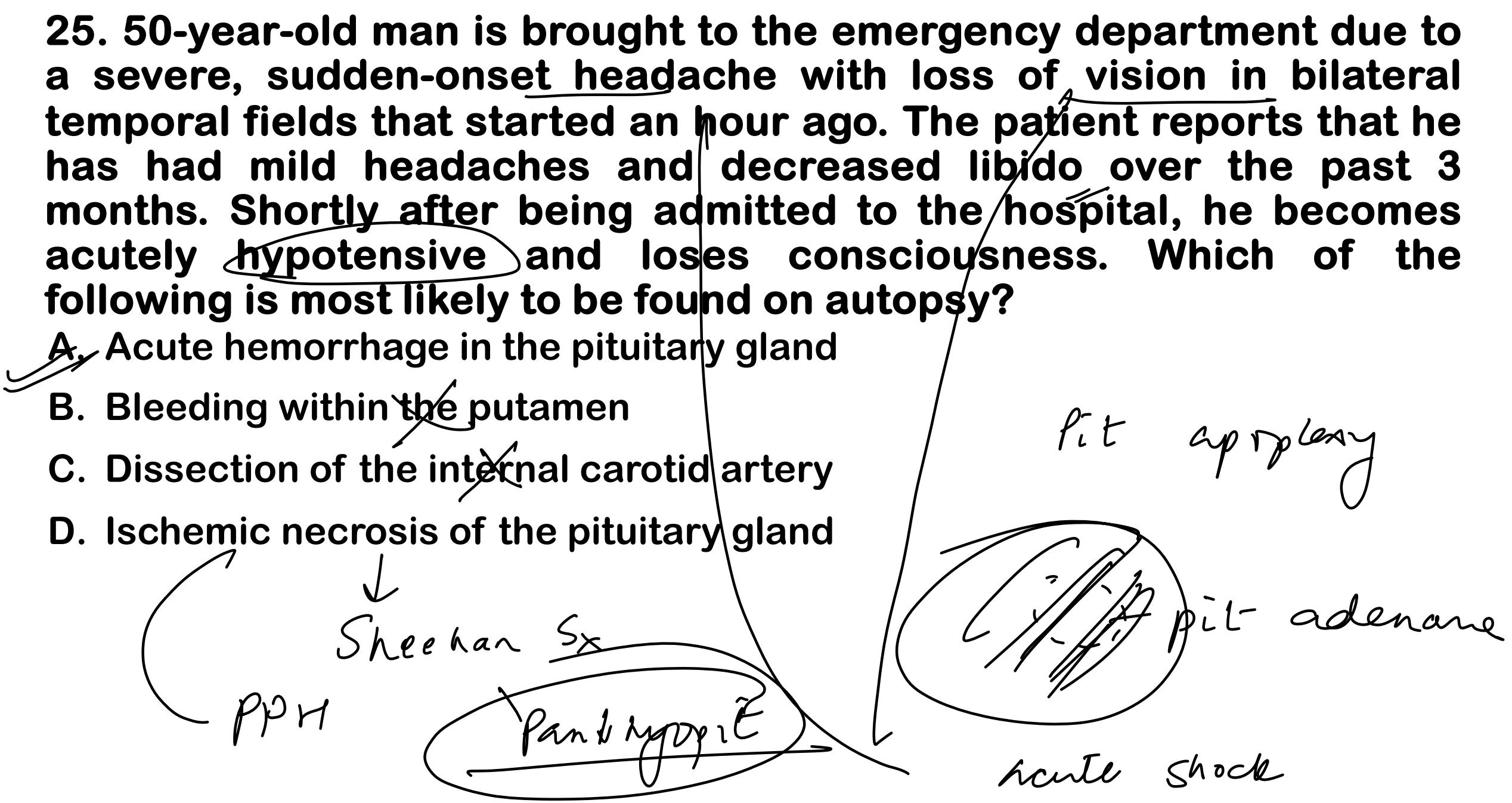
25. 50-year-old man is brought to the emergency department due to a severe, sudden-onset headache with loss of vision in bilateral temporal fields that started an hour ago. The patient reports that he has had mild headaches and decreased libido over the past 3 months. Shortly after being admitted to the hospital, he becomes acutely hypotensive and loses consciousness. Which of the following is most likely to be found on autopsy?

A. Acute hemorrhage in the pituitary gland

B. Bleeding within the putamen

C. Dissection of the internal carotid artery

D. Ischemic necrosis of the pituitary gland



26. A 60-year-old woman is diagnosed with type II diabetes mellitus. She has a history of chronic kidney disease. Which of the following statement is correct about the management of this patient?

A. Metformin is contraindicated in all stages of CKD

B. Pioglitazone is avoided as it is exclusively metabolized by kidneys

C. Glipizide can be used in renal disease

D. Linagliptin can be used only after dose reduction

OHG

Agent	Mechanism of action	Side effects
Sulfonylureas Chlorpropamide,Glipizide, Glyburide **Meglitinides** Repaglinide, Nateglinide	Increases insulin secretion by inhibiting B-cell K+ ATP channels	Hypoglycemia , Weight gain Chlorpropamide:
Biguanides Metformin	Stimulates AMP kinase, decreasing insulin resistance Useful in CV risk mortality	Lactic acidosis, Weight loss, Vit B12 deficiency, Diarrhea Max reduction in HbA1c
Thiazolidinediones Pioglitazone Rosiglitazone	Activates transcription regulator PPAR-g, decreasing insulin resistance	Weight gain, Heart failure, Hepatotoxic, Fractures Risk of bladder cancer - MI-
GLP-1 agonists Exenatide, Liraglutide, Tirazepatide-SC Semaglutide-Oral / SC **DPP4 inhibitors / ORAL** Sitagliptin, Saxagliptin, Linagliptin	Increases glucose-dependent insulin secretion, decreases glucagon secretion, delays gastric emptying Useful in CV risk mortality GLP-2 agonist:	Increase satiety, Weight loss Pancreatitis – MTC Nasopharyngitis- DPP4 - : CI in renal failure except: Lina g
Amylin Analogue Pramlintide	Decreases glucagon secretion, delays gastric emptying	Increase satiety
α-glucoside inhibitors Acarbose , Miglitol	Reduces intestinal disaccharide absorption	Diarrhea, Flatulence CI in IBD
SGLT2 Inhibitors Canagliflozin, Dapagliflozin	Increases renal glucose excretion Useful in CV risk mortality	Urinary tract infections , Polyuria (osmotic diuresis) Weight loss

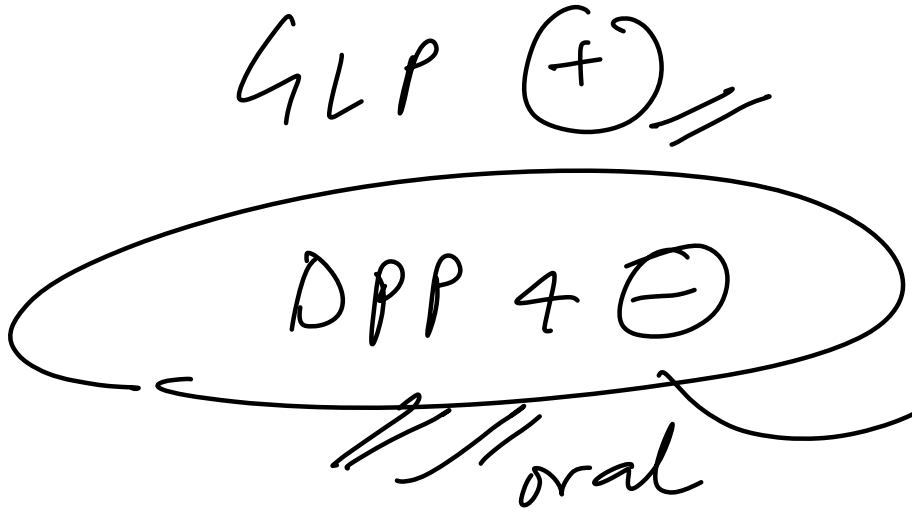
27. A 52-year-old female with diabetes mellitus has experienced a decrease in her HbA1c levels from 7.6 to 6.7 after starting a new oral medication. Laboratory tests show that she has high levels of GIP and GLP-1 and low levels of glucagon. Which of the following oral drugs was most likely administered to this patient?

A. Voglibose

B. Alogliptin

C. Pramlintide

D. Liraglutide



28. A 40-year-old male presents with increased thirst and increased frequency and volume of urination. His random blood sugar was 205 mg/dl. What appropriate investigations should be done?

i) HbA1c
ii) Urine ACR
iii) Echocardiography
iv) Fundoscopy
v) ECG
vi) Serum protein electrophoresis

A. i, ii, iii, v

B. i, ii, iii, vi

C. i, ii, iii, v

D. i, ii, iv, v

29. A 50-year-old man comes to the OPD following transsphenoidal resection of a growth hormone-secreting pituitary adenoma. Three months ago, the patient was diagnosed with acromegaly. MRI of the pituitary showed a 14 mm sellar mass pressing on the optic chiasm and extending into the right cavernous sinus. The surgeon was able to only partially resect the pituitary mass because of the extension into the right cavernous sinus. Medical therapy for acromegaly with octreotide is planned. Which of the following changes are likely to occur following octreotide treatment in this patient?

A. GH low, IGF-1 low, adenoma size low

B. GH low, IGF-1 low, adenoma size unchanged

C. GH low, IGF-1 unchanged, adenoma size low

D. GH unchanged, IGF-1 low, adenoma size unchanged

Pegvisomant
GH-R ⊖
GH ↑
Adenoma size constant
IGF ↓

Somatostatin analogue

adenoma ↓

↓ GH

↓ IGF-1

30. Two days after vaginal delivery of a healthy newborn at term, a 32-year-old woman, gravida 2, para 2, is unable to breastfeed. Her labor was complicated by antepartum hemorrhage and she received two units of packed red blood cells. Her pulse is 99/min and blood pressure is 90/55 mm Hg. Further evaluation of this patient is most likely to show which of the following sets of serum findings?

A. ACTH low, Aldosterone low, Cortisol low

B. ACTH low, Aldosterone high, Cortisol low

C. ACTH high, Aldosterone normal, Cortisol low

D. ACTH low, Aldosterone normal, Cortisol low

RAAS +

aldosterone ↑

Sheehan Sx.

31. Which of the following pairs of drugs and its indications is matched incorrectly?

A. Bromocriptine – Treatment of precocious puberty

B. Octreotide – Treatment of diarrhea associated with vasoactive intestinal peptide tumors

C. Desmopressin – Treatment of diabetes insipidus

D. Leuprolide – Treatment of infertility

32. 53-year-old man comes to the physician complaining of increased urinary frequency for the past 4 weeks. He has no burning with urination, urgency, or difficulty initiating urination. He wakes up several times at night to urinate. His mouth feels dry all the time and he drinks fluids almost every hour to alleviate his thirst. The patient's medications include hydrochlorothiazide and amlodipine for hypertension. His sister was diagnosed with diabetes mellitus at a young age. His blood pressure is 120/76 mm Hg, pulse 85/min, respirations 15/min. His body mass index is 32 kg/m². Laboratory results: Blood glucose 93 mg/dL, Serum sodium 150 mEq/L, Serum potassium 4.1 mEq/L, Bicarbonate 24 mEq/L, BUN 21 mg/dL, Creatinine 1.1 mg/dL, Uric acid 10.1 mg/dL, Serum osmolality 314 mOsm/kg, Urine osmolality 124 mOsm/kg. Which of the following is most consistent with this patient's findings?

A. Central Diabetes insipidus

B. Nephrogenic DI

C. Primary polydipsia

D. Syndrome of inappropriate antidiuretic hormone

(N) UA 2-7mg/dl ADH ∝ ↑ Uric acid

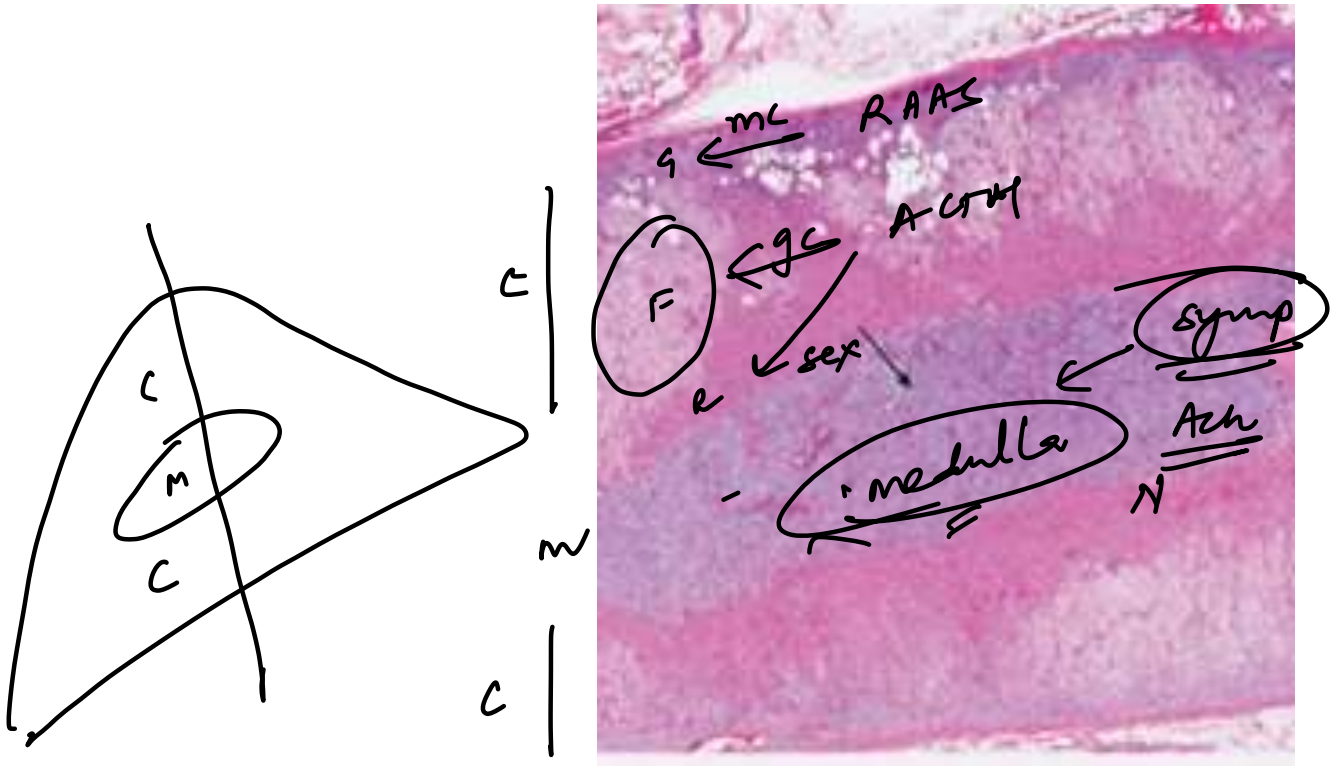
33. The cells marked in the image of adrenal biopsy are directly activated by?

A. Acetylcholine

B. ACTH

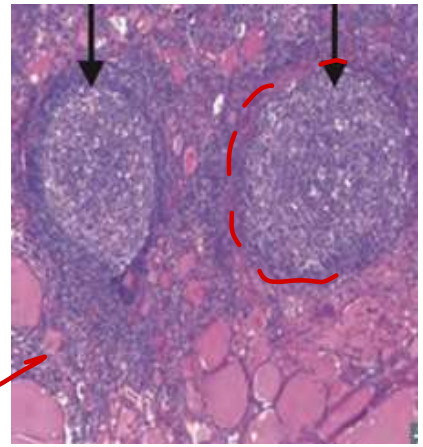
C. Angiotensin II

D. Epinephrine



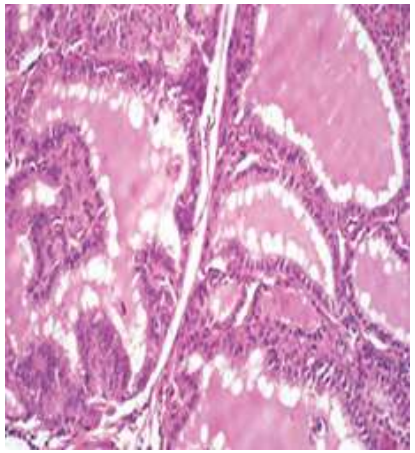
34. 51-year-old woman comes to the OPD due to progressively worsening fatigue, weight gain, and constipation for the past 6 months. Physical examination shows mild, diffuse enlargement of the thyroid gland. Biopsy of this patient's thyroid is most likely to show which of the following findings?

a)



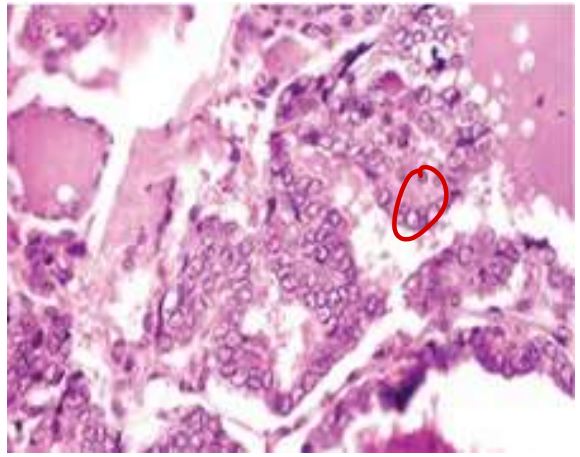
Hashimoto

b)



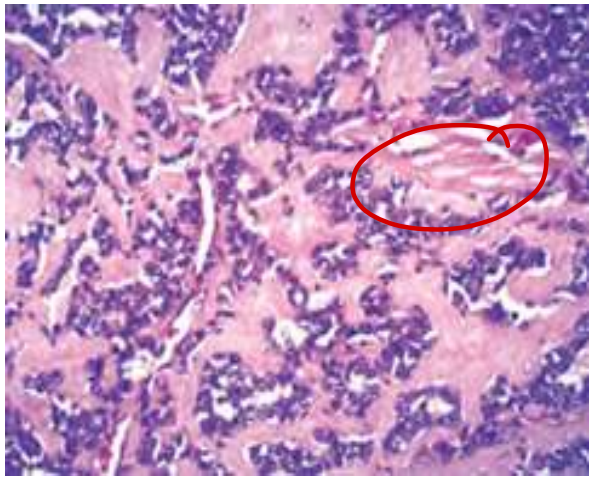
Graves'

c)



Pap

d)



MTZ

35. A 12-year-old child who is known to have type 1 diabetes mellitus presents with confusion and drowsiness. Her mother says that she seems to be breathing very fast. On examination, mucous membranes are dry and blood pressure is 70/50 mm Hg. Random blood glucose is 415 mg/dl and urine ketones are 4+. What is the next best step in management?

A. 2-3 L of normal saline over 1-3 hours

B. Insulin infusion at 0.1 units/kg/hour

C. Arterial blood gas

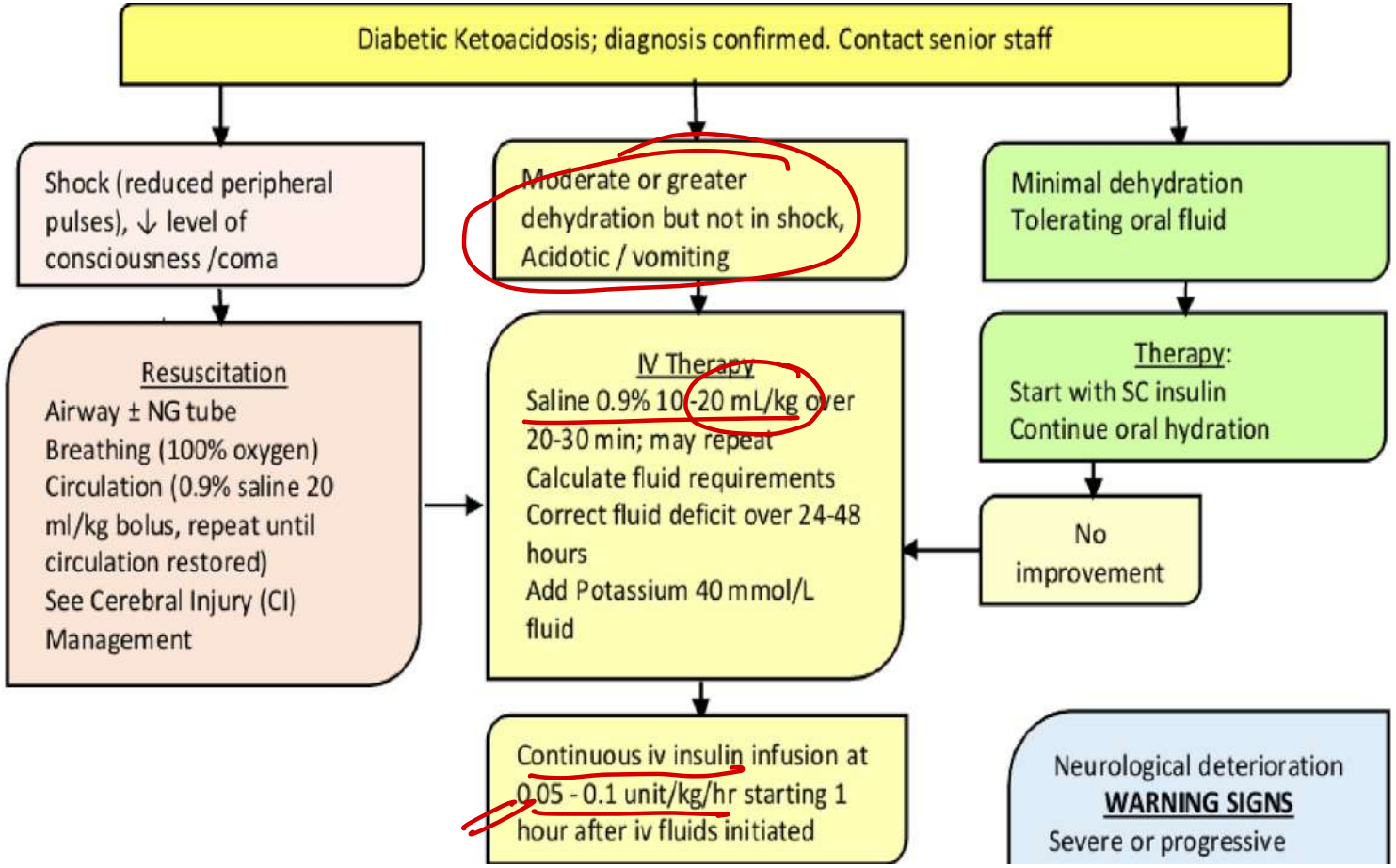
D. Insulin bolus of 0.1 units/kg given IV

DKA

acidosis

Dx / Confirm

Mx


Diabetic Ketoacidosis; diagnosis confirmed. Contact senior staff
Shock (reduced peripheral pulses), ↓ level of consciousness /coma
Moderate or greater dehydration but not in shock, Acidotic / vomiting
Minimal dehydration
Tolerating oral fluid
Resuscitation
Airway ± NG tube
Breathing (100% oxygen)
Circulation (0.9% saline 20 ml/kg bolus, repeat until circulation restored)
See Cerebral Injury (CI) Management
IV Therapy
Saline 0.9% 10-20 mL/kg over 20-30 min; may repeat
Calculate fluid requirements
Correct fluid deficit over 24-48 hours
Add Potassium 40 mmol/L fluid
Therapy:
Start with SC insulin
Continue oral hydration
No improvement
Continuous iv insulin infusion at 0.05 - 0.1 unit/kg/hr starting 1 hour after iv fluids initiated
Neurological deterioration
WARNING SIGNS
Severe or progressive

36. A 6-week-old term boy is brought to the OPD due to increased fussiness and poor weight gain. The patient has several wet diapers per day. His anterior fontanelle is flat and mucous membranes are dry. Laboratory results include Sodium 148 mEq/L, Potassium 3.5 mEq/L, Antidiuretic hormone: increased, Urinalysis shows a specific gravity of 1.002. Which of the following is the most appropriate treatment for this patient's condition?

A. Desmopressin

B. Hydrochlorothiazide

C. Hydrocortisone

D. Insulin

DI

NDI

37. A 45-year-old man reports coarsening of his facial features over several years. In addition, he reports low libido and decreased energy. Physical examination shows frontal bossing and enlarged hands. Which of the following screening tests should be ordered?

A. 24-Hour UFC

B. S. ACTH

C. Fasting GH levels

D. S. IGF-1

Acromegaly

Confirmatory: OGTT.

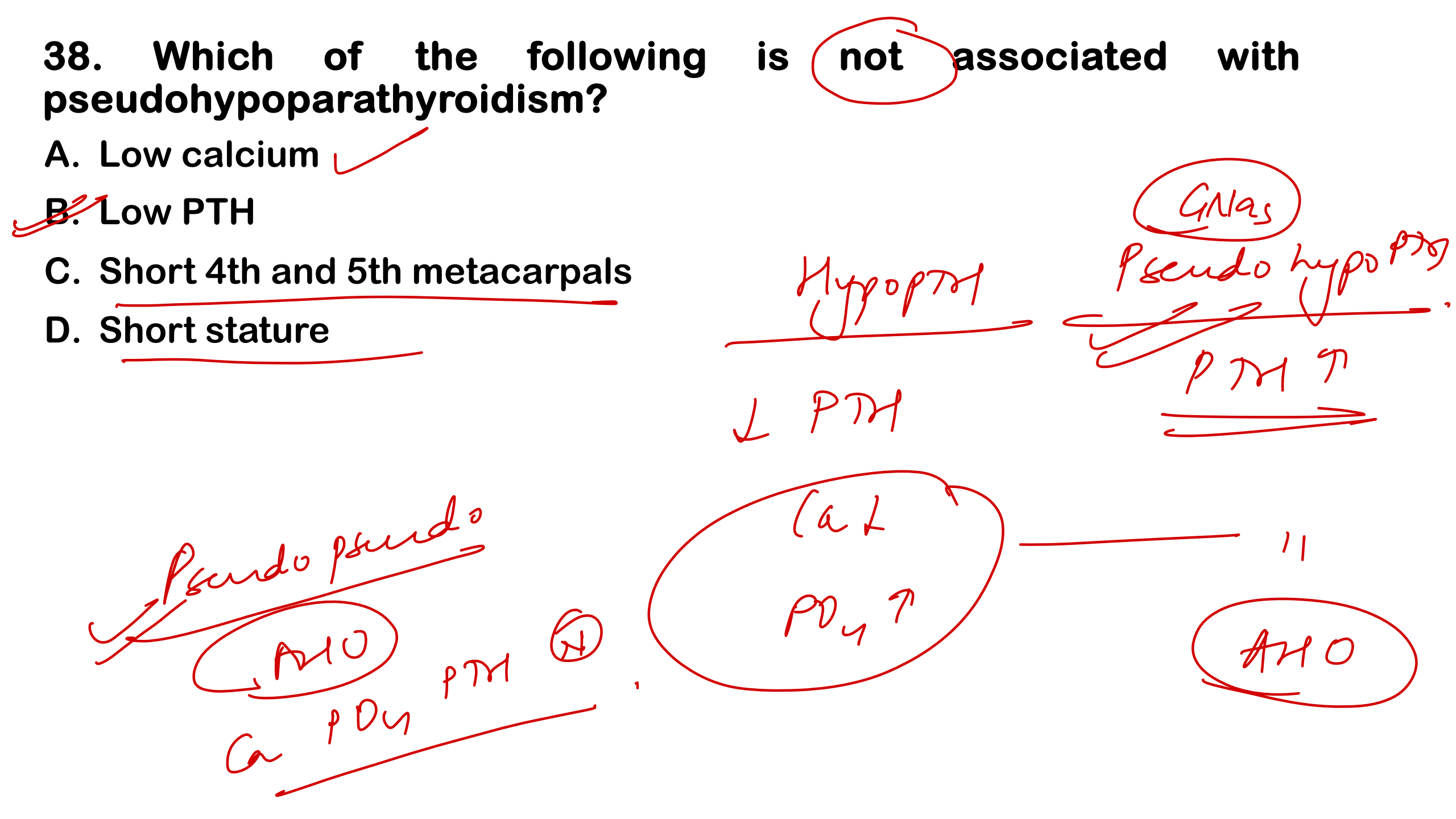
38. Which of the following is not associated with pseudohypoparathyroidism?

A. Low calcium

B. Low PTH

C. Short 4th and 5th metacarpals

D. Short stature



Pseudo-HPT

- Type 1a: Most common; PTH resistance plus physical features of Albright Hereditary Osteodystrophy (AHO) (short stature, round face, short fingers, subcutaneous ossifications).
- Type 1b: Mainly kidney PTH resistance without AHO phenotype.
- Type 1c: Similar to 1a but normal Gs alpha activity.
- Type 2: Normal cAMP response but impaired phosphate excretion

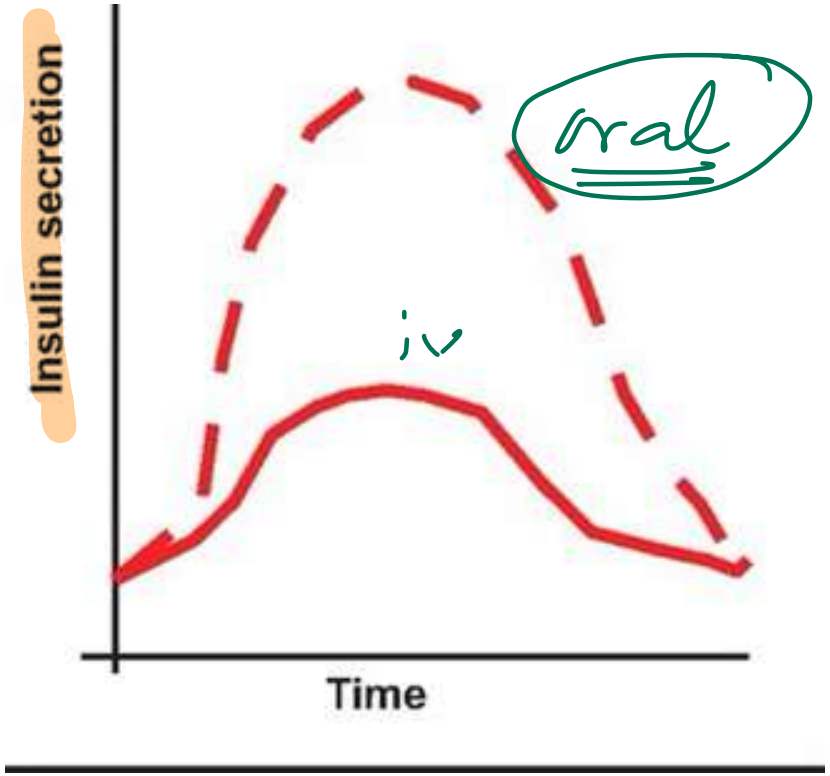
39. Researchers measure the serum insulin levels of healthy volunteers after equivalent loads of oral (dotted line) and intravenous glucose (solid line). The following curves are observed. Which of the following endogenous substances best explains the difference between the curves?

A. Insulin-like growth factor-1

B. Glucagon-like peptide-1

C. Somatostatin

D. Secretin



GIP / GLP

incretin

↑ insulin

⊗ hypoglycemia

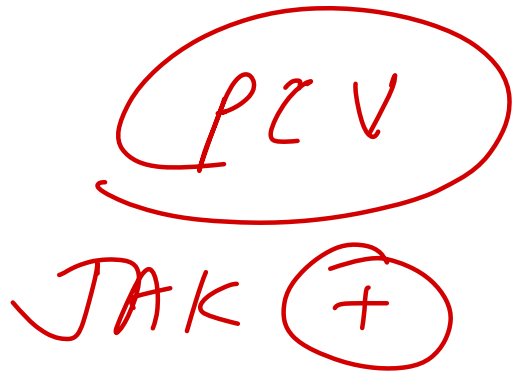
40. A 34-year-old man comes to the physician because of blurry vision and fatigue for 2 months. During this period, he has also had occasional bleeding from his gums after brushing his teeth. One month ago, he was diagnosed with deep vein thrombosis after returning from an overseas business meeting. His pulse is 118/min, respirations are 19/min, and blood pressure is 149/91 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 97%. Examination shows bluish discoloration of the lips. The tip of the spleen is palpable 1 cm below the left costal margin. Sensory examination of the hands shows paraesthesia. Hemoglobin concentration is 18 g/dL, haematocrit is 65%, leukocytes are 15,000/uL, and platelets are 470,000/uL. His serum erythropoietin concentration is decreased. Activation of which of the following is the most likely underlying cause of this patient's condition?

A. Receptor tyrosine kinase

B. Cytokine receptor

C. Antiapoptotic molecule

D. Nonreceptor tyrosine kinase



41. A 15-year-old girl comes to the physician because of a 2-month history of progressive fatigue and weakness. She also reports recurrent headaches for 2 years, which have increased in severity and frequency. Her blood pressure is 185/95 mm Hg. Serum studies show a morning renin activity of 130 ng/mL per hour (N=1-4), a morning aldosterone concentration of 60 ng/dL (N=5-30), and a potassium concentration of 2.9 mEq/L. Further evaluation is most likely to show which of the following?

A. ACTH-producing growth in the pituitary gland

B. Increased urinary excretion of metanephrines

C. Pleomorphic modified smooth muscle cells in the renal cortex

D. Involution of zona glomerulosa of the adrenal gland

JG cells

↑

RAS → Aldo ↑

Renin ↑

42. A woman comes with complaints of hyperpigmentation of her palms after an adrenalectomy. She also has new onset vision deficits. What is the likely diagnosis?

A. Nelson syndrome

B. Sheehan syndrome

C. Conn's syndrome

D. Addison's disease

43. A 68-year-old man comes to the physician for a follow-up examination. He has type 2 diabetes mellitus, hypertension, and chronic kidney disease. Medications include insulin, metoprolol, and atorvastatin. Physical examination shows pitting edema of both ankles. Serum creatinine concentration is 4.5 mg/Dl. Which of the following sets of serum findings is most likely in this patient?

A. PTH increased, vit D decreased, Ca increased, Po4 decreased

B. PTH increased, vit D decreased, Ca decreased, Po4 increased

C. PTH decreased, vit D increased, Ca increased, Po4 decreased

D. PTH decreased, vit D decreased, Ca decreased, Po4 increased

44. Which of the following anti-diabetic drug is associated with unexplained diarrhea?

PYQ

A. Pioglitazone

B. Pramlintide

C. Glimepiride

D. Metformin

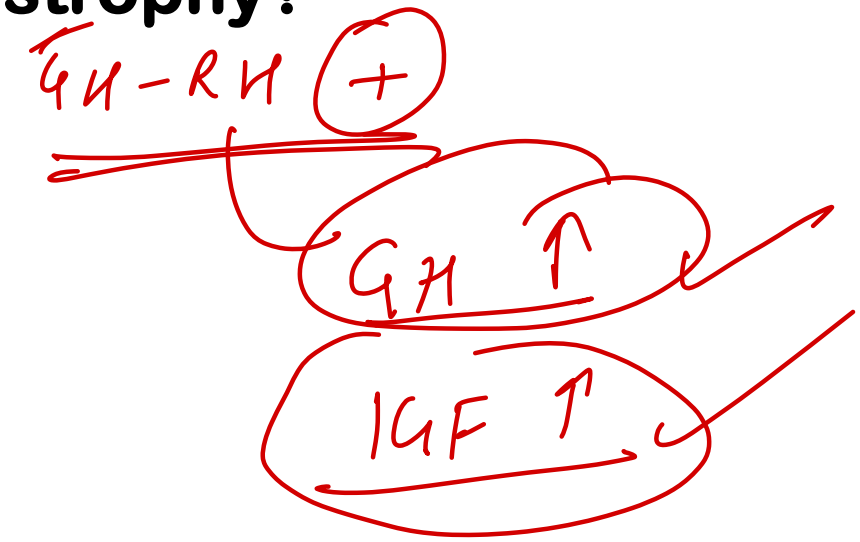
45.Which of the following growth hormone analogue is not used for treatment of GH deficiency but is used in the treatment of HIV-associated lipodystrophy?

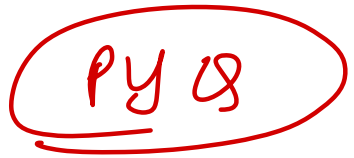
A. Tesamorelin

B. Sermorelin

C. Somatropin

D. Pegvisomant





46. An 8-year-old boy was referred to a pediatric endocrinologist because of growth retardation. Lab tests showed increased serum growth hormone levels but very low serum levels of insulin-like growth factor 1 (IGF-1). Further exams led to the diagnosis of Laron dwarfism. Which of the following drugs would be most appropriate for this boy?

A. Somatropin

B. Octreotide

C. Mecasermin

D. Oxandrolone

47. Sodium iodide symport is present in all of the following except:

A. Pituitary

B. Placenta

C. Salivary gland

D. Thyroid

48. A 26-year-old man developed sudden severe abdominal pain. On physical examination, he had marked abdominal tenderness and guarding. Laboratory studies showed calcium 12.2 mg/dL; phosphorus 2.6 mg/dL; creatinine 1.1 mg/dL; and parathyroid hormone 62 pg/mL (normal: 9-60 pg/mL). During surgery, four enlarged parathyroid glands were found and excised, with re-implantation of one half of one gland. After the surgery, his calcium concentration returned to normal. Three years later, he had an episode of upper gastrointestinal hemorrhage. An endoscopy and biopsy specimen showed multiple benign gastric ulcerations. Abdominal MRI indicated multiple 1- to 2-cm mass lesions in the pancreas. Which of the following additional neoplasm lesions is he most likely to have?

A. Adrenal pheochromocytoma

B. Endometrial carcinoma

C. Pituitary adenoma

D. Thyroid medullary carcinoma

MEN 1

MEN2a

26-

49. In Type 1 Diabetes Mellitus, what is the feature of stage 3 beta cell destruction?

A. Autoimmune +ve Normoglycemic presymptomatic

B. Autoimmune +ve dysglycemic symptomatic

C. Autoimmune -ve Normoglycemic presymptomatic

D. Autoimmune -ve dysglycemic presymptomatic

Stage	Autoantibodies	Blood Glucose	Symptoms	Beta Cell Status
Stage 1	≥2	Normal	None	Autoimmune attack starts
Stage 2	≥2	Abnormal (dysglycemia)	None	Significant beta-cell loss
Stage 3	Present or variable	Hyperglycemia	Present (classic symptoms)	Severe beta-cell loss

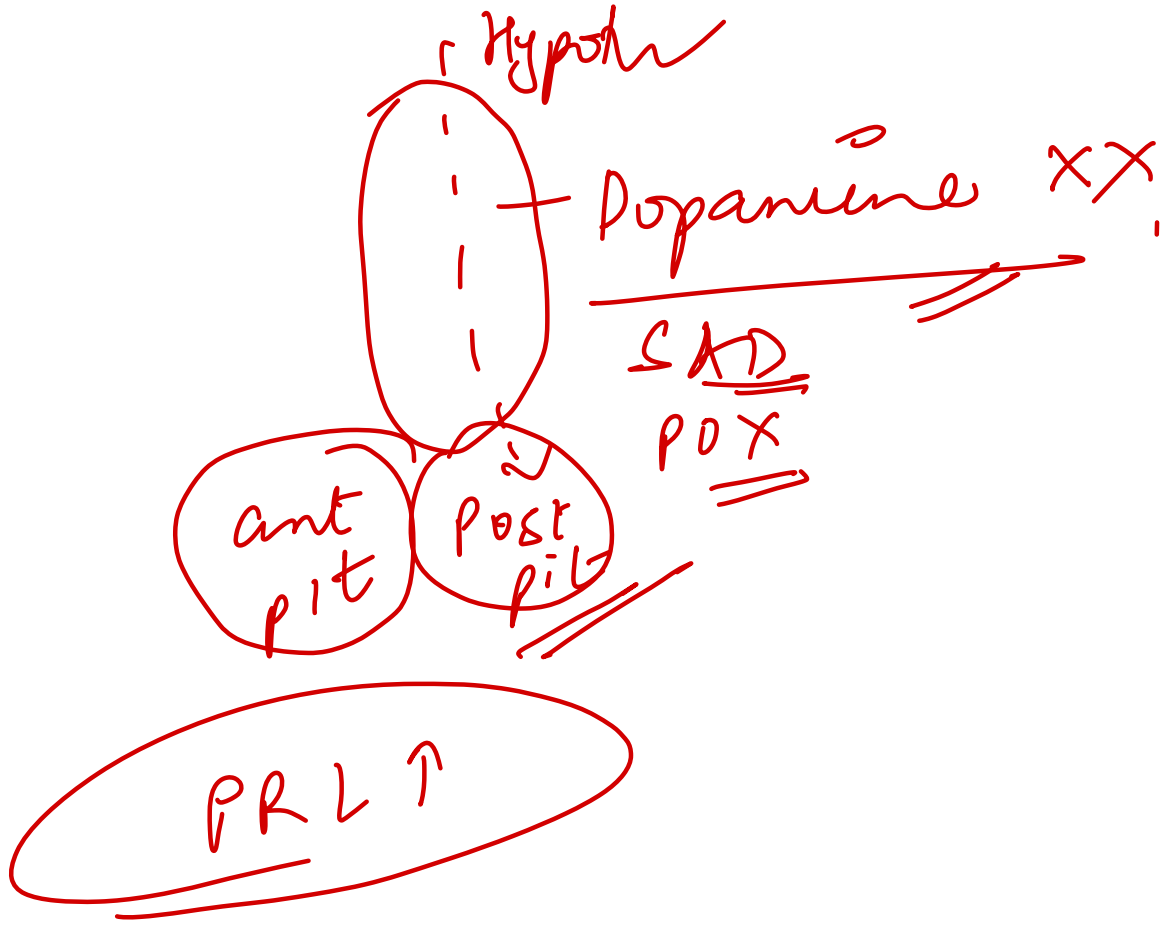
50. A 29-year-old man presents with headaches, fatigue, visual disturbances. He has sarcoidosis, mild hypercalcemia, and MRI shows a mass in hypothalamus and pituitary stalk. Which of the following pituitary hormones is most likely elevated in this patient?

A. ACTH

B. Growth hormone

C. Prolactin

D. Thyrotropin



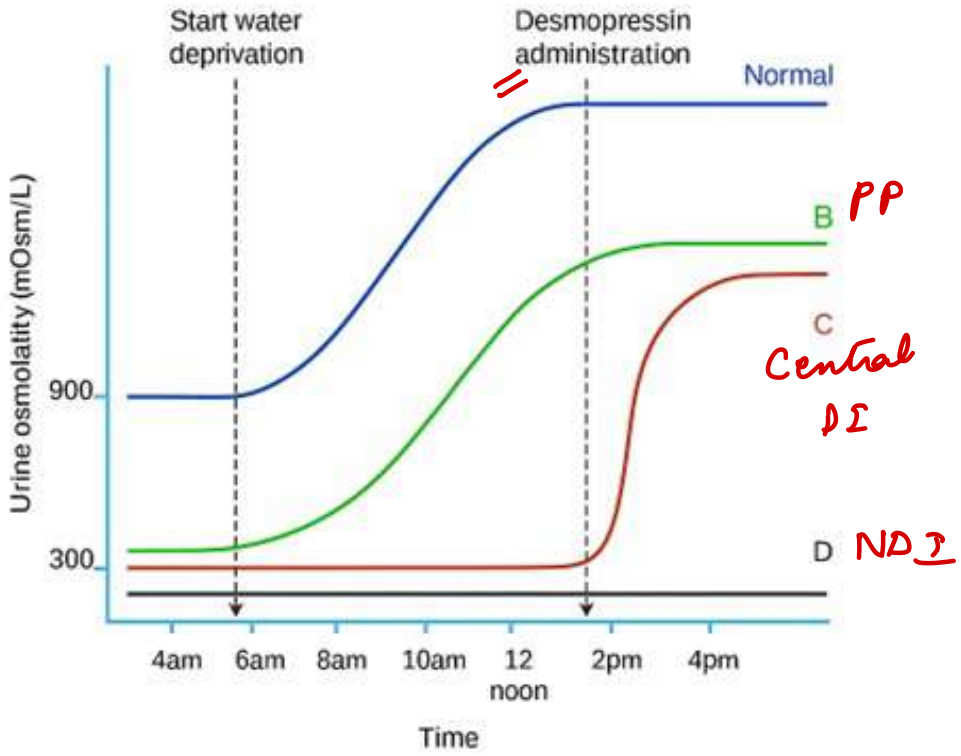
51. Identify the correct pair?

A. B- Normal

B. C- Primary polydipsia

C. D- Nephrogenic DI

D. B- Central DI



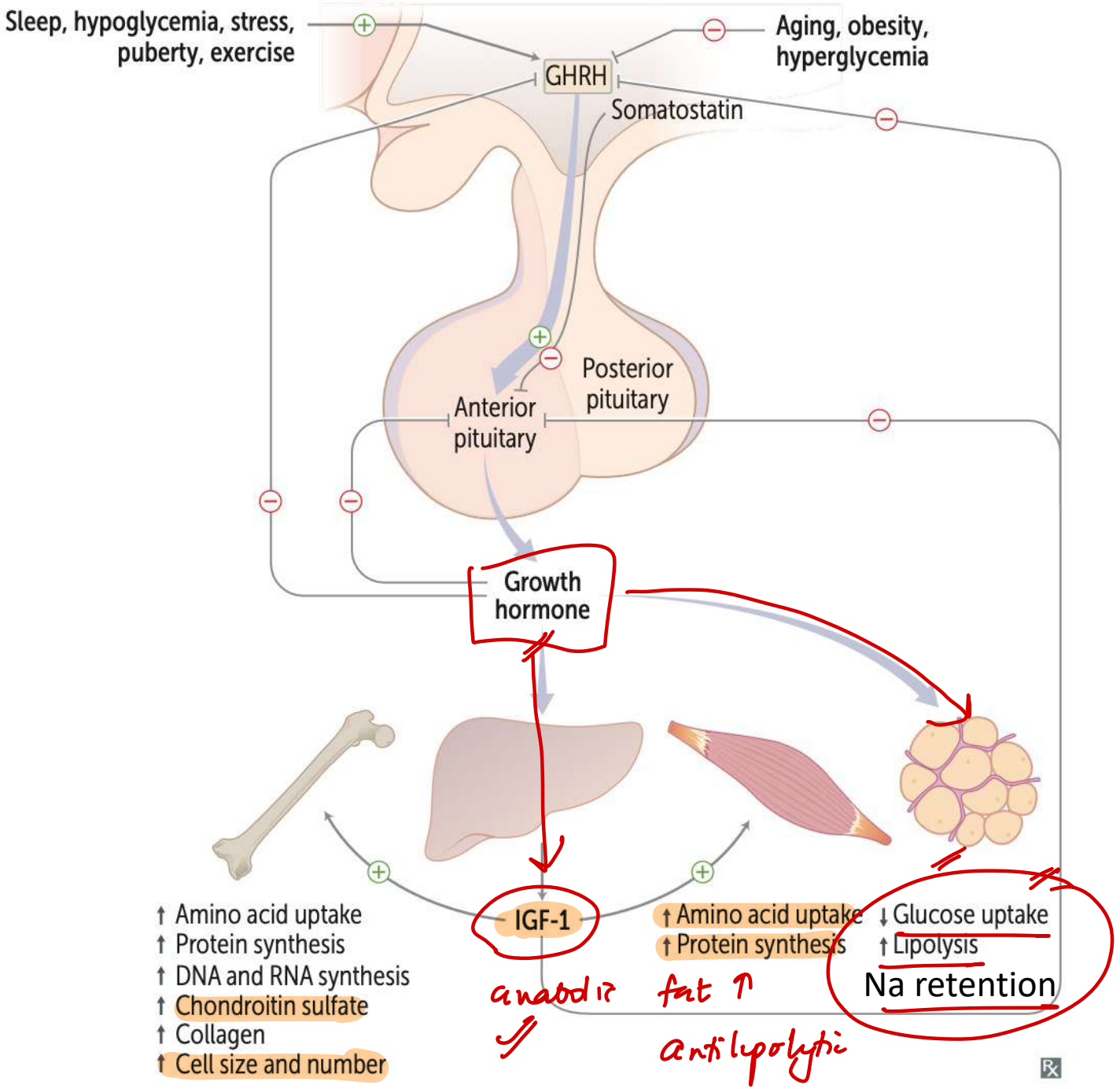
52. Which function of growth hormone (GH) is specifically mediated via IGF-1?

A. Sodium retention

B. Lipolysis

C. Reduced insulin sensitivity

D. Anti-lipolysis


Sleep, hypoglycemia, stress, puberty, exercise
Aging, obesity, hyperglycemia
GHRH
Somatostatin
Posterior pituitary
Anterior pituitary
Growth hormone
IGF-1
↑ Amino acid uptake
↑ Protein synthesis
↑ DNA and RNA synthesis
↑ Chondroitin sulfate
↑ Collagen
↑ Cell size and number
↑ Amino acid uptake
↑ Protein synthesis
↓ Glucose uptake
↑ Lipolysis
Na retention
anabolic
fat ↑
antilipolytic

53. A 33-year-old man collapses during a family vacation. At the hospital, blood pressure is 86/52 mmHg and random blood sugar is 49 mg/dl. His wife says he has been on treatment for Addison's disease for two years but had forgotten his medication for the trip. What is the drug of choice for this patient?

A. Dexamethasone → gc 100%.

B. Fludrocortisone → mc 100%.

C. Norepinephrine → vc

D. Hydrocortisone → gc + mc

54. A 53-year-old woman is brought to the emergency department after she collapsed suddenly while standing. She also reports left-sided chest pain. Legacy effect (metabolic memory) in diabetes mellitus refers to which of the following observations?

A. Early intensive glycemic control has long-term benefits on microvascular and macrovascular complications, even if strict control is not maintained later.

micro >> macro

B. Good glycemic control only in longstanding disease prevents complications.

C. Early detection and management of dyslipidemia completely prevents metabolic memory.

D. High HbA1c in longstanding disease has no effect on future complications.

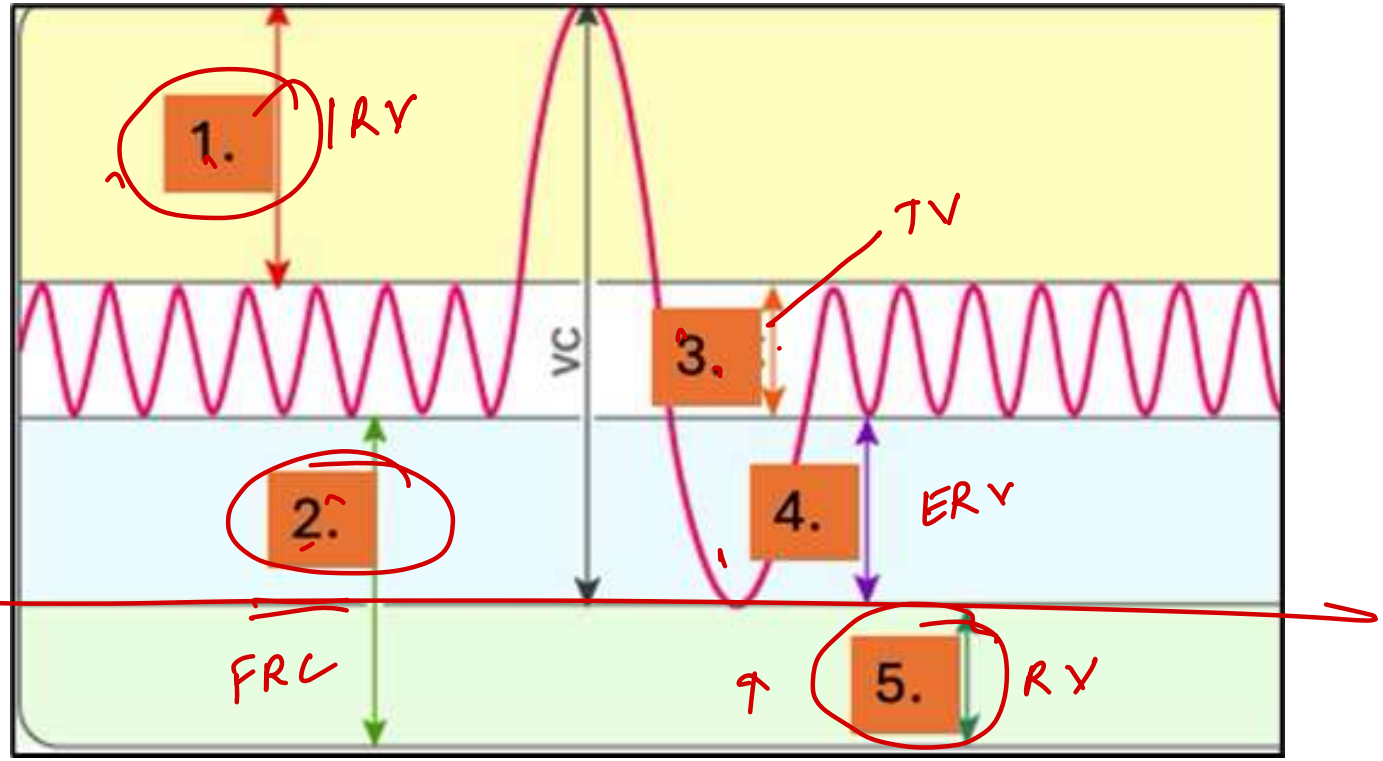
55. The image below demonstrates normal lung volumes and capacities. Which of the following changes is unlikely in a "pink puffer"?

A. 2 is increased

B. 1+2+3 is decreased

C. 5 is increased

D. 1+3+4 is decreased



56. A 50-year-old chronic smoker presented with mild recurrent hemoptysis without fever or weight loss. The chest X-ray appears normal and the sputum is negative for AFB. Which of the following is the next best step?

PYQ

A. MRI

B. Fiberoptic bronchoscopy

C. HRCT thorax

D. Rigid bronchoscopy

57. A 45-year-old patient came with hypoxemia and a normal alveolar-arterial oxygen gradient. What can be the cause?

A. Right to left shunt
B. Ventilation/Perfusion mismatch
C. Hypoventilation
D. Alveolar membrane damage

↑ altitude
Hypoventilation

58. A 45-year-old female patient with class II pulmonary hypertension presents with a positive vasoreactivity test. Which of the following is used in the next step of management?

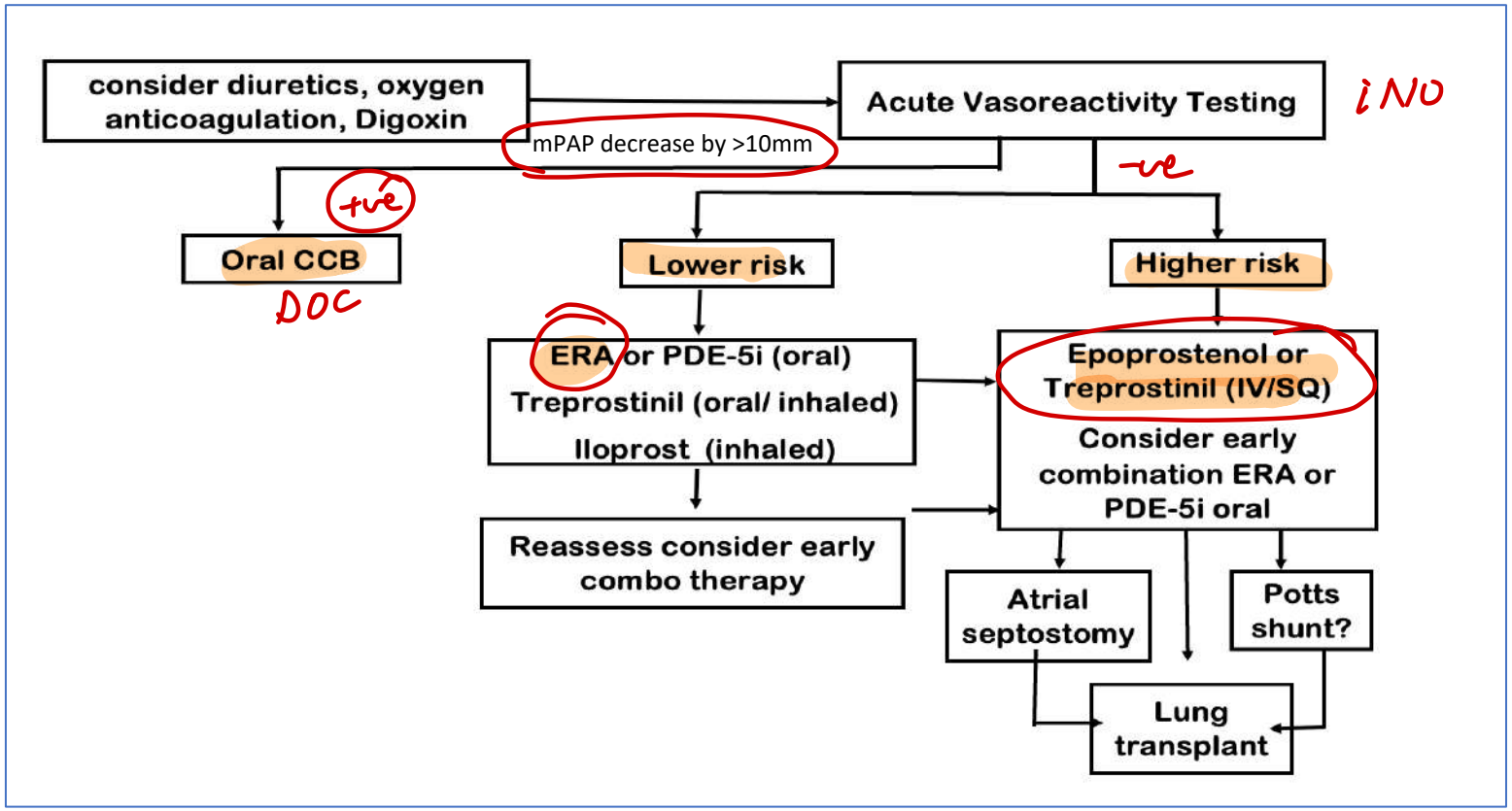
A. Iloprost

B. Ambrisentan

C. Nifedipine

D. Epoprostenol

PYQ.


consider diuretics, oxygen anticoagulation, Digoxin
Acute Vasoreactivity Testing
mPAP decrease by >10mm
+ve
-ve
Oral CCB
DOC
Lower risk
Higher risk
ERA or PDE-5i (oral)
Treprostinil (oral/ inhaled)
Iloprost (inhaled)
Epoprostenol or Treprostinil (IV/SQ)
Consider early combination ERA or PDE-5i oral
Reassess consider early combo therapy
Atrial septostomy
Potts shunt?
Lung transplant

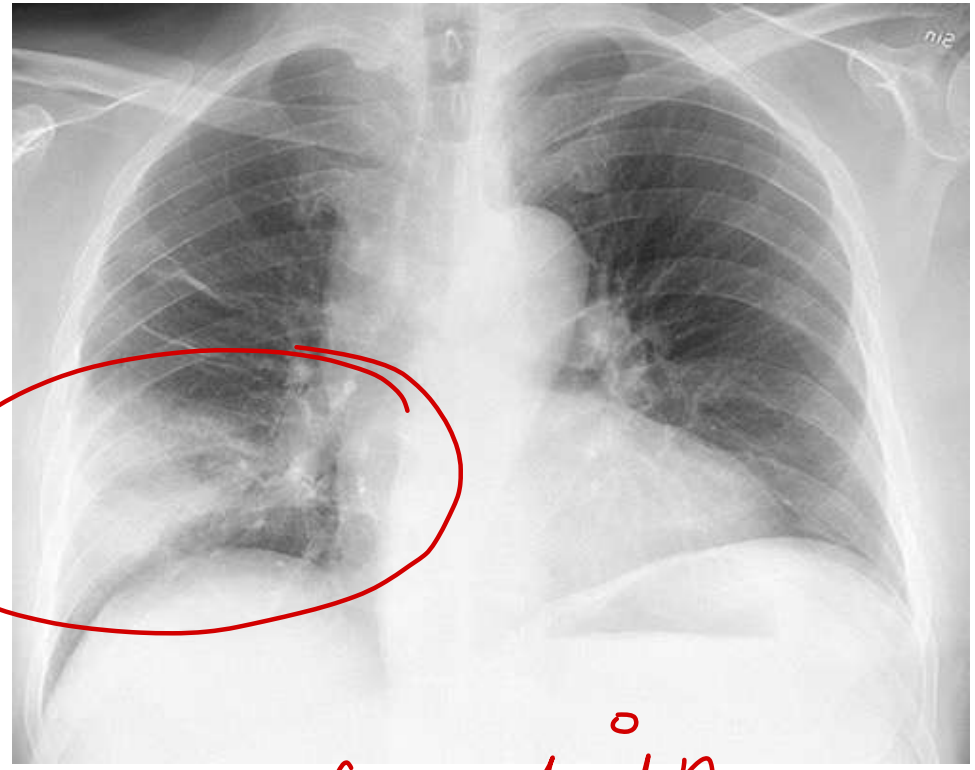
59. A patient in emergency admitted to ICU based on the appropriate score with the following CXR presentation. What is the treatment of choice in this patient?

A. Mechanical ventilation

B. Ceftriaxone plus azithromycin

C. Amoxicillin plus clavulanic acid

D. LMW heparin



Consolidation

Pneumonia

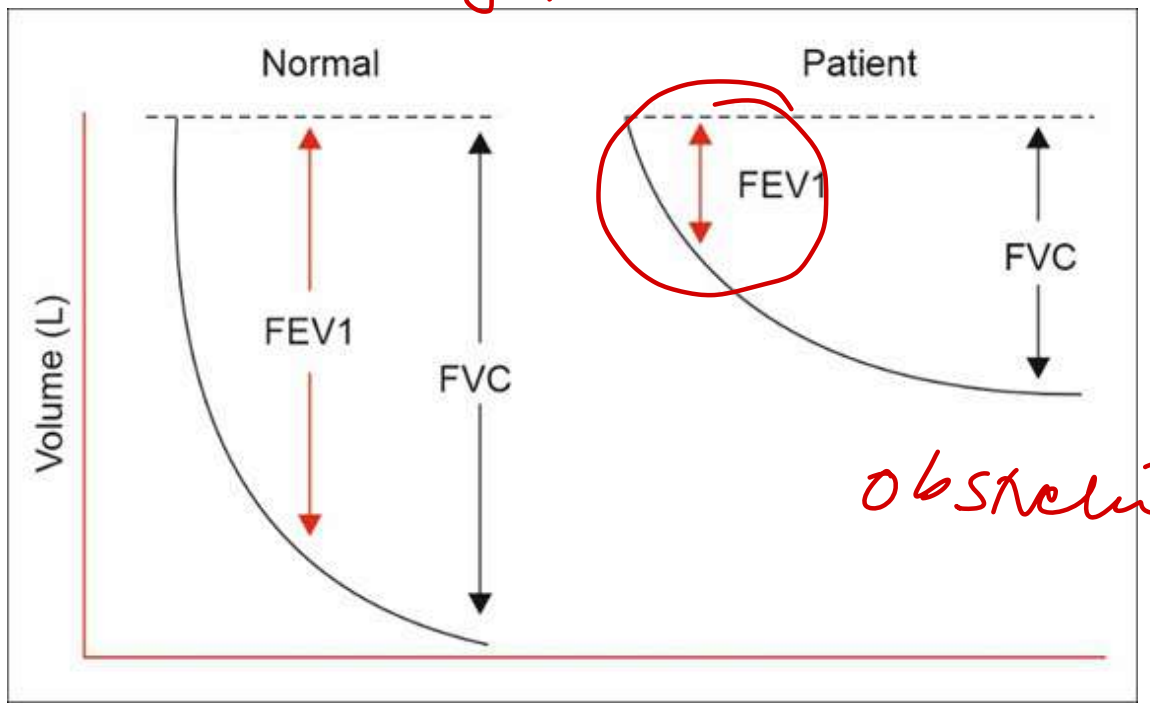
60. The given image shows a normal graph on the left and the patient's graph on the right. Which of the following diagnoses can be inferred from the graph?

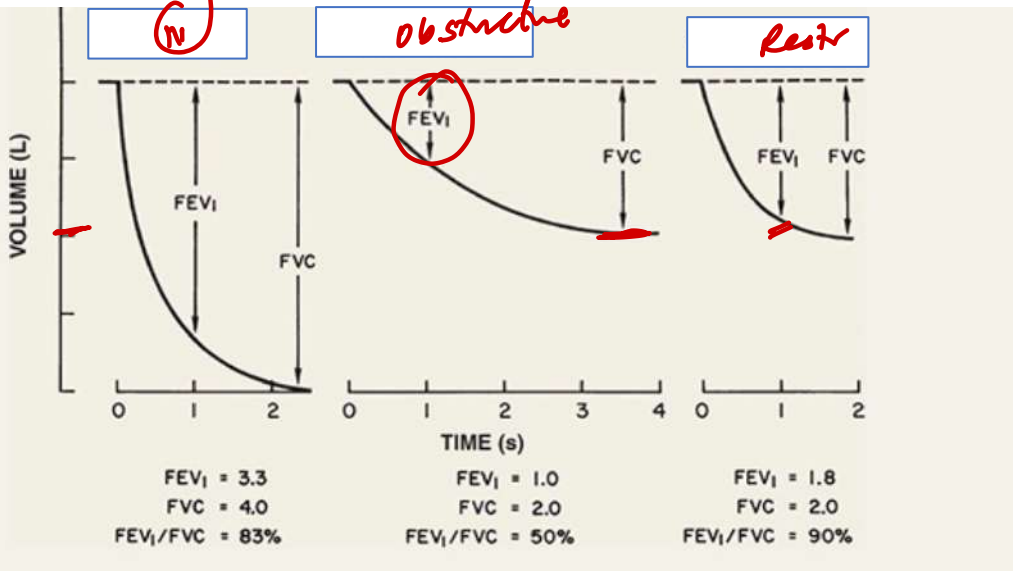
A. Chest wall neuromuscular disease

B. Sarcoidosis

C. Idiopathic pulmonary fibrosis

D. Bronchiectasis




N
obstructive
Restr
VOLUME (L)
FEV1
FVC
FEV1
FVC
FEV1
FVC
0
1
2
0
1
2
3
4
0
1
2
TIME (s)
FEV1 = 3.3
FVC = 4.0
FEV1/FVC = 83%
FEV1 = 1.0
FVC = 2.0
FEV1/FVC = 50%
FEV1 = 1.8
FVC = 2.0
FEV1/FVC = 90%

61. A 40-year-old male presented to OPD with complaints of excessive daytime sleepiness, and his wife also complains that he snores a lot at night during sleep. Which of the following is incorrect regarding his condition?

A. Increased tone of the pharyngeal muscles worsens obstruction

B. Fall of oxygen saturation triggers waking episodes at night

C. Episodes of apnea increase work of breathing

D. PaO2 is normal during the day

62. A 30-year-old patient presents with fever, cough, and tenacious white sputum. Which of the following should be used for treatment?

A. Syrup Dextromethorphan with bromhexine

B. Syrup Codeine

C. Syrup Dextromethorphan

D. Syrup Bromhexine

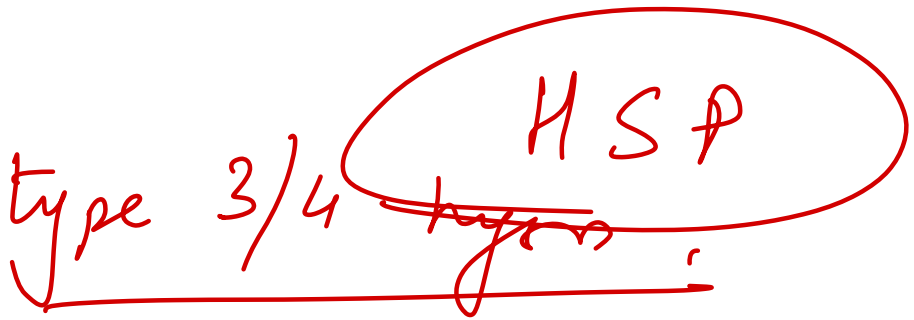
63. A 35-year-old man comes to the clinic for evaluation of exertional dyspnea and dry cough for 8 months. Oxygen saturation on room air while lying down is 96% and drops to 88% after 6 minutes of walking. Examination shows fine crackles in both lower lungs. Chest x-ray reveals reticular densities in both lung fields. Lung biopsy shows an infiltration of inflammatory cells, predominantly lymphocytes, as well as poorly formed noncaseating granulomas and moderate alveolar septal fibrosis. Which of the following is the most likely diagnosis?

A. Bronchial asthma

B. Chronic bronchitis

C. Hypersensitivity pneumonitis

D. Idiopathic pulmonary fibrosis



64. A 64-year-old man comes to the OPD due to worsening dyspnea on exertion for the past 3 months. The patient has had a nonproductive cough but no chest pain, fever, or chills. He was diagnosed with hypertension several years ago but takes no medications. Physical examination shows bilateral inspiratory crackles as well as dullness to percussion and decreased breath sounds at the right lung base. Chest x-ray reveals a right-sided pleural effusion. Which of the following pleuropulmonary changes are most likely present in this patient?

A. Vascular hydrostatic pressure increased, Oncotic pressure increased, lymphatic flow normal

B. Vascular hydrostatic pressure normal, Oncotic pressure normal, lymphatic flow decreased

C. Vascular hydrostatic pressure increased, Oncotic pressure normal, lymphatic flow increased

D. Vascular hydrostatic pressure normal, Oncotic pressure decreased, lymphatic flow increased

CHF - p. edema

cirrhosis / NS

65. A 45-year-old man presents with progressive shortness of breath over the past few years. He has no history of smoking and works as an accountant. Physical examination reveals diminished breath sounds and hyperresonance to percussion. A chest X-ray shows basilar emphysema. His liver function tests are mildly elevated. Which of the following properties correlate with the histopathology staining in this condition?

A. Periodic Acid Schiff - Positive, Diastase - Sensitive

B. Periodic Acid Schiff - Positive, Diastase - Resistant

C. Periodic Acid Schiff - Negative, Diastase - Sensitive

D. Periodic Acid Schiff - Negative, Diastase - Sensitive

66. Arrange the following in ascending order of their normal values:

1. Vital capacity
2. Functional residual capacity (FRC)
3. Inspiratory capacity
4. Tidal volume

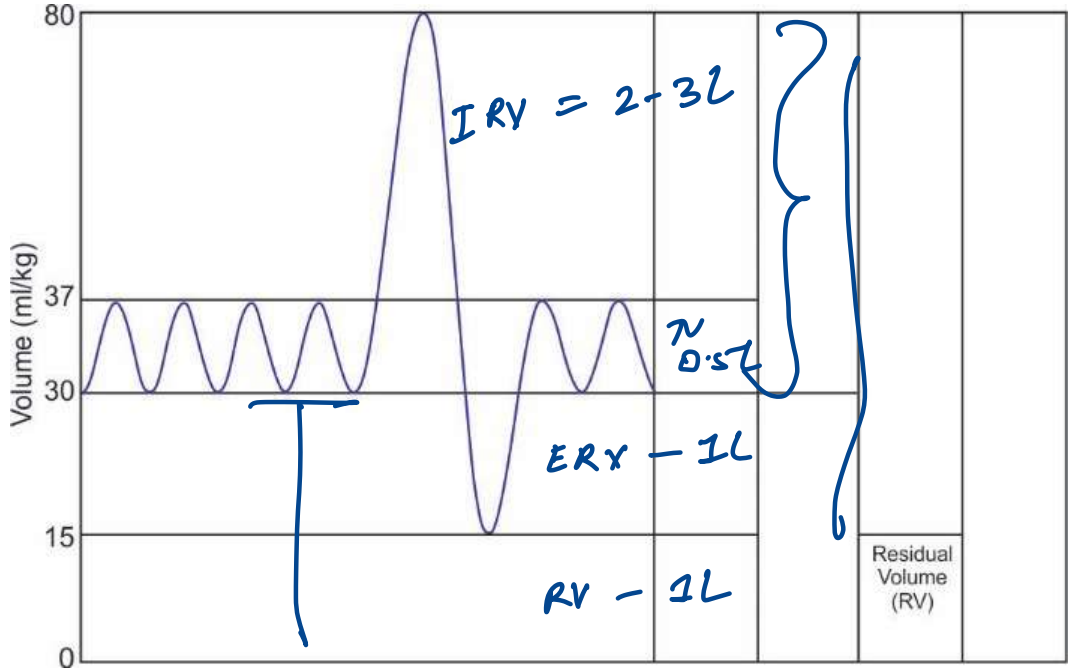
A. 1-2-3-4

B. 1-4-2-3

C. 4-3-1-2

D. 4-2-3-1

4 - 2 - 3 - 1



67. A 24-year-old male who is a known case of bronchial asthma presented for a routine follow-up. PFT was done earlier—his FEV1 was 70%, which improved to 83% after bronchodilator nebulization. He was already on MDI Albuterol daily. On questioning, it seems like he is being symptomatic for at least 2 times per week and is waking up in the nights due to symptoms at least once per week. On examination, there are scattered rhonchi. What should be done?

A. Add Fluticasone MDI two times a day

B. Shift to MDI Salmeterol two times a day

C. Add Prednisolone 10mg

D. Continue the current management

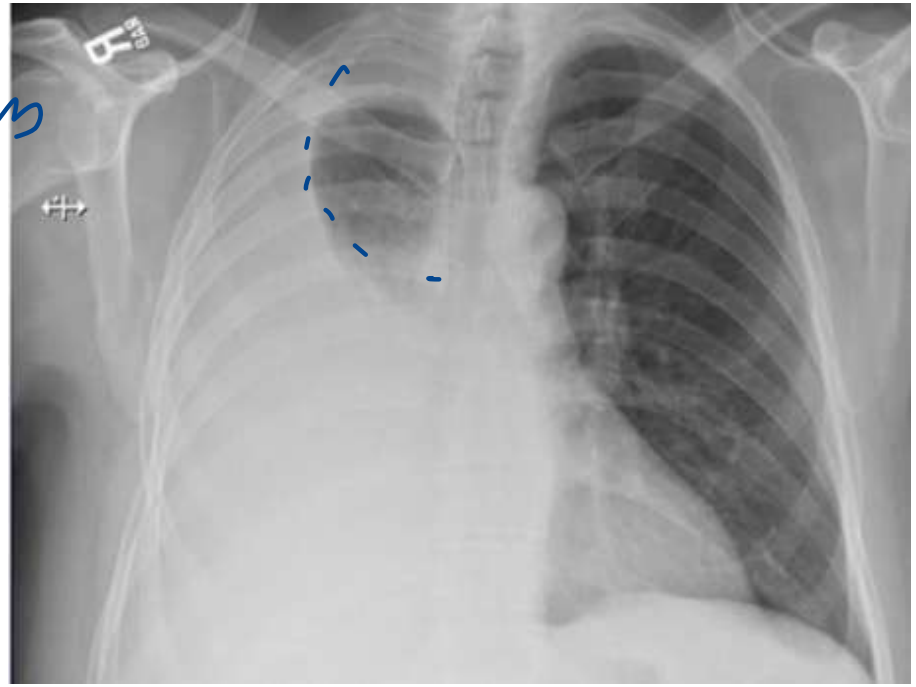
68. A 66-year-old man comes to the office due to increasing shortness of breath over the past 3 weeks. He has had a nonproductive cough for several months, which he attributes to allergies, but also notes a 9-kg unintentional weight loss over this time. He has a 50-pack-year smoking history. Chest x-ray is shown below. Which of the following would be the expected physical examination finding over the right lower chest?

A. Bronchial breath sounds

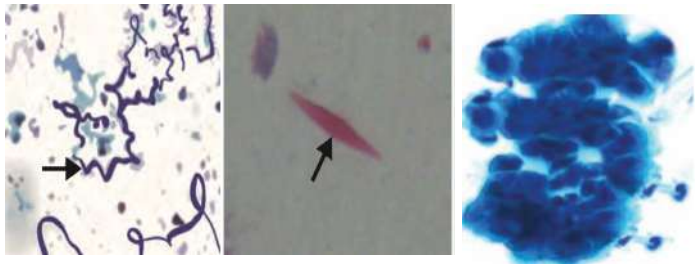
B. Decreased tactile fremitus

C. Fine inspiratory crackles

D. Increased resonance on percussion

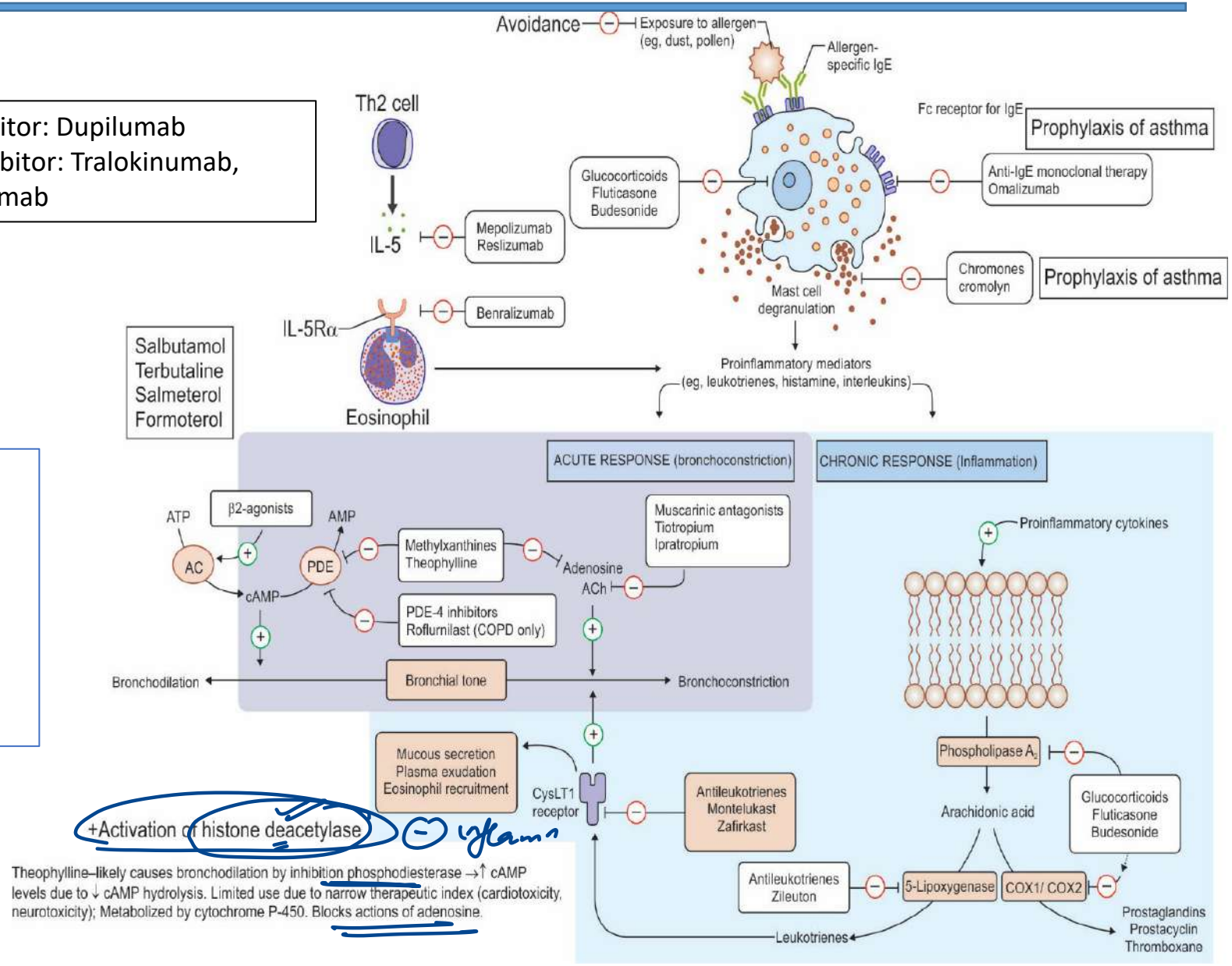


Asthma



IL-4 inhibitor: Dupilumab
IL-13 inhibitor: Tralokinumab, Lebrikizumab

Step1,2: Symptoms <5d/week:
LD-ICS-Formoterol as needed
Step 3: Most days/ >1/week nighttime:
LD-ICS-Formoterol
Step 4: Low lung function:
MD-ICS-Formoterol
Step 5: Add LAMA + HD-ICS + Anti-IgE/IL5



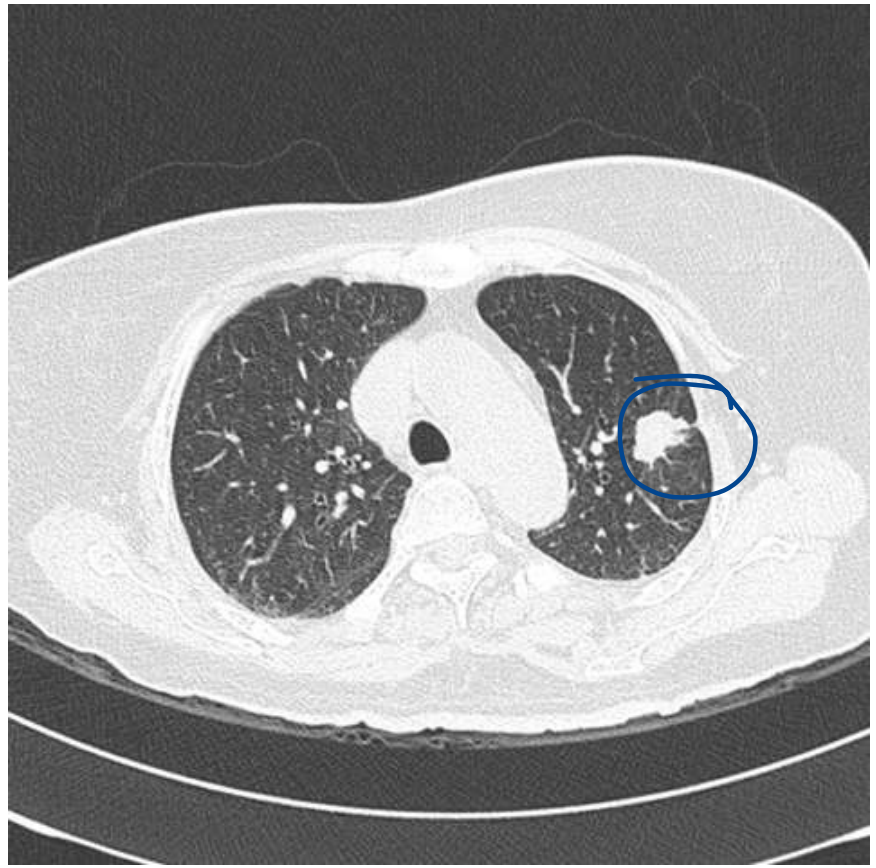
69. A 55-year-old chronic smoker presents with weight loss, hemoptysis and TTF-1 positivity. What is the possible diagnosis?

A. Squamous cell carcinoma

B. Small cell carcinoma

C. Adenocarcinoma

D. Large cell carcinoma



70. What is the route of dissemination of the following disease?

A. Air-borne

B. Feco-oral

C. Droplet

D. Hematogeneous

71. A 36-year-old woman is referred for evaluation because of hematuria and hemoptysis since 2 weeks. DLCO is 120% of normal with normal lung volumes. What is the likely diagnosis in this patient?

A. Pulmonary hypertension ✗

B. Asthma ✗

C. Wegener's granulomatosis

D. Microscopic polyangiitis

polycythemia ✗ → pulm hge

cavities + +

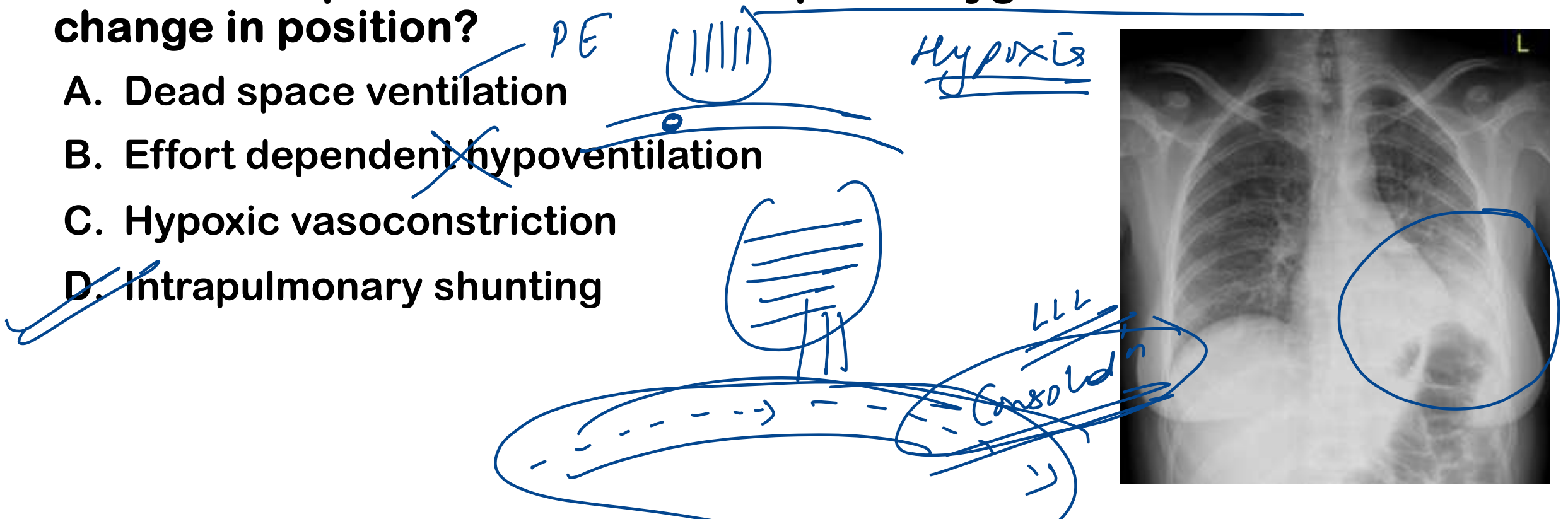
72. 64-year-old man comes to the emergency department due to 2 days of fever, chills, productive cough. The patient has a history of hypertension, hyperlipidemia, and type 2 diabetes mellitus. Oxygen saturation is 94% on room air when lying on his right side but drops to 89% when he lies on his left. Dullness to percussion and bronchial breath sounds are present on the left side. Imaging is shown here. Which of the following pathophysiologic mechanisms in the left lung is most responsible for the drop in oxygen saturation after the change in position?

A. Dead space ventilation

B. Effort dependent hypoventilation

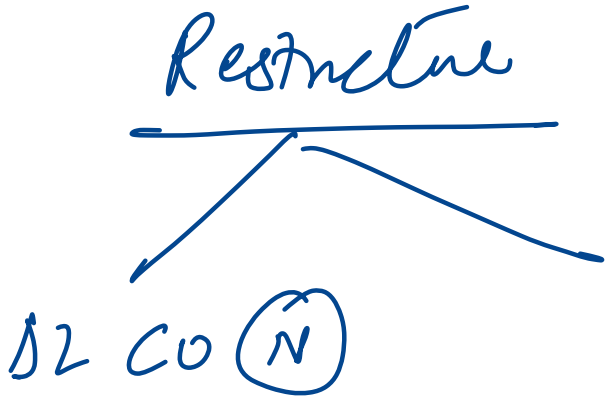
C. Hypoxic vasoconstriction

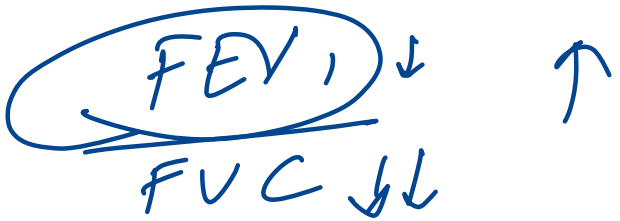
D. Intrapulmonary shunting



73. A 38-year-old man comes to the OPD with reports of dyspnea on exertion and decreased exercise tolerance. His medical history is unremarkable, and he has no history of childhood asthma or cough. The patient has gained almost 30kg over the past 4 years due to a sedentary lifestyle. He currently has a BMI of 41 kg/m2. His respiratory rate is 22/min and pulse oximetry is 93% on room air at rest. Physical examination is notable for central obesity. Lungs are clear on auscultation bilaterally. Which of the following changes are most likely to be seen on pulmonary function testing in this patient?

A. FEV1 low, FVC low, RV normal, TLC low
B. FEV1 low, FVC low, RV high, TLC high
C. FEV1 high, FVC low, RV normal, TLC low
D. FEV1 low, FVC low, RV high, TLC low





74. All of the following are true about theophylline except:

A. PDE 4 inhibition: Bronchodilation

B. Deactivation of histone deacetylase: Anti-inflammatory

C. PDE 3 inhibition: Cardiac effects

D. Adenosine antagonism: Diuresis

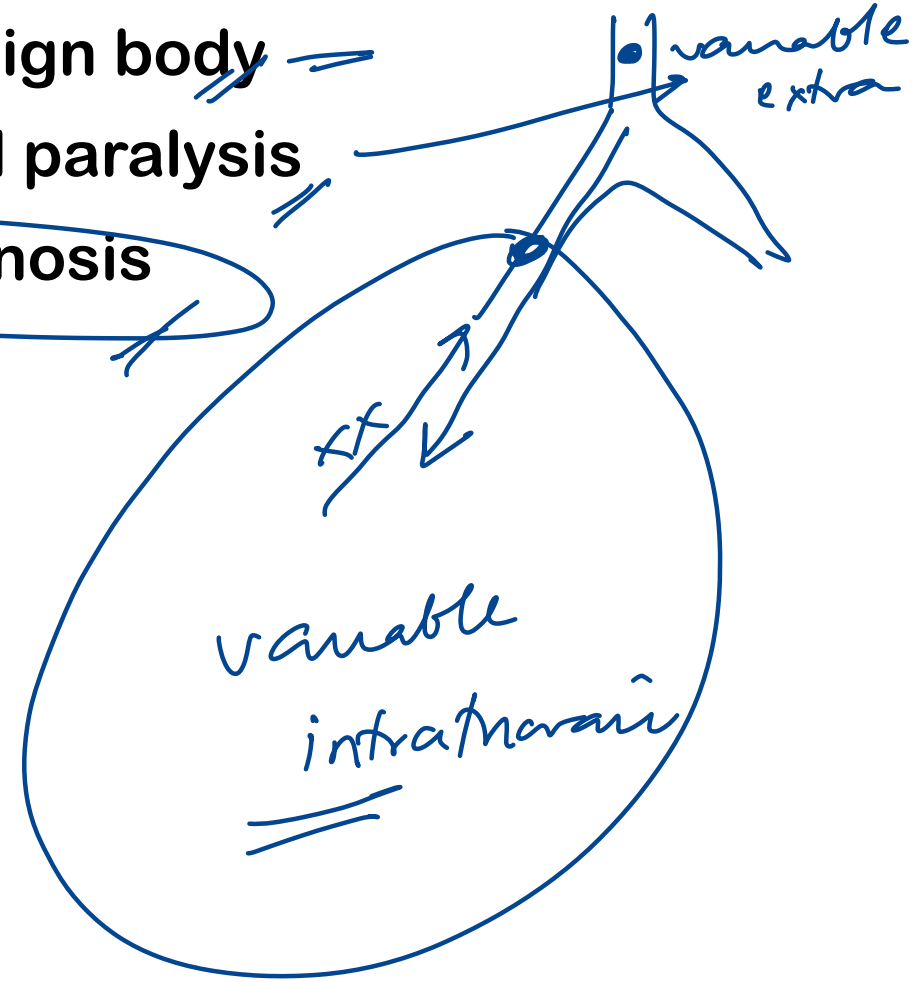
75. 65-year-old man presents with progressive dyspnoea & pulmonary function testing was done. FEV1 is 2.5 L (78% predicted), FVC is 4.00 L (94% predicted), and the FEV1/FVC ratio is 62.5%. The flow-volume curve is shown. What is the most likely cause?

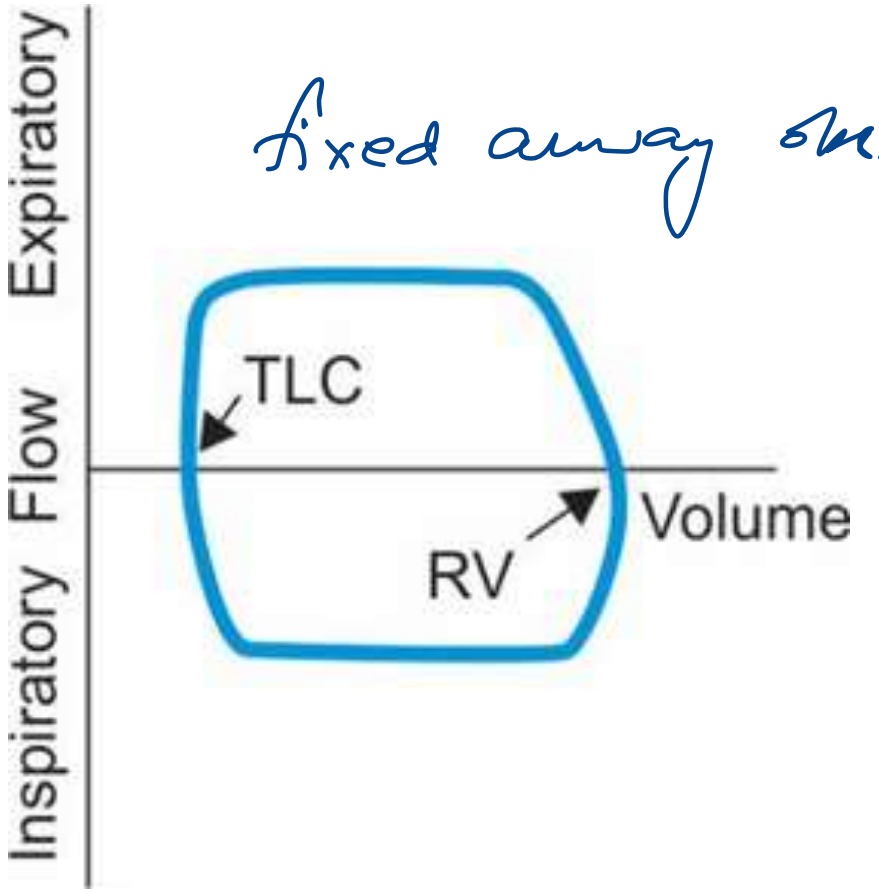
A. Aspirated foreign body

B. U/L vocal cord paralysis

C. Subglottic stenosis

D. COPD





76. A 63-year-old woman is brought to the emergency department because of a 2-day history of severe epigastric pain and nausea. She has a 20-year history of alcohol use disorder. Nine hours after admission, she becomes increasingly dyspneic and tachypneic. Pulse oximetry on supplemental oxygen shows an oxygen saturation of 81%. Physical examination shows diffuse lung crackles, marked epigastric tenderness, and a periumbilical hematoma. Laboratory studies show normal brain natriuretic peptide. An x-ray of the chest shows bilateral opacities in the lower lung fields. Which of the following pathomechanisms best explains this patient's pulmonary findings?

A. Alveolocapillary membrane leakage

B. Intrapulmonary left-to-right shunt

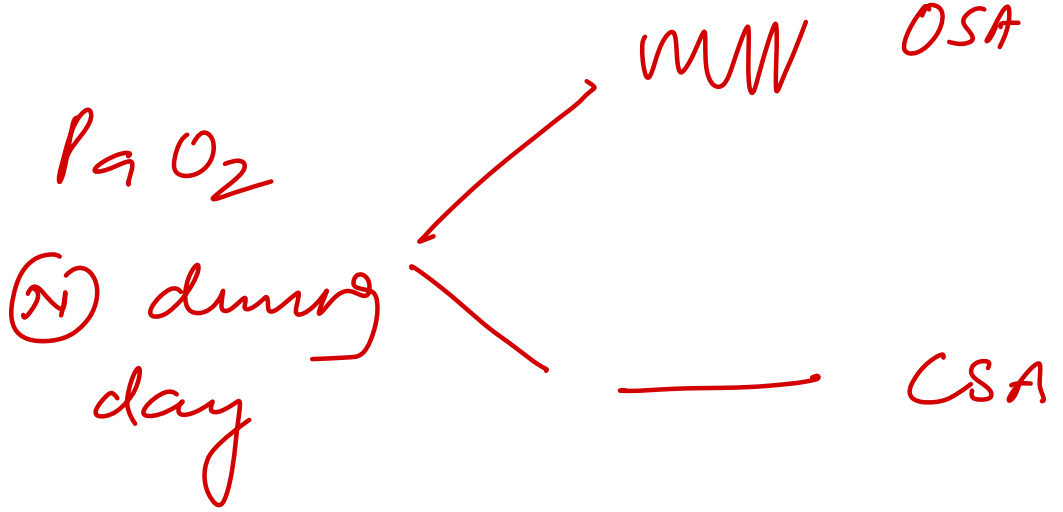
C. Increased production of surfactant

D. Embolic obstruction of pulmonary arteries

77. A woman came in with complaints of excessive daytime sleepiness and difficulties in concentration and memory persisting for a year. During the examination, her Body Mass Index (BMI) was measured at 43 kg/m2, and her blood pressure (BP) was recorded as 170/98 mmHg. Arterial Blood Gas (ABG) analysis was performed while she was awake, and the results are as follows. Based on the provided information, what is the probable diagnosis?

PaO2 – 70 mmHg
PaCO2 – 53 mmHg
HCO3- – 33 mmHg

A. Obesity hypoventilation syndrome
B. Obstructive sleep apnea
C. Central sleep apnea
D. Narcolepsy



78. The combined compliance of the lung and chest wall of a healthy individual is measured and plotted as shown below. It is noted that the intrapleural pressure at the end of maximal inspiration is -8 cm H20 (marked x). Which of the following is the best estimate of the intrapleural pressure at the point marked by the black dot?

A. +10 cm H2O

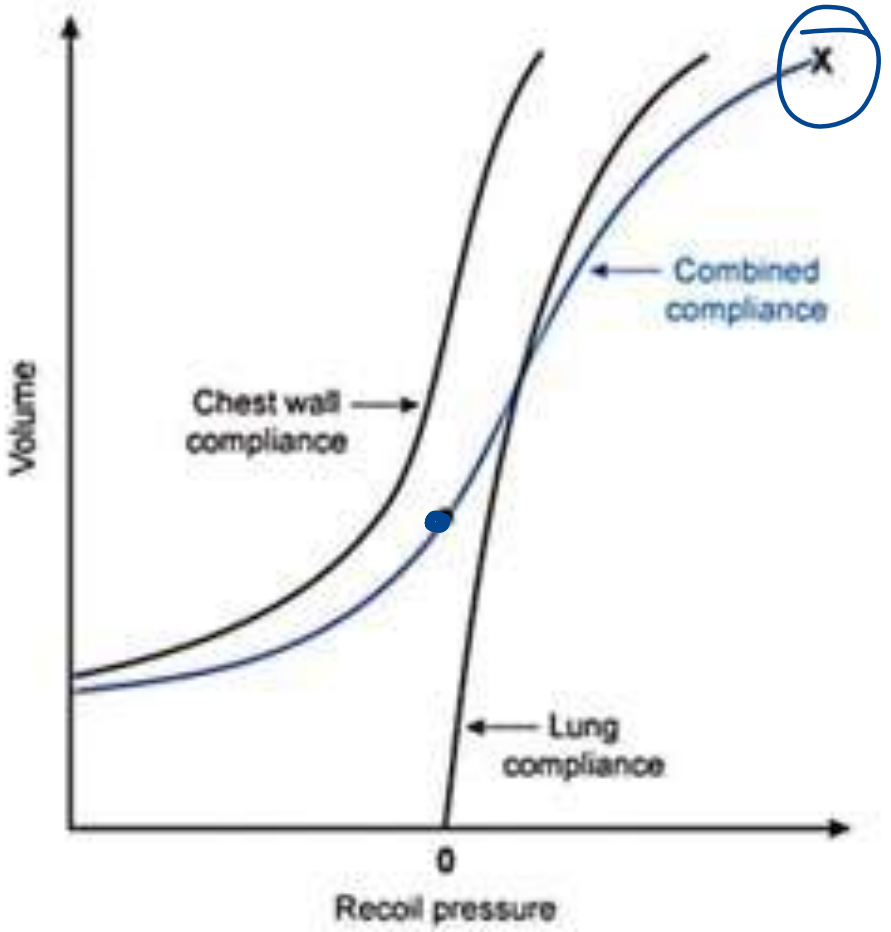
B. + 5 cm H2O

C. -5cm H20

D. 0cm H20

always -ve

E. -10 cm



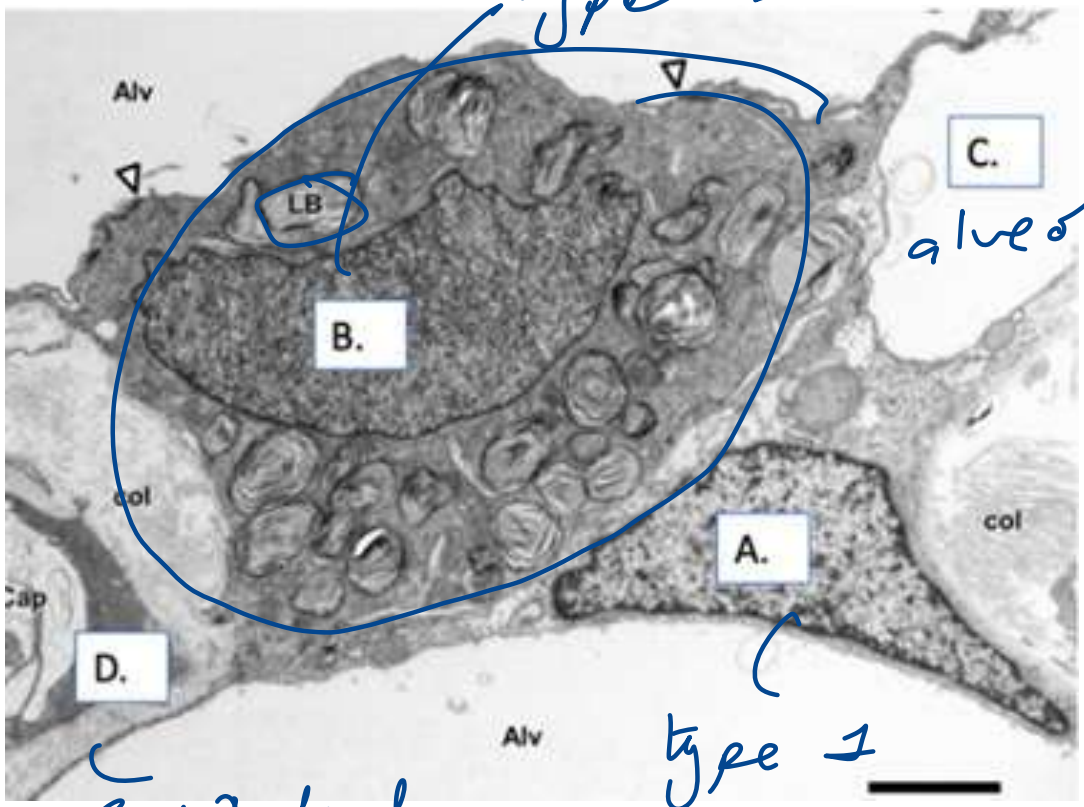
79. Physicians conduct a series of animal experiments to determine pulmonary tissue regeneration capacity. During one of the experiments, lung alveoli are exposed to NO2 and massive necrosis of the epithelial lining ensues. Histologic examination of the injured tissues a month later shows partial recovery of the alveolar epithelial lining. This regenerated tissue is most likely derived from which of the following cells?

A. A

B. B

C. C

D. D



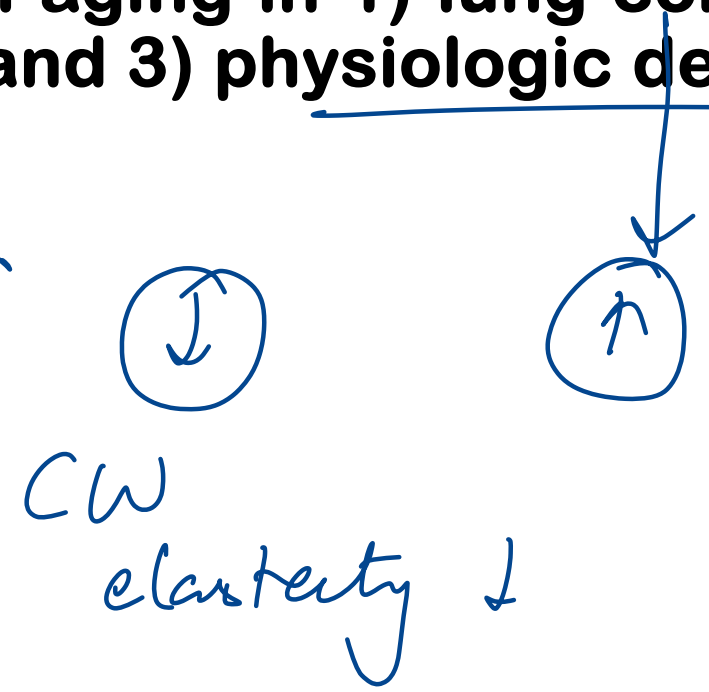
80. A 70-year-old woman has been enrolled in a longitudinal research study on aging for the last 30 years. Medical history is significant for osteoporosis; she has developed moderate kyphosis due to gradual loss of vertebral body height. She is otherwise active and healthy with no additional medical issues. She has never smoked. Compared to her physiology testing done years ago, which of the following changes is most consistent with normal aging in 1) lung compliance, 2) total respiratory system compliance and 3) physiologic dead space respectively?

A. Increase, decrease, increase

B. Increase, increase, increase

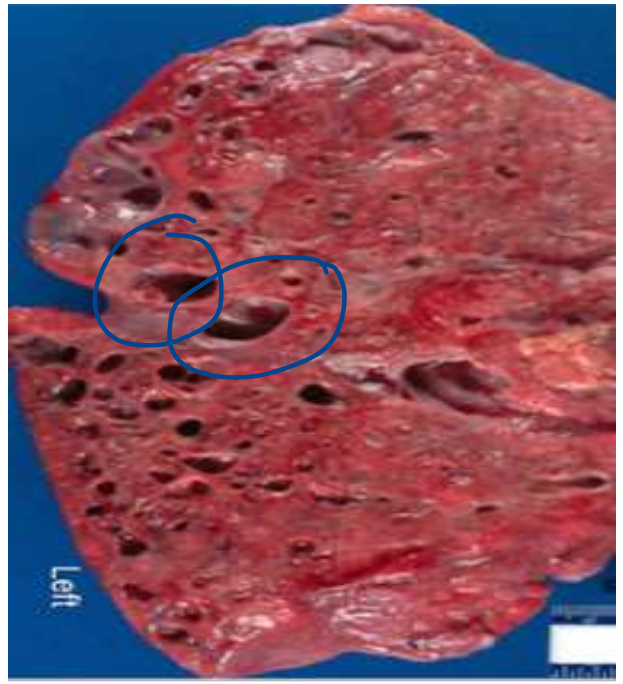
C. Increase, unchanged, decrease

D. Decrease, decrease, increase



81. A 17-year-old girl is brought to the emergency department due to hemoptysis and severe respiratory distress. The patient has been on several oral antibiotics for pneumonia over the past week and has required numerous similar treatments in the past. Pulmonary examination reveals diffusely reduced air flow, rales, and intercostal retractions. Despite aggressive management, the patient ultimately expires. An autopsy is performed and a gross lung specimen is shown in the image below:
Which of the following is the most likely etiology of this patient's hemoptysis?

A. Bleeding from hypertrophied bronchial arteries
B. Blood loss from hypertrophied pulmonary arteries
C. Diffuse alveolar hemorrhage due to vasculitis
D. Formation of a fistula between the tracheobronchial tree and aorta



82. A 53-year-old woman underwent hip replacement surgery. A week after the surgery, the patient developed swelling of the legs associated with pain on palpation. Her heart rate is 70 beats per min. There is no history of hemoptysis or significant weight loss. There is no previous history of pulmonary embolism. What is the risk of developing pulmonary embolism in the patient based on Well's score?

A. Low

B. High

C. Moderate

D. Cannot comment without d-dimer values

DVT

Clinical Feature	Points
Active cancer (treatment ongoing or within last 6 months)	+1
Paralysis, paresis, or recent plaster immobilization of the lower extremities	+1
Recently bedridden for ≥3 days or major surgery within 12 weeks	+1
Localized tenderness along the deep venous system	+1
Entire leg swollen	+1
Calf swelling ≥3 cm larger than the asymptomatic side (measured 10 cm below tibial tuberosity)	+1
Pitting edema confined to symptomatic leg	+1
Collateral superficial veins (non-varicose)	+1
Previous documented DVT	+1
Alternative diagnosis at least as likely as DVT	-2

Interpretation
- Low probability: ≤0 points
- Moderate probability: 1-2 points
- High probability: ≥3 points

PE

Clinical Variable	Points
Clinical signs and symptoms of deep vein thrombosis (DVT)	3.0
PE is the most likely diagnosis or equally likely	3.0
Heart rate > 100 beats per minute	1.5
Immobilization (≥3 days) or surgery in the past 4 weeks	1.5
Previous DVT or PE	1.5
Hemoptysis	1.0
Malignancy (currently or treated in the last 6 months)	1.0

- PE unlikely: ≤4 points
- PE likely: >4 points

83. A 34-year-old woman comes to the office for evaluation of recurrent transient pulmonary infiltrates. The patient has a history of bronchial asthma and has had several exacerbations over the past few years, particularly during the winter months. Her medications include albuterol as needed and medium-dose inhaled glucocorticoids. Complete blood count shows eosinophilia. A chest CT scan reveals proximal bronchiectasis. This patient's condition is most likely related to colonization with which of the following?

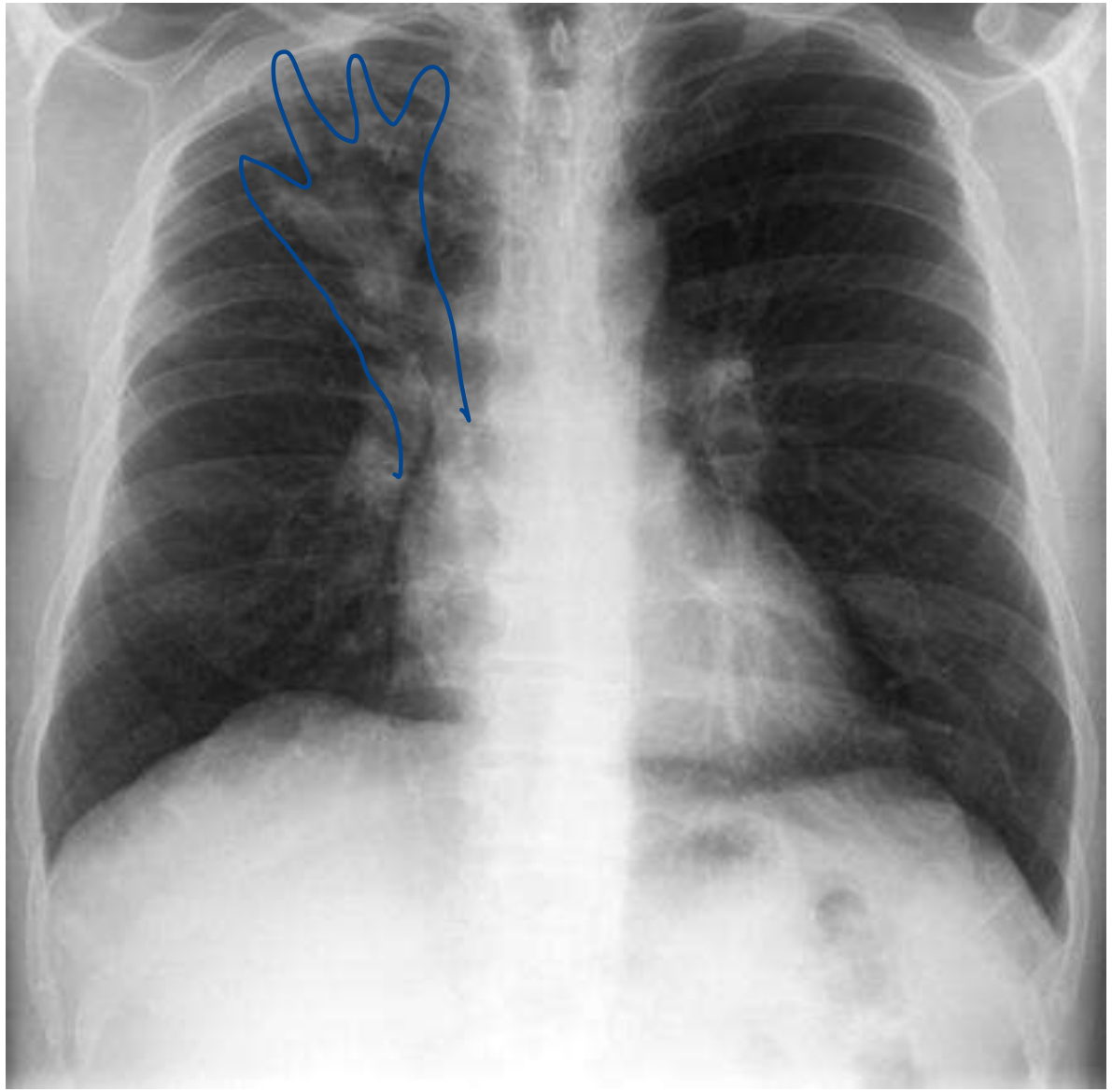
A. Adenovirus

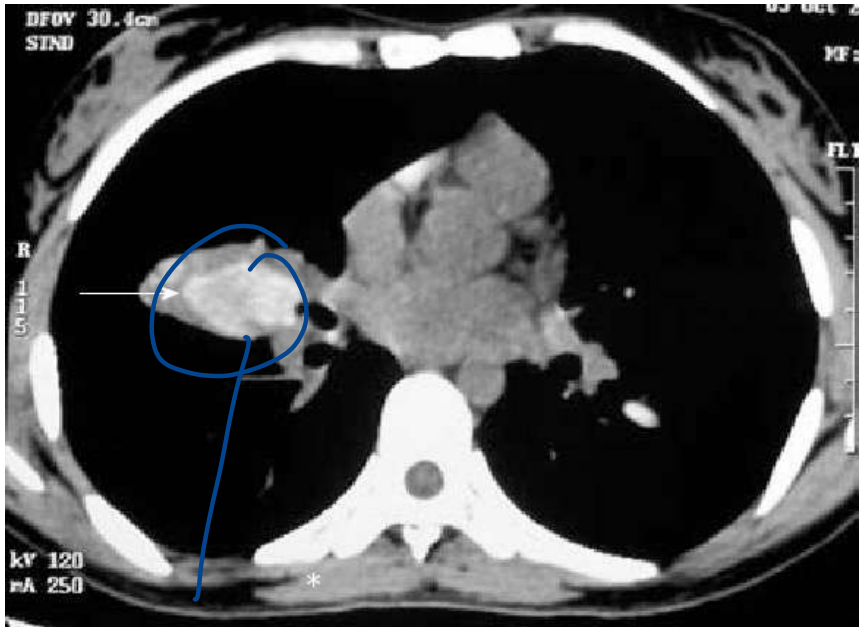
B. Aspergillus fumigatus

C. Strongyloides

D. Paragonimus

ABPA





HAM

toothpaste sign -

fungal hyphae -

84. A 55-year-old woman with a history of Crohn disease is admitted to the hospital due to perforated appendicitis. The patient quickly develops respiratory difficulty, and acute respiratory distress syndrome is diagnosed. She is intubated and mechanically ventilated with positive pressure ventilation. She is intermittently placed in the prone position while mechanically ventilated. Which of the following is most likely to occur due to this position change?

A. Alveolar hyperdistention

B. Decreased cardiac output

C. Decreased functional residual capacity

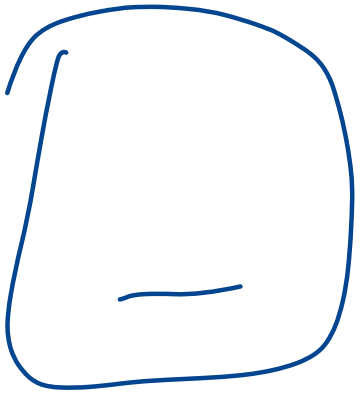
D. Improved ventilation-perfusion matching

PRONE

↑ FRC

PEEP ++

Alveolar recruitment ↑



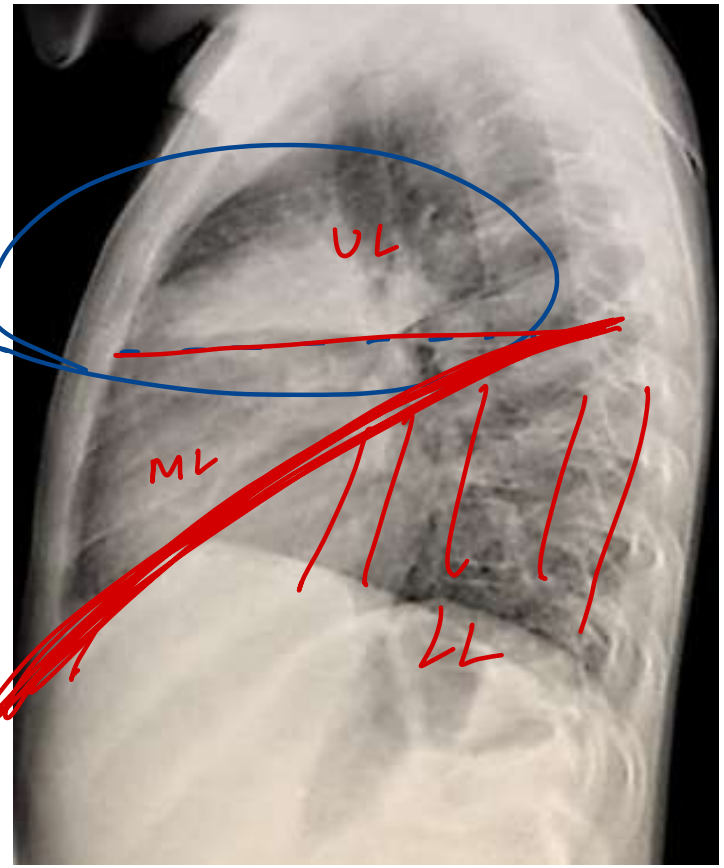
85. A 15-year-old girl is admitted for fever, cough, and malaise for the past two days. She has no history of sick contacts, and all her immunizations are up to date. Her leukocyte count is 21,000/mm with 7% band forms. Upright chest x-ray findings are shown in the image below. Which of the following is the most likely location of the pathologic process in this patient?

A. Left lower lung lobe

B. Left pleural space

C. Right middle lung lobe

D. Right upper lobe



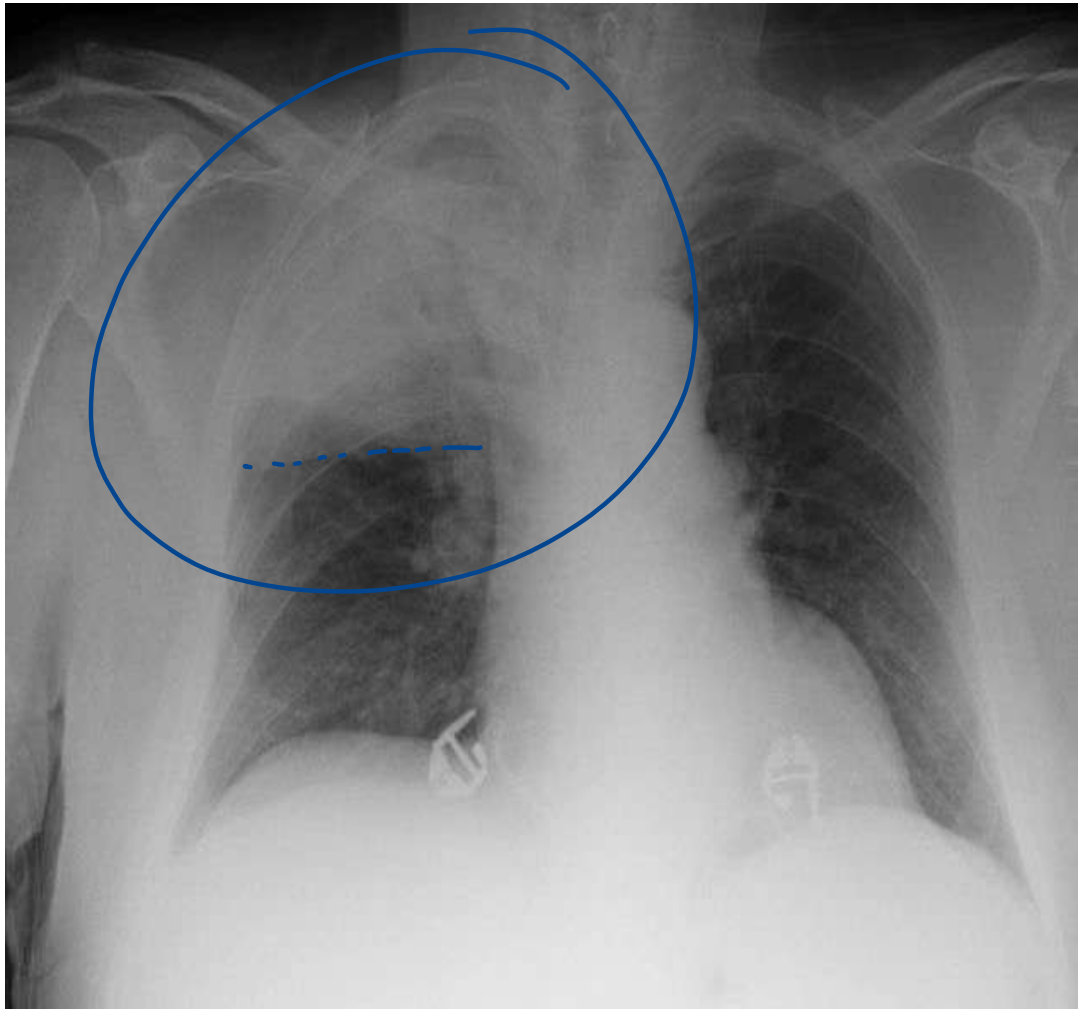
Consolidn

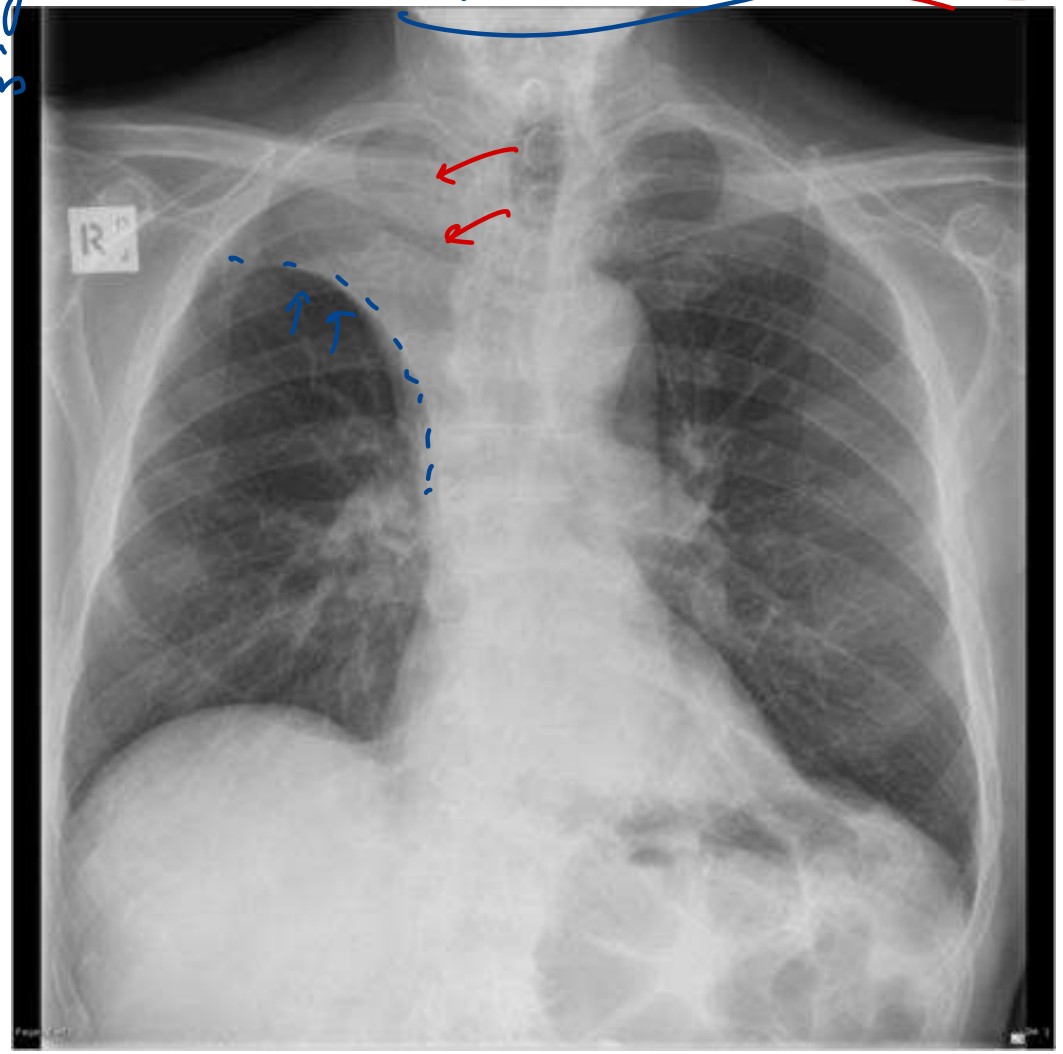
RUL

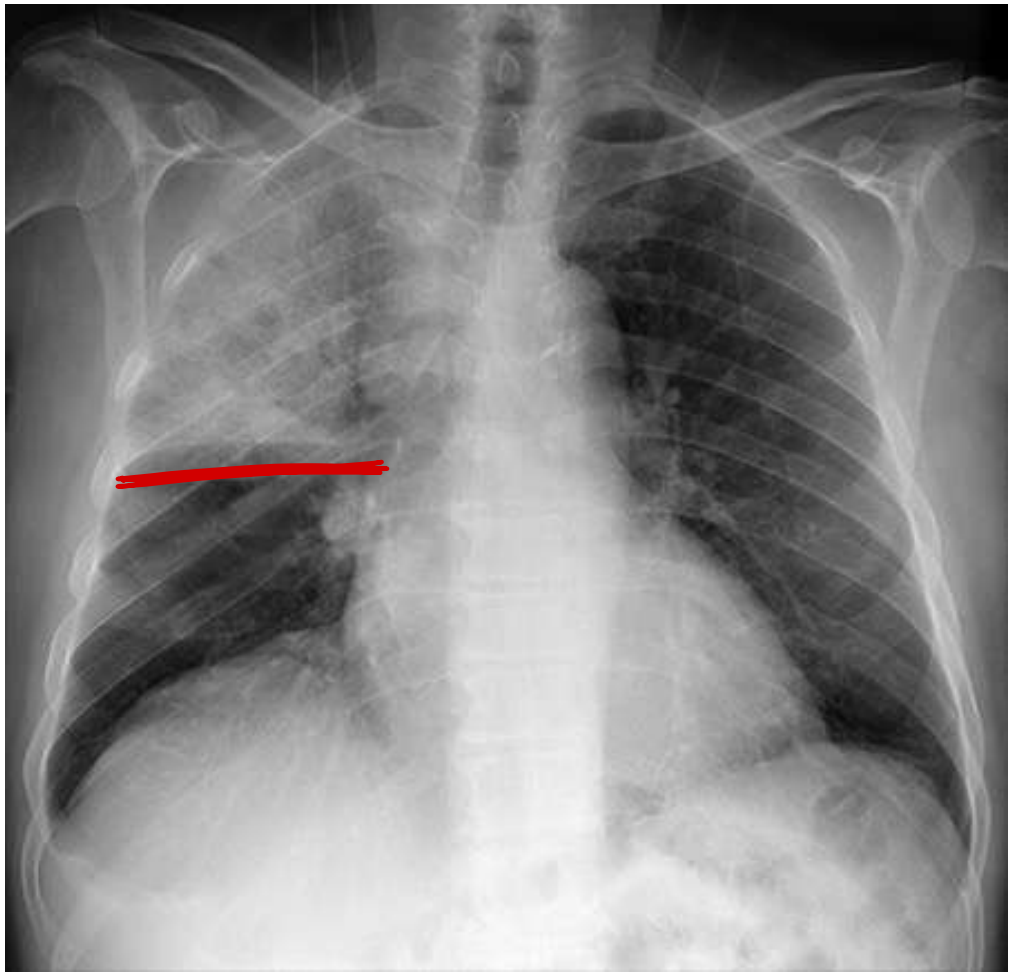
air bronchogram sign

vol loss

Collapse







NEET 25

Consolidation

86. 60-year-old man is brought to the emergency department following a motor vehicle collision. He is comatose and unable to provide any information. Multiple blunt injuries of the torso and abdomen are present. Review of the patient's medical record reveals a history of right upper lobe cavitary tuberculosis that was effectively treated several years ago. A representative slice of the chest CT, shown in the image below, redemonstrates his known right upper lobe cavity. Which of the following best describes this patient's condition?

A. Allergic inflammation ✗ ABPA

B. Chronic colonization

C. Invasive malignancy

D. Heterotopic calcification ✗✗

aspergilloma

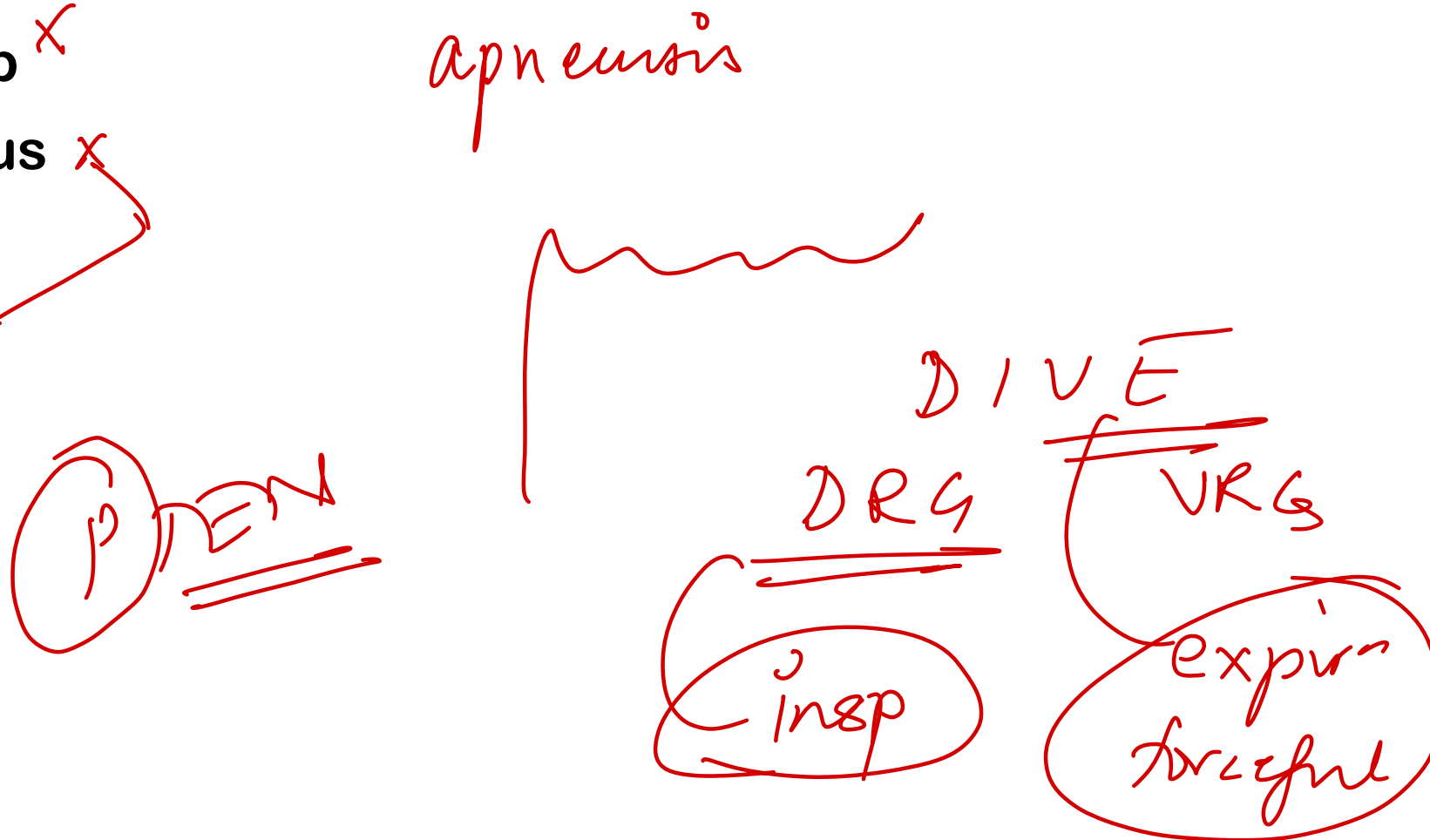
87. A 16-year-old girl with a head injury from a car accident was brought to the emergency department by ambulance. On exam, she had a respiratory rate of 8 breaths per minute, and a prolonged duration of inhalation was noted. Damage to which of the following groups of neurons in the brainstem is most likely responsible for this abnormal respiration?

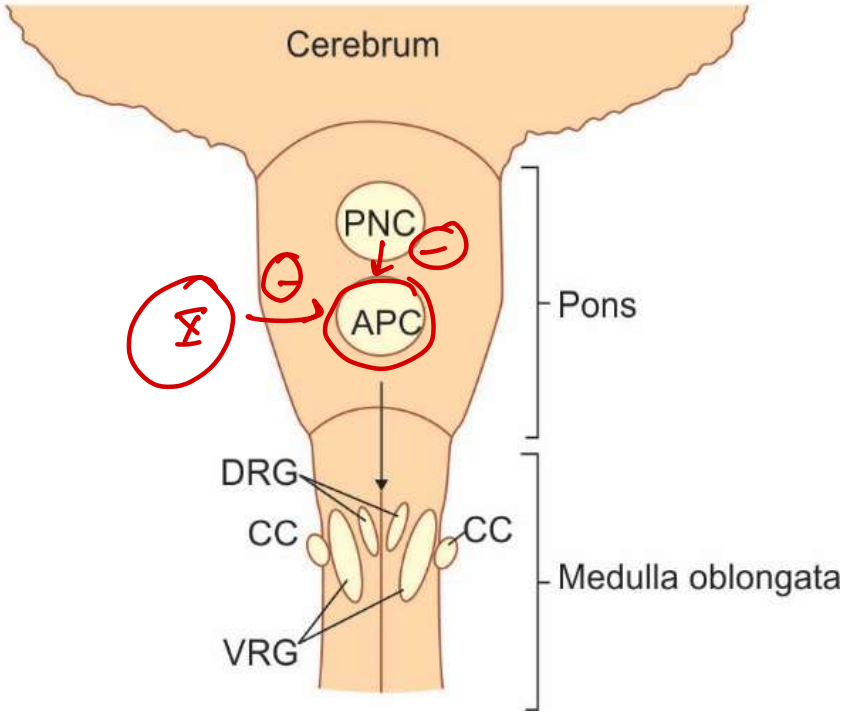
A. Dorsal respiratory group

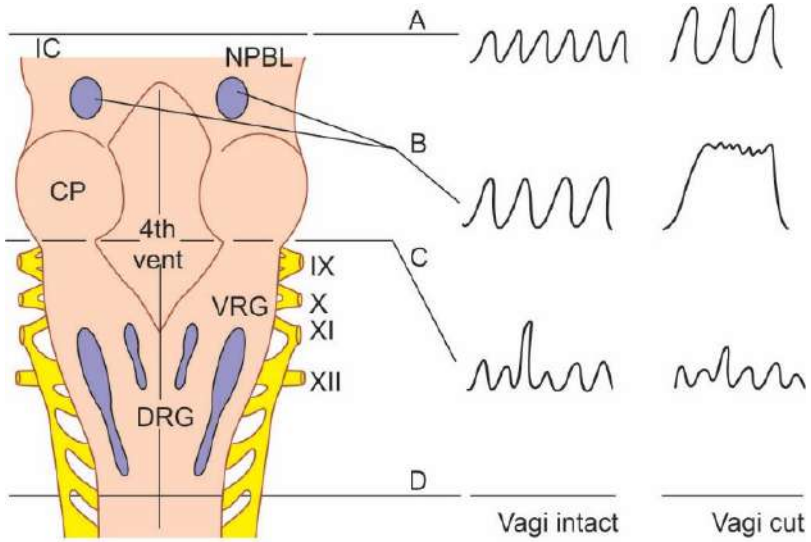
B. Nucleus tractus solitarius

C. Pneumotaxic center

D. Vasomotor center







Transection	Effect
ABOVE PONS	X intact: X cut:
MID-PONS	X intact: X cut:
PONS-MEDULLA	
BELOW MEDULLA	

88. A 76-year-old man is brought to the emergency department after being involved in a motor vehicle collision. He is found to have a laceration of the spleen and is taken for emergent laparotomy. During surgery, the patient goes into cardiac arrest and dies, despite aggressive resuscitation efforts. Autopsy examination is performed and shows areas of thickening inside the chest wall as shown below. The lung examination shows fibrosis of the lower lobes. Pathologic examination of these fibrotic areas is most likely to reveal which of the following findings?

A. Alveolar hyaline membranes ARDS

B. Birefringent silicate particles silica

~~C. Carbon-laden macrophages~~ pneumocon

D. Ferruginous bodies

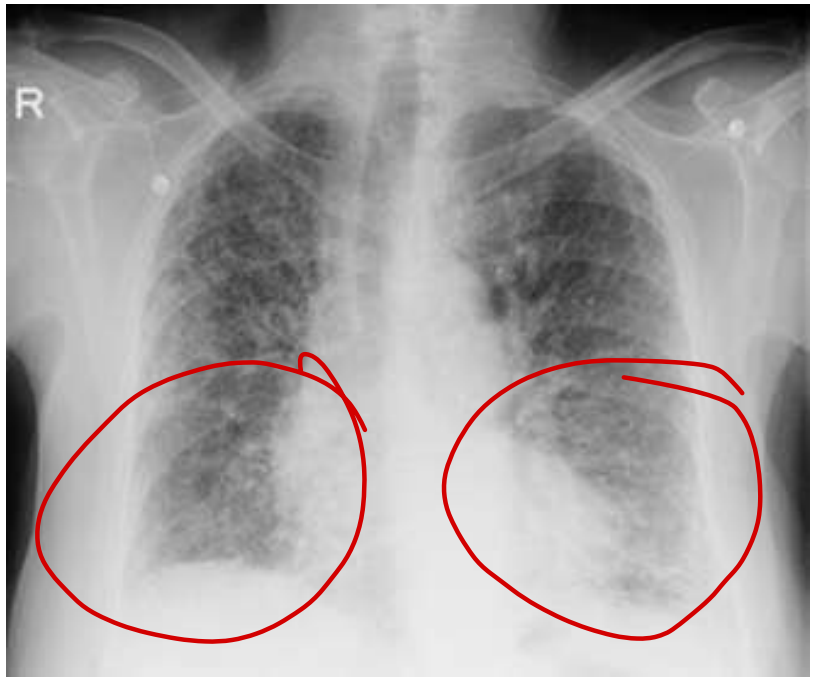
89. A 58-year-old man comes to the OPD due to exertional dyspnea and cough. His symptoms started 6 months ago and have progressively worsened. Other medical conditions include peptic ulcer disease, and rheumatoid arthritis. The patient had taken medication for rheumatoid arthritis for many years but stopped a year ago, as the drug failed to improve his worsening hand arthritis. Chest x-ray is shown in the image below. Which of the following is the most likely explanation for this patient's pulmonary symptoms?

A. Bilateral atelectasis

B. Left ventricular failure

C. Obstructive lung disease

D. Pulmonary fibrosis



90. A 1-hour-old boy born at 29 weeks gestation via cesarean delivery due to maternal preeclampsia with severe features, is admitted to the neonatal intensive care unit for respiratory failure. Which of the following best describes the condition of this patient's lungs compared to a normal neonate?

A. Compliance low, FRC high, Airway resistance high

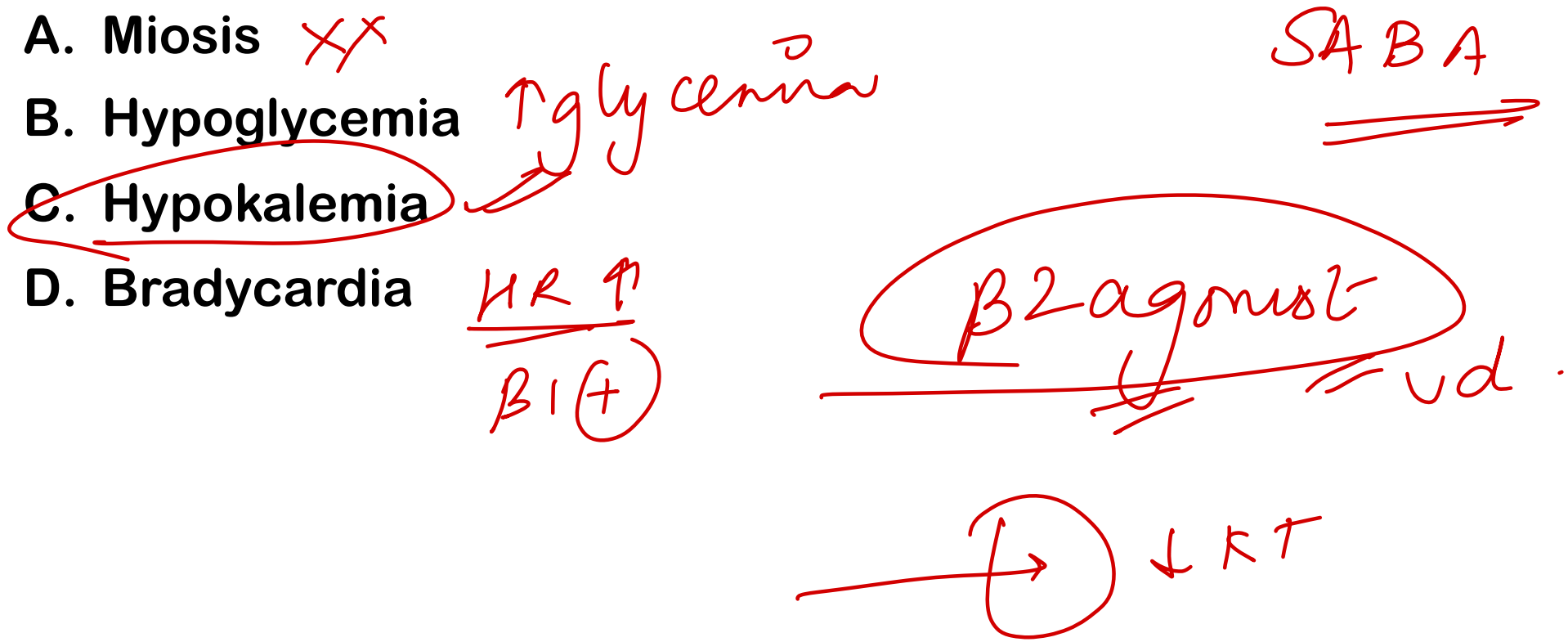
B. Compliance low, FRC low, Airway resistance high

C. Compliance high, FRC high, Airway resistance high

D. Compliance high, FRC high, Airway resistance low

91. A 23-year-old woman with asthma is brought to the emergency department because of shortness of breath and wheezing for 20 minutes. She is unable to speak more than a few words at a time. Treatment with high-dose continuous inhaled albuterol is begun. This patient is at increased risk for which of the following adverse effects?

A. Miosis
B. Hypoglycemia
C. Hypokalemia
D. Bradycardia



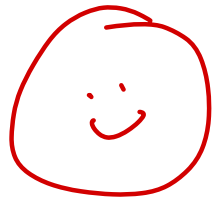
92. A 17-year-old girl presents to the clinic with headache, fatigue, fever, and a persistent dry cough. She reports that the symptoms began 2 weeks ago during a school trip. A chest X-ray reveals diffuse interstitial infiltrates. Laboratory testing shows hemolytic anemia with elevated reticulocyte count. Blood samples drawn into anticoagulated tubes are stored on ice, and visible clumping is observed when cold. Which of the following pathogens is the most likely cause of this patient's condition?

A. Legionella pneumophila

B. Klebsiella pneumoniae

C. Haemophilus influenzae

D. Mycoplasma pneumoniae



93. Which of the following statements about Ciclesonide is incorrect?

A. Oral candidiasis is common with its use.

B. It has fewer side effects than other inhalational corticosteroids.

C. It is a prodrug activated by bronchial esterase.

D. It has comparable efficacy to other inhalational corticosteroids.

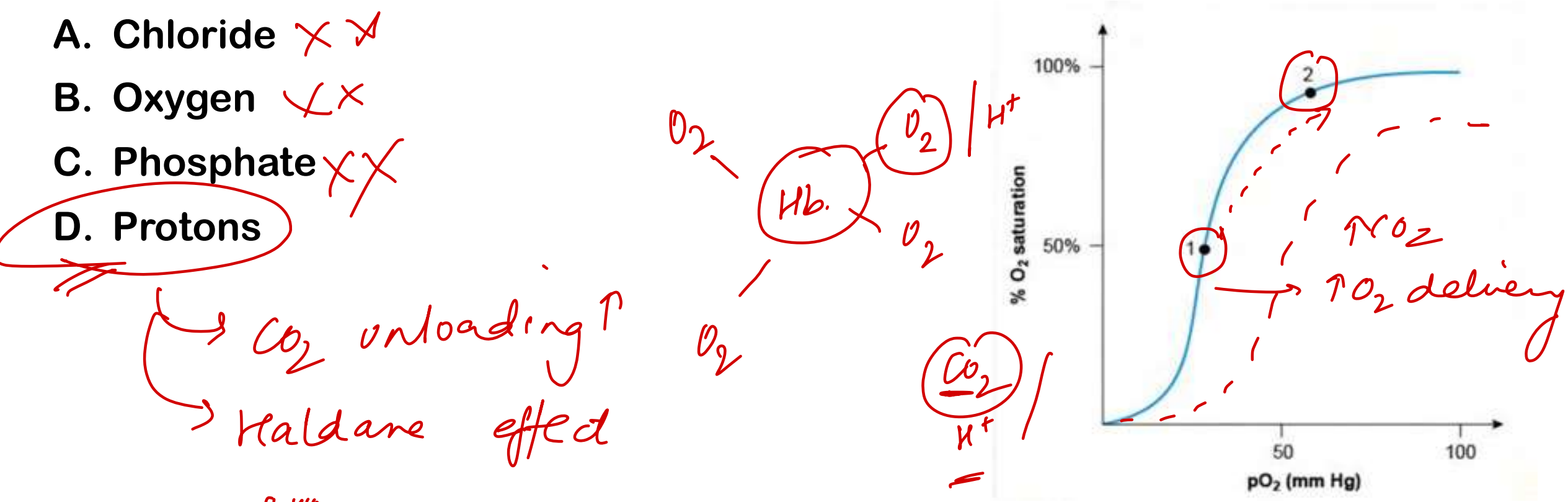
94. Physiologists studying hemoglobin function in patients with respiratory disorders are evaluating changes associated with oxygen loading and unloading. During the transition from point 1 to point 2 on the graph shown below, hemoglobin molecules are most likely to release which of the following?

A. Chloride

B. Oxygen

C. Phosphate

D. Protons



CO_2 unloading ↑

Haldane effect

O_2 — Hb. — O_2 | H^+

O_2

CO_2 | H^+

↑ CO_2

↑ O_2 delivery

a HCO_3

RBC

Bohr → ↑ CO_2 – ↑ O_2 delivery

Bohr

Haldane

Cl^- shift

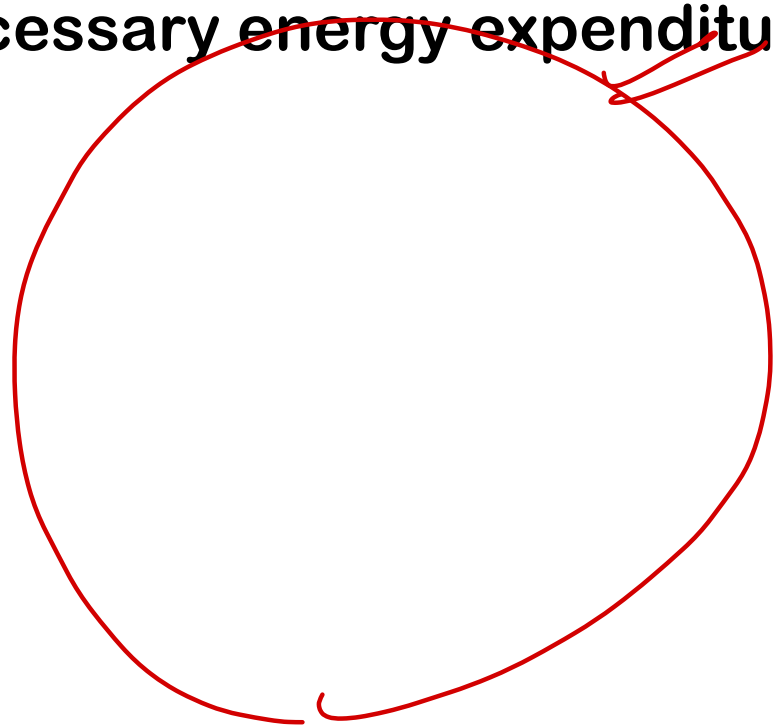
95. All are advantages of the Hering-Breuer reflex, except:

A. Prevents overinflation during deep inspiration

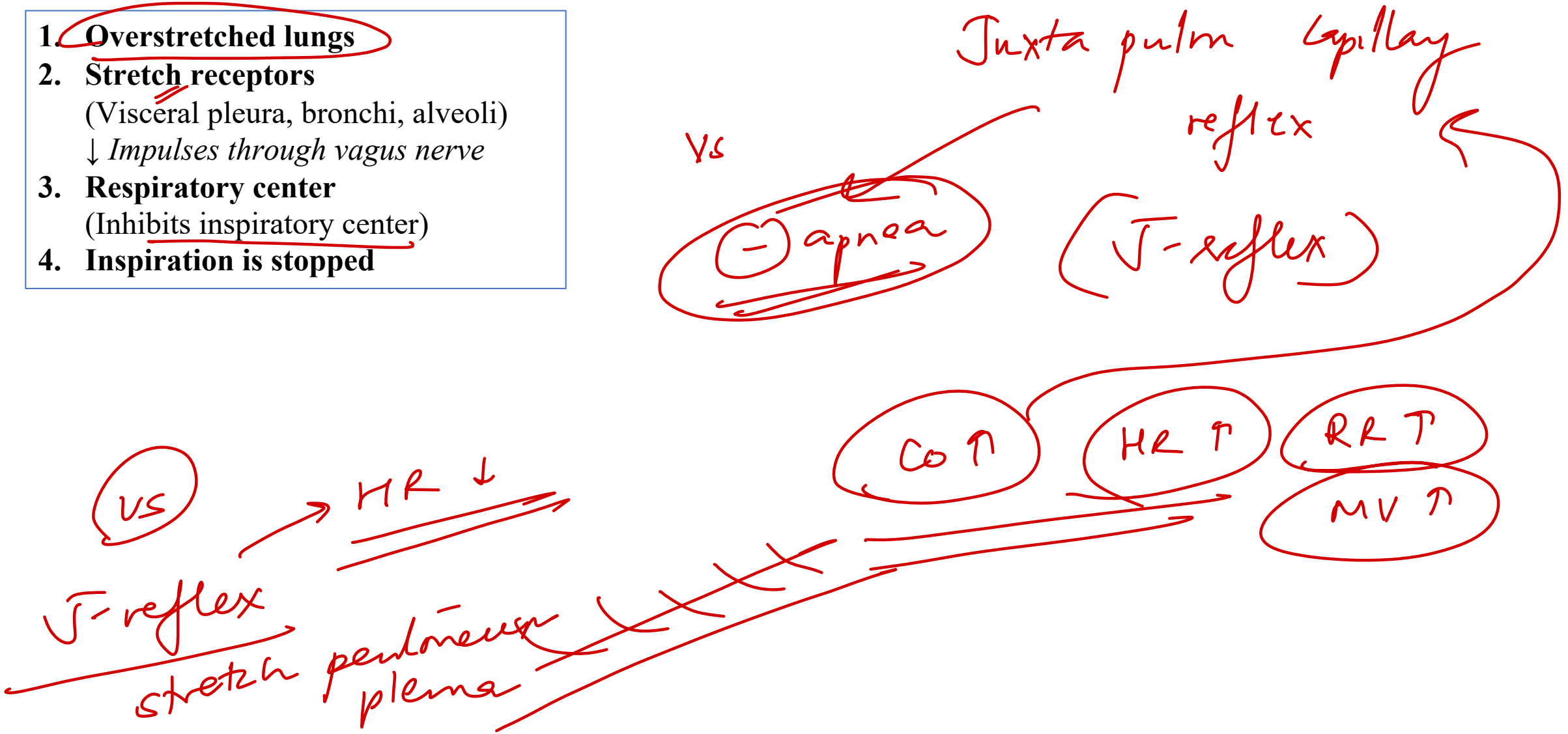
B. Promotes high lung volumes for efficient gas exchange

C. Prevents atelectasis during expiration

D. Reduces unnecessary energy expenditure



1. **Overstretched lungs**
2. **Stretch receptors**
   (Visceral pleura, bronchi, alveoli)
   ↓ *Impulses through vagus nerve*
3. **Respiratory center**
   (Inhibits inspiratory center)
4. **Inspiration is stopped**



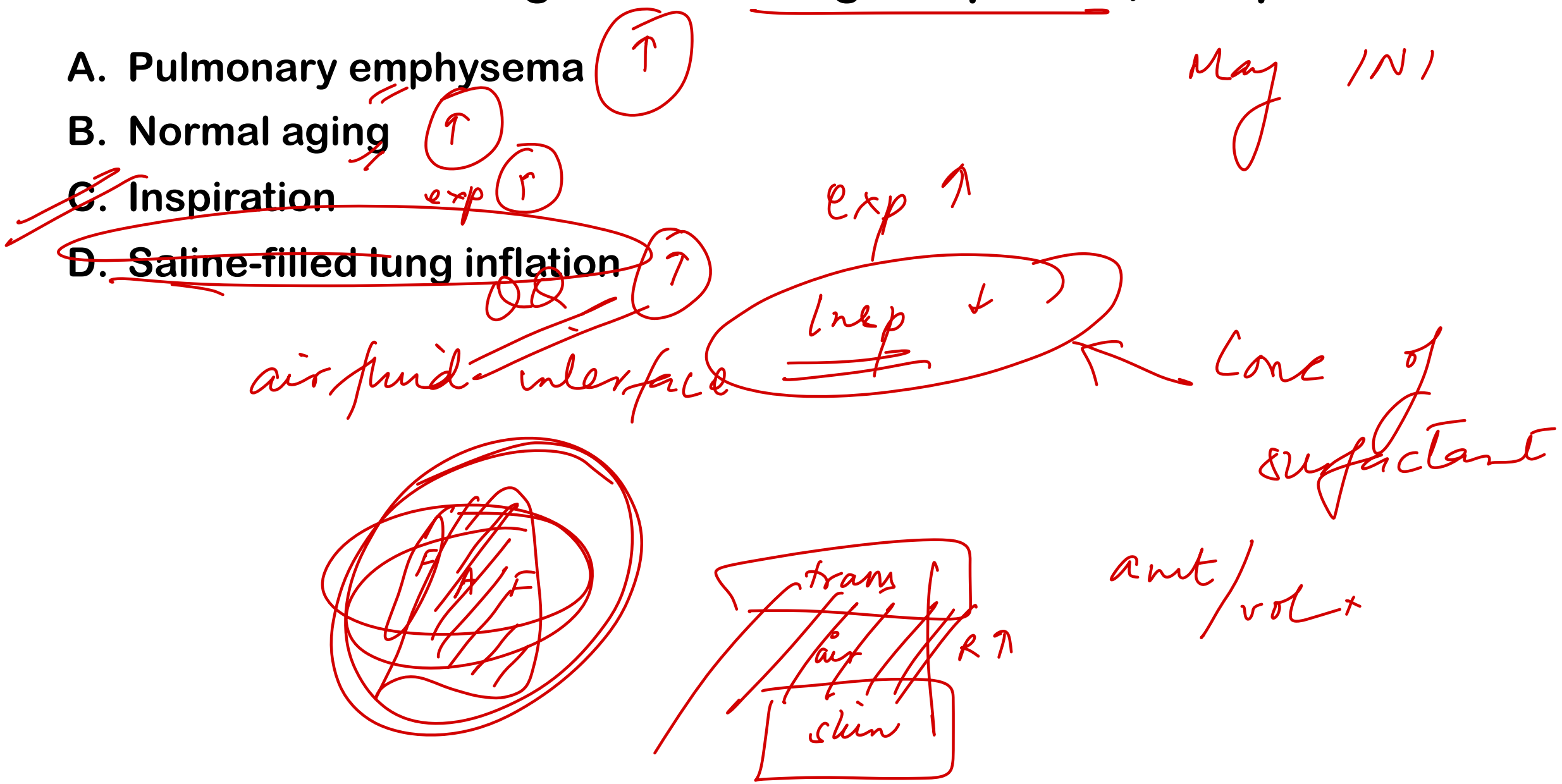
96. All of the following increase lung compliance, except:

A. Pulmonary emphysema

B. Normal aging

C. Inspiration

D. Saline-filled lung inflation



97. For MDR-RR TB, what is the indication of short course bedaquiline?

PYQ

A. Resistance to rifampicin and sensitive to fluoroquinolones

B. Extrapulmonary TB like tubercular meningitis

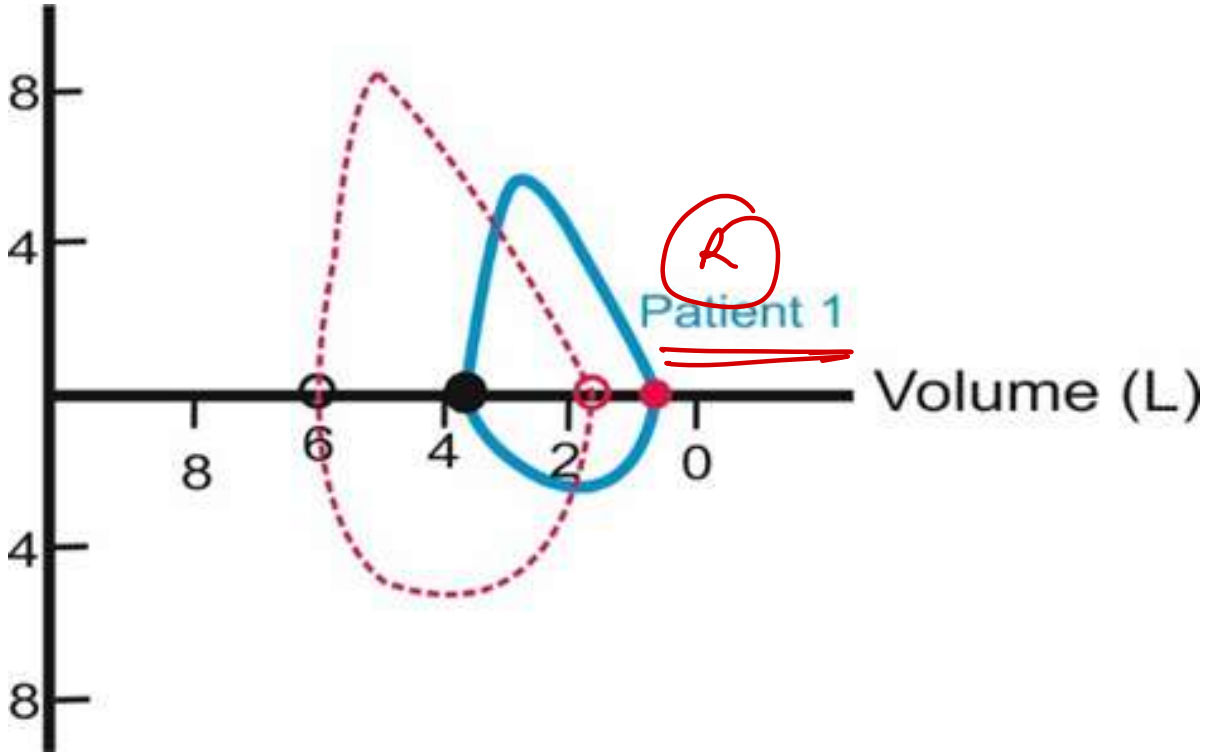
C. Mutation only to INH A and kat G gene

D. Rifampicin sensitive (R)

any one

98. The flow volume curve after spirometry in patient 1 is given below. the most likely diagnosis in this patient is?

A. Vocal cord palsy
B. Bronchial asthma
C. Morbid obesity
D. Emphysema



99. Her blood pressure is 86/50 mm Hg and pulse is 120/min and regular. Pulse oximetry shows 80% on room air. She is diaphoretic and tachypneic. Jugular venous pressure is 13 cm H2O. Further workup in this patient would most likely show which of the following?

A. Cannon a waves on JVP

B. Raised troponin levels

C. Mediastinal widening

D. Filling defect in PA on CTPA

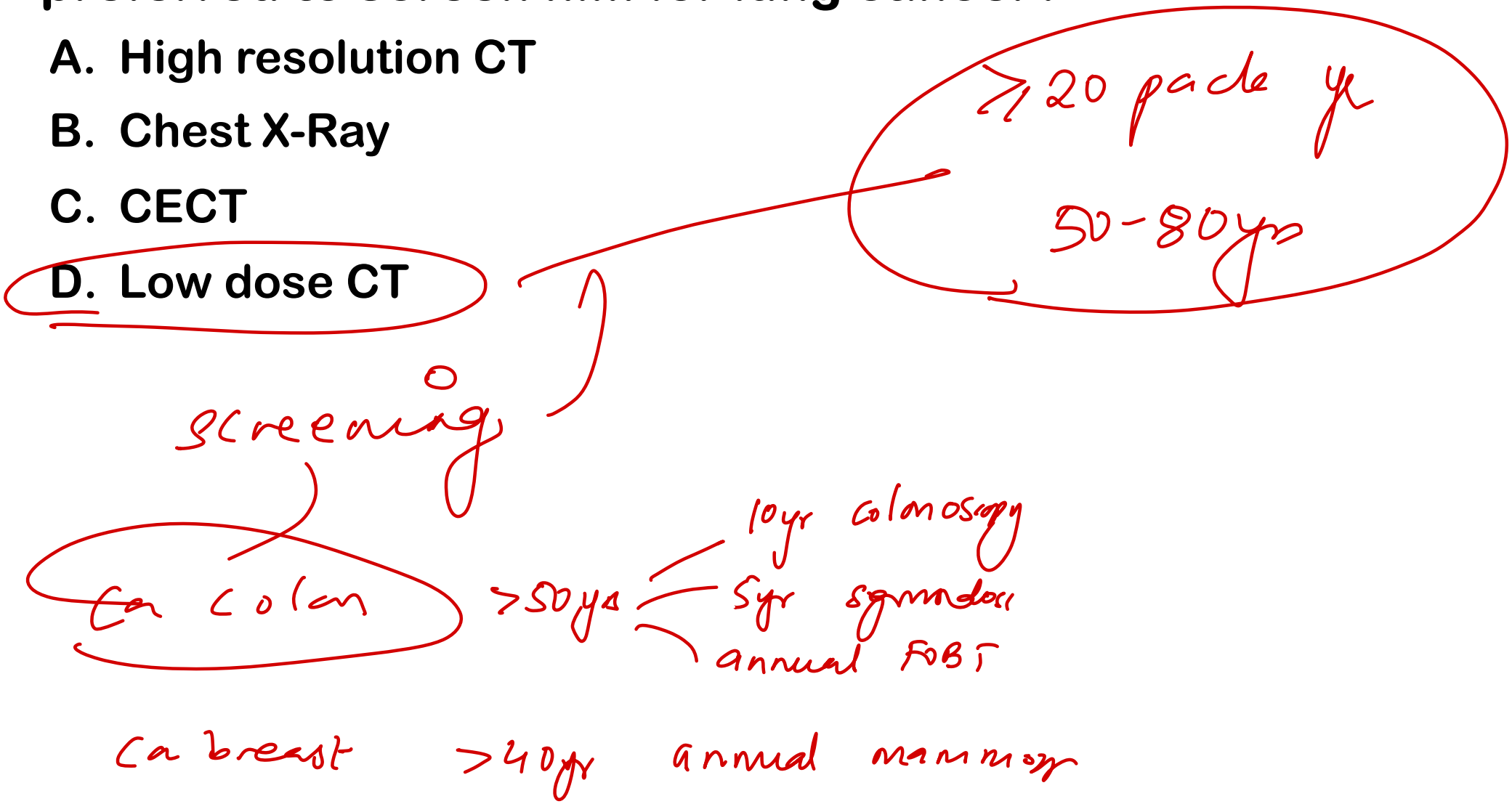
100. A 60-year-old man with a 35 pack-year history of smoking presented for a routine check-up. His brother was diagnosed with lung cancer at a similar age. Which of the following would be preferred to screen him for lung cancer?

A. High resolution CT

B. Chest X-Ray

C. CECT

D. Low dose CT



Thank You