Test Bank

Subject:

Surgery-Endocrine Rotation

Collected by:

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Hello everyone, please read the following before you start ♥

- *The stars (★) next to each question indicate how many times it was repeated over the past years.*
- *4th year & 6th year questions were very similar, so we included both in this collection. Questions asking for "the best next step" are exclusively 6th year's, so just know that.*
- *These questions include everything back to 2014. If you need more questions, you can go to the years before that.*
- *Don't hesitate to contact us if you have any questions. Good luck* ♥

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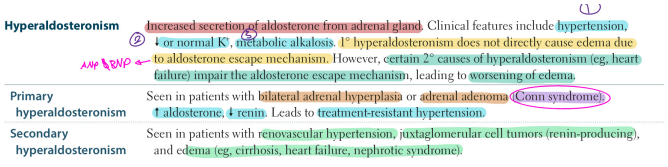
1. All of the following findings are consistent with the diagnosis of Conn's syndrome EXCEPT:

a) Hypertension
b) Hypernatremia
c) High plasma renin
d) Hypokalaemia
e) Age <20



Hyperaldosteronism	Increased secretion of aldosterone from adrenal gland. Clinical features include hypertension, ↓ or normal K^+, metabolic alkalosis. 1° hyperaldosteronism does not directly cause edema due to aldosterone escape mechanism. However, certain 2° causes of hyperaldosteronism (eg, heart failure) impair the aldosterone escape mechanism, leading to worsening of edema.
Primary hyperaldosteronism	Seen in patients with bilateral adrenal hyperplasia or adrenal adenoma (Conn syndrome). ↑ aldosterone, ↓ renin. Leads to treatment-resistant hypertension.
Secondary hyperaldosteronism	Seen in patients with renovascular hypertension, juxtaglomerular cell tumors (renin-producing), and edema (eg, cirrhosis, heart failure, nephrotic syndrome).

Answer: C

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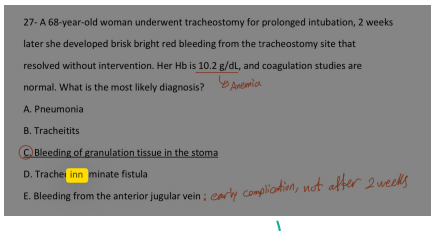
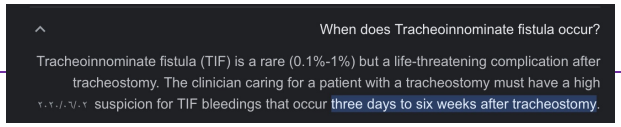
2. A 68-year-old woman underwent tracheostomy for prolonged intubation. 2 weeks later she developed brisk bright red bleeding from the tracheostomy site that resolved without intervention. Her Hb is 10.2 g/dL, & coagulation studies are normal. What is the most likely diagnosis?

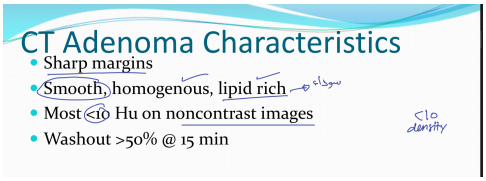
a) Pneumonia
b) Tracheitits
c) Bleeding of granulation tissue in the stoma
d) Tracheo-innominate fistula
e) Bleeding from the anterior jugular vein





Answer: D

3. All are features that suggest a benign adrenal mass on CT scan with adrenal protocol EXCEPT:



a) Size of a 3 cm in diameter
b) Sharp margins, smooth & homogenous
c) Rich with fat component
d) Density more than 30 Hu (Hounsfield unit) on non-contrast images
e) Washout more than 60% at 15 min

➔ The mass can be:
• **Benign cortical adenoma:** A homogeneous adrenal mass <4 cm in diameter, with a smooth border, and an attenuation value <10 Hounsfield unit (HU) on unenhanced CT, and rapid contrast medium washout (>50 percent at 10 minutes).

• **Adrenal carcinoma or metastases:** irregular shape, inhomogeneous density, high unenhanced CT attenuation values (>20 HU), delayed contrast medium washout (<50 percent at 10 minutes), diameter usually >4 cm, and tumor calcification.

Answer: D

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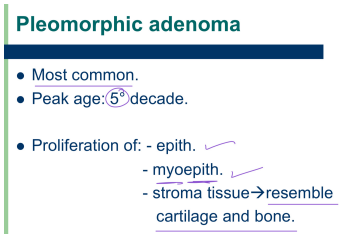
4. What is the most common parotid tumour?



a) Mucoepidermoid carcinoma
b) Adenoid cystic carcinoma
c) Acinar cell tumour
d) Warthin's tumour
e) Pleomorphic adenoma

Answer: E

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5. For a patient with adrenal mass; all of the following are features suggestive of Cushing syndrome EXCEPT:

a) Moon face
b) Central obesity
c) Hypokalaemia → there is hypokalemia in cushing, but also conn's → so it is not a feature
d) Diabetes mellitus
e) Hypertension

Answer: C

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6. The most common cause of hypothyroidism is:

a) Multinodular goitre
b) Thyroid dyshormonogenesis
c) Follicular adenoma
d) Graves' thyroiditis
e) Hashimoto's thyroiditis

Answer: E

7. A 45-year-old woman has a 2-cm solitary, non-functioning thyroid nodule, & fine needle cytology is Bethesda 4. This lady is considered to have:

a) Follicular neoplasm
b) Malignant cytology
c) Atypia of undetermined significance
d) Inadequate cytology
e) Benign cytology

Bethesda score

Diagnostic category	Description	Risk of malignancy (%)
I	Non-diagnostic/unsatisfactory	1–4
II	Benign	0–3
III	Atypia or follicular lesion of undetermined significance	5–15
IV	Follicular neoplasm or suspicious for follicular neoplasm	15–30
V	Suspicious for malignancy	60–75
VI	Malignant	97–99

Source: Cibas ES, Ali SZ. The 2017 Bethesda system for reporting thyroid cytopathology. J Am Soc Cytopathol. 2017;6:217–222. https://doi.org/10.1016/j.jasc.2017.09.002

Answer: A

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8. Which of the following is NOT TRUE regarding the carotid body:

a) It is innervated through the glossopharyngeal and vagus nerves
b) It is stimulated by hypoxia
c) Carotid body tumour is malignant in 35% of cases
d) Carotid body tumour most commonly occurs in middle age group
e) Carotid body tumour best diagnosed by angiography

- Lateral masses:
  a. **Branchial cyst** (discussed previously)
  b. **Carotid artery aneurysm**
  c. **Carotid body tumor**
     - Carotid body tumors are **the most common paragangliomas of the skull base and neck region (60%).** These tumors develop at the carotid **bifurcation**.
     - Approximately **one-third** are inherited as part of a **genetic syndrome**.
     - They are **locally invasive**, **slow**-growing tumors that can remain **asymptomatic** for many years.
     - Carotid body tumors typically present as **painless**, gradually enlarging masses located in the upper part of the neck below the angle of the jaw. In later stages, pain, dysphagia, deficits of cranial nerves VII, IX, X, XI and XII, and hoarseness or a Horner's syndrome may result from pressure on the vagus or sympathetic nerves.
     - Physical examination discloses a rubbery non-tender mass in the lateral neck that is more freely movable in the horizontal plane than vertically, referred to as a positive ***Fontaine's sign***. Carotid body tumors are often pulsatile (it can transmit the carotid pulse, or it can have a pulse on its own), and a bruit can be heard on auscultation; however, the absence of a bruit does not rule out a carotid body tumor.
     - Diagnosis is usually made based on characteristic features demonstrated on **MRI/MRA** imaging. Duplex sonography typically indicates the mass to be hypervascular, although the absence of hypervascularity does not exclude the diagnosis
     - Treated with surgical excision and preoperative embolization

Answer: C

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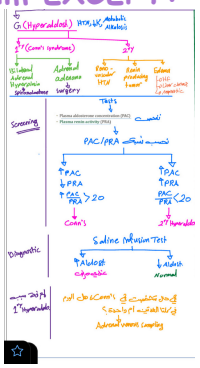
9. A 35-yaar-old male patient who is previously healthy presents with repeated episodes of headache, diaphoresis, & palpitations. His blood pressure was 200/160. All of the following measures are useful to evaluate him EXCEPT:

a) Serum renin levels
b) Serum glucose levels
c) Plasma free metanephrines
d) Clonidine suppression test
e) 24-hour urine catecholamine



Triad of pheo

B ← 18 اجابة

الأصح إنها A وتشخص Conn's not pheo

لا أعلم من العقدة من قبل الكلوتن Answer: B

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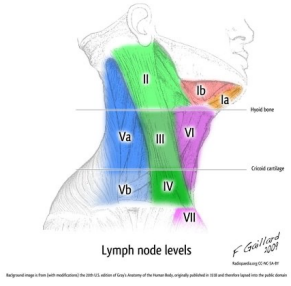
10. submandibular lymph nodes belong to which cervical group of lymph nodes?

a) Group 1 cervical lymph nodes
b) Group 2 cervical lymph nodes
c) Group 3 cervical lymph nodes
d) Group 4 cervical lymph nodes
e) Group 5 cervical lymph nodes

B. **Deep cervical group:** run along the course of the internal jugular vein within the carotid sheath. They are divided into 6 levels; I, II, III, IV, V & VI.
- **Group I:**
  - **Ia: submental nodes**; drain midline structures:
    - Tip of the nose / Middle portion of upper and lower lips
  - **Ib: submandibular nodes**
    - Nose / Sides of the tongue
- **Group II: upper jugular (Jugulo-digastric)**
  - Lie behind the posterior belly of digastric muscle
- **Group III: middle jugular (jugular omohyoid)**
  - Lie behind the omohyoid
- **Group IV: lower jugular (epithelio-cervical)**
  - Lie below the omohyoid
- **Group V: accessory**
  - Found in the posterior triangle of the neck, related to the accessory nerve.
  - Accessory lymph nodes drain the post-nasal space.
- **Group VI: tracheo-esophageal (paratracheal)**
  - Lie between the trachea and cervical esophagus
  - Drain thyroid and subglottic larynx
  - **Subglottic laryngeal carcinoma** will metastasize to this group



Answer: A

11. Regarding the sublingual gland, one is TRUE:

a) It is the commonest site of stone formation
b) It drains through the Wharton's duct
c) It is the least common site for malignancy
d) It is a single gland under the tongue
e) Unlikely to be involved with ranula

Anatomy
Paired Major Salivary glands

- Parotid: Stenson duct→ 2° molar tooth.
- Submandibular: Warton duct→ lateral to frenulum.
- Sublingual: in Warton duct.

Answer: B

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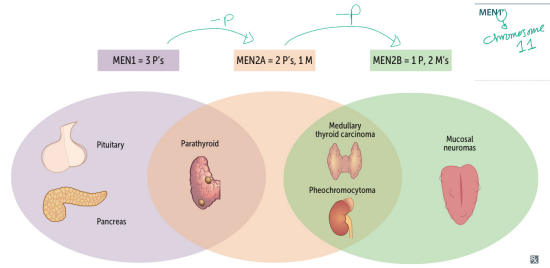
12. All of the following may be found as part of MEN 1 syndrome EXCEPT:

a) Gastrinoma
b) Facial angiofibroma
c) Parathyroid hyperplasia
d) Pituitary adenoma
e) Pheochromocytoma



MEN1 (chromosome 11)
Pituitary tumors (prolactin or GH)
Pancreatic endocrine tumors – Zollinger-Ellison syndrome, insulinomas, VIPomas, glucagonomas
(rare)
Parathyroid adenomas
Associated with mutation of *MEN1* (tumor suppressor, codes for menin, chromosome 11), angiofibromas, collagenomas, meningiomas

Answer: E

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13. All of the following are true regarding insulinoma EXCEPT:

a) It improves upon giving glucose
b) Hypoglycaemic symptoms occur after fasting or exercise
c) It is a benign tumour in most of the cases
d) It is associated with low C-peptide
e) Must rule out sulfonylurea

Insulinoma
Tumor of pancreatic β cells → overproduction of insulin → hypoglycemia.
May see Whipple triad: low blood glucose, symptoms of hypoglycemia (eg, lethargy, syncope, diplopia), and resolution of symptoms after normalization of plasma glucose levels. Symptomatic patients have ↓ blood glucose and ↑ C-peptide levels (vs exogenous insulin use). ~ 10% of cases associated with MEN1 syndrome.
Treatment: surgical resection. not octreotide

Answer: D

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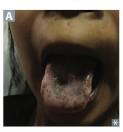
14. All of the following findings are consistent with the diagnosis of Addison's disease EXCEPT:

↓ Aldosterone

a) Fever
b) Hypertension
c) Dehydration
d) Nausea
e) Vomiting

Answer: B

Primary adrenal insufficiency



↓ gland function → ↓ cortisol, ↓ aldosterone → hypotension (hyponatremic volume contraction), hyperkalemia, metabolic acidosis, skin/mucosal hyperpigmentation A (↑ melanin synthesis due to ↑ MSH, a byproduct of POMC cleavage). Primary pigments the skin/mucosa.
Addison disease—chronic 1° adrenal insufficiency; caused by adrenal atrophy or destruction. Most commonly due to autoimmune adrenalitis (high-income countries) or TB (low-income countries).

15. Which of the following is the most common functional neuroendocrine tumour of the pancreas?

a) Insulinoma
b) Glucagonoma
c) Gastrinoma
d) VIPoma
e) Somatostatinoma

Insulinoma	Tumor of pancreatic β cells → overproduction of insulin → hypoglycemia. May see Whipple triad: low blood glucose, symptoms of hypoglycemia (eg, lethargy, syncope, diplopia), and resolution of symptoms after normalization of plasma glucose levels. Symptomatic patients have ↓ blood glucose and ↑ C-peptide levels (vs exogenous insulin use). ~ 10% of cases associated with MEN1 syndrome. Treatment: surgical resection. Not octreotide

Answer: A

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16. The most common pancreatic neuroendocrine tumour in MEN 1 is:

a) Insulinoma
b) Somatostatinoma
c) Glucagonoma
d) Gastrinoma
e) VIPoma

Literally, every single past exam had one of these 2 questions (15 & 16). Make sure to know them well please!

Answer: D

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17. MIBG (metaiodobenzylguanidine) scan is useful in the diagnosis of which of the following?

a) Conn's disease
b) Hyperandrogenism
c) Cushing syndrome
d) Pheochromocytoma
e) Virilising adrenal tumour

→ Inoperable disease

- **Benign pheochromocytoma:** primary therapy with phenoxybenzamine.
- **Malignant pheochromocytoma:** MIBG therapy; otherwise, palliative treatment (chemotherapy, tumor embolization).

Answer: D

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18. A 45-year-old gentleman presented with a right parotid (unilateral) mass of 2-year duration. His physical examination was normal. What is the most likely diagnosis?

a) Adenocarcinoma
b) Squamous cell carcinoma
c) Pleomorphic adenoma
d) Warthin's tumour
e) Mucoepidermoid carcinoma

Answer: C

Pleomorphic adenoma

- Most common.
- Peak age: 5° decade.
- Proliferation of: - epith.
  - myoepith.
  - stroma tissue→resemble cartilage and bone.

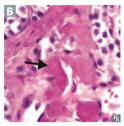
presentaion

- Solitary Painless mass in Parotid area,firm,slowly growing,mobile.
- Intraoral pharyngeal mass extending from parapharynx (deep lobe)
- 2-10% may turn into malignant (usually adenocarcinoma)

- Gross appearance: irregular round to ovoid mass,well defined borders,white to tan cut surface.
- Sometimes have haemorhage and infarcted areas.

19. What is the most common malignant tumour of the parafollicular cells of the thyroid gland?

a) Follicular carcinoma
b) Hurthle cell carcinoma
c) Lymphoma
d) Medullary carcinoma
e) Papillary carcinoma



From parafollicular "C cells"; produces calcitonin, sheets of polygonal cells in an amyloid stroma (stains with Congo red). Associated with MEN 2A and 2B (*RET* mutations).

MEN2

Answer: D

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20. Which of the following best describes primary Hyperparathyroidism?

a) Elevated PTH & low calcium
b) Elevated phosphate & high PTH
c) Elevated chloride & calcium
d) Elevated PTH & magnesium
e) Elevated calcium & PTH

↑PTH → ↑Ca

Answer: E

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21. A 68-year-old male patient presented with an enlarged upper deep cervical lymph node. He is a smoker & his physical exam was unremarkable. The next step in the management should be:

a) Fine needle aspiration cytology from the node
b) CT scan of the neck
c) MRI of the neck & chest
d) Excisional biopsy
e) Neck dissection

Answer: A

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22. When should feeding be started after thyroid surgery?

a) One hour after surgery
b) 12 hours after surgery
c) 24 hours after surgery
d) When the patient passes flatus or has bowel sounds
e) On full recovery

Answer: E

23. Which of the following tumours is more common in iodine deficient areas?

a) Medullary neoplasms
b) Papillary neoplasms
c) Follicular neoplasms
d) Thyroid Lymphoma
e) Anaplastic neoplasms

Follicular Ca

- 10 y survival around 60 %.
- Associated with iodine deficiency.
- Usually monofocal.
- Haematogenous spread.
- Diagnosed by capsular and vascular infiltration.
- Sensitive to RAI.

Answer: C

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24. All are features of salivary Warthin's tumour (papillary cystadenoma lymphomatosum) EXCEPT:

a) More common in males
b) Always in Parotid gland
c) Bilateral in 10 % of cases
d) It transforms into a malignant tumour in 20% of cases
e) It is related to smoking

(2) Warthin tumor (papillary cystadenoma lymphomatosum)—benign cystic tumor with germinal centers. May be bilateral or multifocal. Typically found in people who smoke. "Warriors from Germany love smoking."

Papillary Cystadenoma Lymphomatosum(Warthin)

- Occurs only in Parotid.
- 10% bilat.
- More in males(90%)
- More in smokers.
- Cystic mass(may be fluctuant)
- Doesnot change into malignancy.

Answer: D

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25. Because of the anatomy & physiology of the submandibular gland, it is commonly involved with which of the following?

a) Recurrent infection
b) Malignant tumours
c) Stone formation
d) Warthin's tumour
e) Hyperplasia of the gland

Sialolithiasis

- Most common in the duct of submandibular salivary glands.

- Intermittent obstruction→ chronic sialadenitis → dilatation of the ducts and atrophy of acinar cells→superimposed infection and microabscesses .

Answer: C

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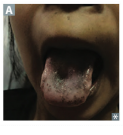
26. All of the following are clinical findings of Addison's disease EXCEPT:

a) Weakness
b) Intolerance to stress
c) generalized oedema
d) Irritability & restlessness
e) Hyperpigmentation of the skin

Answer: C

Primary adrenal insufficiency



↓ gland function → ↓ cortisol, ↓ aldosterone → hypotension (hyponatremic volume contraction), hyperkalemia, metabolic acidosis, skin/mucosal hyperpigmentation A (↑ melanin synthesis due to ↑ MSH, a byproduct of POMC cleavage). Primary pigments the skin/mucosa.
Addison disease—chronic 1° adrenal insufficiency, caused by adrenal atrophy or destruction. Most commonly due to autoimmune adrenalitis (high-income countries) or TB (low-income countries).

27. Midline neck masses in children can include all of the following EXCEPT:

a) Lymphadenopathy
b) Branchial Cyst
c) Thyroglossal duct remnants
d) Thymus cysts
e) Dermoid cysts

DDx

- Midline neck mass: thyroglossal duct cyst, dermoid cyst, pyramidal lobe of thyroid.
- Lateral: LN, branchial cleft cyst.
- Supraclavicular: lymph node, hygroma.
- Submandibular: LN, parotid and submandibular glands.

Answer: B

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28. Anxiety, tremor, & palpitations seen in patients with insulinoma are usually due to:

a) Hypoglycaemia
b) High catecholamines
c) High glucagon
d) High growth hormone
e) High cortisol

CLINICAL FEATURES

Patients with an insulinoma commonly present with fasting hypoglycemia symptoms (Whipple's triad: hypoglycemic syndromes, blood glucose <50 mg/dL during attack and symptoms relived by IV glucose) and neuroglycopenic symptoms including diplopia, blurred vision, abnormal behavior and amnesia. The secretion of catecholamines results in sweating, weakness, tremor, anxiety, tachycardia, hunger, anxiety and palpitations.

Answer: B

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29. An 11-year-old male patient came to your clinic with a neck mass. He has no history of radiation exposure & a negative family history of thyroid cancer. Further assessment revealed a solid mass on sonogram, & cold nodule on scan. You suspect a thyroid neoplasm. This patient most probably has:

a) Papillary thyroid tumour
b) Medullary thyroid tumour : MEN 2
c) Follicular thyroid tumour : iodine def.
d) Anaplastic thyroid tumour : old
e) Hurthle cell neoplasm

Papillary Ca

- Most common, Best prognosis
- 10 year survival around 85 %
- At younger age group.
- Spreads by lymphatics
- Can be multifocal.
- Can be familial.
- Usually sensitive to RAI Radioactive iodine

Answer: A

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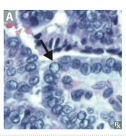
30. Psammoma bodies are typically found in which of the following thyroid cancers?

a) Papillary
b) Follicular
c) Medullary
d) Anaplastic
e) Lymphoma

Papillary carcinoma



Most common. Empty-appearing nuclei with central clearing ("Orphan Annie" eyes) A, psammoma bodies, nuclear grooves (Papi and Moma adopted Orphan Annie). ↑ risk with *RET*/*PTC* rearrangements and *BRAF* mutations, childhood irradiation.
Papillary carcinoma: most prevalent, palpable lymph nodes, Good prognosis.

Answer: A

31. In the adrenal glands, which hormone is produced by the zona glomerulosa?

a) Aldosterone
b) Cortisone
c) Androstenedione
d) Adrenaline
e) Estradiol

Answer: A

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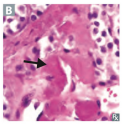
32. Congo red stain is used in histopathological diagnosis of which thyroid tumours?

a) Papillary thyroid tumour
b) Medullary thyroid tumour
c) Follicular thyroid tumour
d) Anaplastic thyroid tumour
e) Thyroid lymphoma



From parafollicular "C cells"; produces calcitonin, sheets of polygonal cells in an amyloid stroma (stains with Congo red). Associated with MEN 2A and 2B (*RET* mutations).

Answer: B

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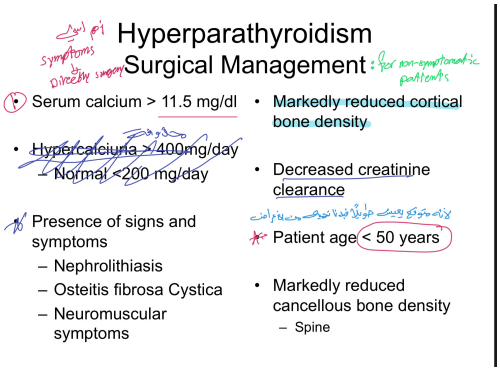
33. Which of the following is NOT an operative indication for primary hyperparathyroidism?

a) Serum calcium of 11.1 mg/dL
b) Very low bone density
c) Renal impairment
d) Age of 40 years old
e) Renal stones



Answer: A

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34. All of the following may be found as part of MEN 1 (multiple endocrine neoplasia) syndrome EXCEPT:

a) Gastrinoma
b) Facial angiofibroma
c) Parathyroid hyperplasia
d) Pituitary adenoma
e) Pheochromocytoma

Answer: E

35. All of the following statements about solitary thyroid nodules are true EXCEPT:

a) They are more prevalent in women
b) In the adult population, more than 90% are benign
c) Fine needle aspiration is indicated when the size is less than 10 mm
d) When it extends retro-sternum, it is less likely to be malignant
e) The risk of a hot nodule being malignant is very small

- Nodule < 1cm
  No FNA.

Answer: C

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36. Regarding carcinoid tumours, all of the following are true EXCEPT:

a) They are neuroendocrine tumours
b) Carcinoid tumours arising in the appendix are usually malignant
c) They are found as part of the MEN 1 syndrome
d) The carcinoid syndrome is usually due to the release 5-hydroxy-indoleacetic acid
e) Carcinoid syndrome is commonly associated with tumours arising in bronchus

Tumor location [2]

- **GI tract** (55% of cases): carcinoid
  - Small intestine (esp. the ileum): 45%
  - Rectum: 20%
  - Appendix: 17%
  - Colon: 11%
  - Stomach: 7%
- **Pancreas** (15% of cases)
  - Insulinoma
  - Glucagonoma
- **Bronchopulmonary system** (10% of cases)
  - Carcinoid lung tumor
  - Small cell carcinoma
- **Thyroid**: medullary carcinoma
- **Adrenal glands**: pheochromocytoma

5-hydroxyindoleacetic acid

Abbreviation: 5-HIAA

A degradation product of serotonin metabolism. Elevated levels in 24-hour urine are seen in carcinoid tumor.

Answer: E

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37. Regarding the minor salivary glands, which of the following is true?

a) They have a high malignant potential
b) They are unlikely to be affected by radiation therapy
c) They are scattered from oral cavity down to the vocal cords
d) They have a defined duct for drainage
e) Their secretion is not affected by atropine

Risk of malignancy:

20% in Parotids.

40% in submandibular.

60% in minor salivary glands

Answer: A

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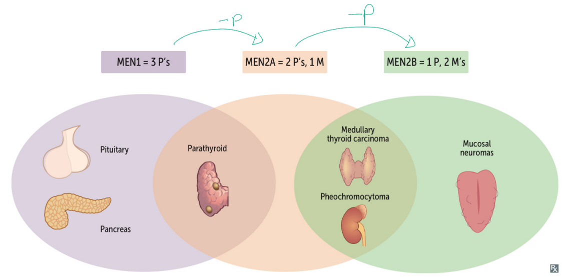
38. A 35-year-old woman with epigastric pain, which did not improve on proton pump inhibitors, is found to have a non-healing pyloric channel ulcer on upper endoscopy. Her serum calcium level is 12 mg/dL. What is the most likely diagnosis?

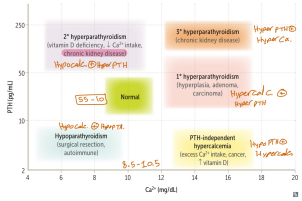
a) WDHA syndrome
b) Zollinger-Ellison syndrome
c) MEN 1
d) MEN 2B
e) MEN 2A



Answer: C

39. Serum calcium level is usually elevated in all of the following EXCEPT:

a) Hyperparathyroidism due to ectopic adenoma
b) Primary hyperparathyroidism
c) Tertiary hyperparathyroidism
d) Secondary hyperparathyroidism
e) Vitamin D intoxication



Secondary hyperparathyroidism	2° hyperplasia due to ↓ Ca^{2+} absorption and/or ↑ PO_4^{3-}, most often in chronic kidney disease (causes hypovitaminosis D and hyperphosphatemia → ↓ Ca^{2+}). **Hypocalcemia**, hyperphosphatemia in chronic kidney disease (vs hypophosphatemia with most other causes), ↑ ALP, ↑ PTH.

Renal osteodystrophy—renal disease → 2° and 3° hyperparathyroidism → bone lesions.

Answer: D

---

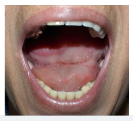
40. The term plunging ranula refers to which clinical entity:

a) A serous cyst originating from the parotid gland that is potentially malignant
b) A mucous retention cyst originating from the submandibular & sublingual glands that reaches the neck
c) A benign salivary mass involving the parotid & submandibular glands
d) A malignant congenital salivary mass arising from the submandibular gland
e) A midline neck mass which moves on tongue protrusion

Ranula:

- A ranula is mucocele of the sublingual gland that presents as an oral mass at the floor of the mouth and laterally. It can be deep and present as an upper lateral neck mass (diving, plunging ranula).

e. **Pharyngeal ranula:**
- A ranula is a cystic mucosal extravasation from the sublingual salivary gland.
- Plunging ranula: a ranula that extends through the **mylohyoid muscle**.
- Treatment: **excision**.



Answer: B

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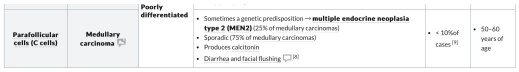
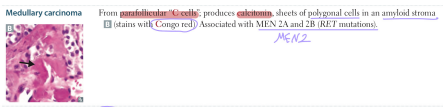
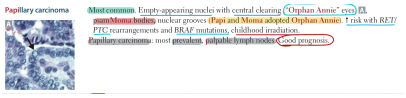
41. All of the following suggest a familial form of medullary thyroid carcinoma (MTC) EXCEPT:



4. Medullary Carcinoma:
A neuroendocrine tumor of the parafollicular or C cells of the thyroid gland. Most are sporadic but approximately 25% are familial as part of MEN2 (RET proto-oncogene)

a) The tumour is multifocal
b) Positive B-Raf mutation
c) The tumour is bilateral (foci of tumour are present in both thyroid lobes)
d) Positive Ret-oncogene mutation
e) The presence of C-cell hyperplasia in the pathologic examination of the resected lobe





Answer: B

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42. Indications for operation in a patient with primary hyperparathyroidism include all of the following EXCEPT:

a) A substantial decline in renal function
b) A substantial decline in bone mass
c) Nephrolithiasis
d) Age older than 60
e) Depression & fatigue

Hyperparathyroidism
Surgical Management

- Serum calcium > 11.5 mg/dl
- ~~Hypercalciuria >400mg/day~~
  - ~~Normal <200 mg/day~~
- Presence of signs and symptoms
  - Nephrolithiasis
  - Osteitis fibrosa Cystica
  - Neuromuscular symptoms
- Markedly reduced cortical bone density
- Decreased creatinine clearance
- Patient age < 50 years
- Markedly reduced cancellous bone density
  - Spine

Answer: D

43. All of the following are true about follicular cancer EXCEPT:

a) It disseminates via haematogenous
b) It is less common than papillary cancer
c) Bone is a site for metastasis
d) It usually presents in the old age
e) It is frequently multicentric

2. Follicular Adenocarcinoma:
Monoclonal origin including RAS mutations, PAX-PPAR gamma 1or others, but rarely with RET/PTC or BRAF.
Follicular thyroid cancer can be a part of familial neoplastic syndromes like Cowden (PTEN).

Follicular adenocarcinoma is the second most common type, comprising for about 10% of thyroid cancers. Blood borne metastasis is more common than it is for papillary thyroid cancer. It is more aggressive than papillary cancer and has a higher mortality rate, but overall still excellent compared to most cancers Follicular type will most commonly spread to the bone with lytic lesions.

- Hürthle cell cancer was considered a variant of follicular thyroid cancer but recent studies indicate that it is a distinct tumor type (some sources and doctors will still consider it follicular cell variant), it has a similar clinical presentation as follicular, but unlike follicular carcinoma it commonly spreads to lymph nodes, has poor radioactive iodine uptake and a worse prognosis, it is less common than the previously mentioned types, making up only 5% of thyroid cancers.

Answer: E

---

44. Elevation of serum C-peptide is useful for diagnosing which of the following neuroendocrine tumours?

a) Glucagonoma
b) VIPoma
c) Somatostatinoma
d) Insulinoma
e) Gastrinoma

Insulinoma Tumor of pancreatic β cells → overproduction of insulin → hypoglycemia.
May see Whipple triad: low blood glucose, symptoms of hypoglycemia (eg, lethargy, syncope, diplopia), and resolution of symptoms after normalization of plasma glucose levels. Symptomatic patients have ↓ blood glucose and ↑ C-peptide levels (vs exogenous insulin use). ~ 10% of cases associated with MEN1 syndrome.
Treatment: surgical resection.

Answer: D

---

45. Diagnostic hemi-thyroidectomy is done for which of the following?

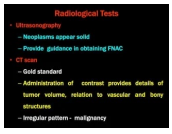
a) 2 cm nodule with FNA consistent with papillary cancer
b) 2 cm nodule with FNA consistent with follicular cancer
c) 2 cm nodule with FNA consistent with medullary cancer
d) FNA consistent with degenerative changes
e) FNA that is inadequate

Answer: B

---

46. Which of the following is true regarding salivary glands?

a) Mucoepidermoid is the most common malignant tumour
b) Most of the parotid swellings are non-neoplastic
c) Pleomorphic adenoma is the most common benign neoplasm of the salivary glands in children
d) Sonography is the gold standard in the evaluation of a parotid mass
e) Adenoid cystic carcinoma has a good prognosis



Answer: A

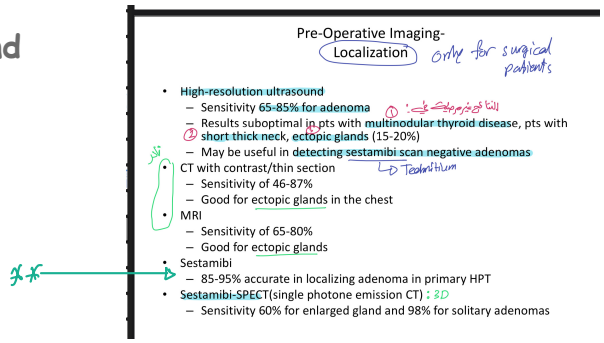
Salivary gland tumors Usually benign and most commonly affect the parotid gland. Submandibular, sublingual, and minor salivary gland tumors are more likely to be malignant. Typically present as painless mass/swelling. Facial paralysis or pain suggests malignant involvement.
1. Pleomorphic adenoma (benign mixed tumor)—most common salivary gland tumor. Composed of chondromyxoid stroma and epithelium and recurs if incompletely excised or ruptured intraoperatively. May undergo malignant transformation.
2. Warthin tumor (papillary cystadenoma lymphomatosum)—benign cystic tumor with germinal centers. May be bilateral or multifocal. Typically found in people who smoke. "Warriors from Germany love smoking."
3. Mucoepidermoid carcinoma—most common malignant tumor. Mucinous and squamous components.

Malignant Tumors

- Mucoepidermoid:
  - -most common.
  - -usually in parotid, 2° site is palate.
  - -peak age 5° decade.
  - -high or low grade.
  - -

47. The most sensitive test for localization in primary hyperparathyroidism is:

a) High-resolution ultra sound
b) CT with contrast
c) Sestamibi scan
d) MRI
e) CT without contrast



Answer: C

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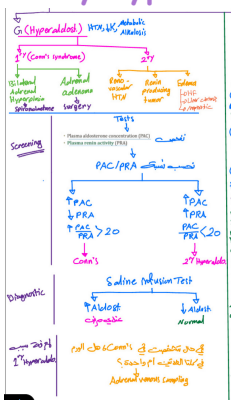
48. A 22-year-old lady came to the clinic complaining of palpitations & shortness of breath. Her workup revealed that she is hypertensive & hypokalemic. Imaging showed bilateral masses on adrenals. You suspect that she has primary hyperaldosteronism. What is the best next step?

a) FNA
b) Bilateral adrenalectomy
c) MIBG
d) Venous sampling : For Localization
e) Bilateral radiotherapy



Answer: D

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49. Which thyroid neoplasm is known to be multifocal?

a) Medullary cancer
b) Follicular cancer
c) Papillary cancer
d) Anaplastic cancer
e) Follicular adenoma

Answer: C

---

50. Which of the following is true regarding medullary thyroid carcinoma?

a) It is related to irradiation ✗ not related (papillary)
b) 75% of cases are sporadic
c) It arises from follicular cells of the thyroid ✗ parafoll.
d) It is sensitive to RAI (radioactive iodine therapy) ✗
e) Familial cases are positive for B-Raf mutation ✗ RET- oncogene

Answer: B

Medullary Ca

- From Parafollicular cells.
- 10 year survival ~~25-30%~~ 50-60%
- Can be Familial or Sporadic.
- Can be part of MEN 2. A&B
- Does not uptake RAI.

51. All of the following are true regarding Hurthle cell carcinoma EXCEPT:

a) It is also called oxyphilic cell carcinoma

b) It is more aggressive than papillary & follicular carcinoma

c) It is considered a variant of follicular carcinoma

d) It shows abundant eosinophils under the microscope eosinophilic cytoplasm not eosinophils

e) It is usually multifocal

- **Hurthle cell carcinoma**
  - 3–10% of all well-differentiated thyroid cancers
  - Often classified as subtype of follicular carcinoma
  - Thyroid histopathology: hypercellularity with a predominance of **Hurthle cells** (large, polygonal epithelial cell with eosinophilic granular cytoplasm as a result of numerous altered mitochondria)
    - Hurthle cells are nonspecific and also observed in Hashimoto thyroiditis, Graves disease, previously-irradiated thyroid glands, and in **Hurthle cell adenoma** (no vascular or capsular invasion; no metastasis)
    - They are also found in the parathyroid glands, salivary glands, and kidneys

Answer: D

---

52. Psammoma bodies are associated with which type of thyroid cancer?

a) Papillary carcinoma

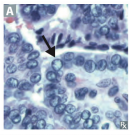
b) Follicular carcinoma

c) Medullary carcinoma

d) Anaplastic carcinoma

e) Fibrolymphovascular tumours

Papillary carcinoma



Most common. Empty-appearing nuclei with central clearing ("Orphan Annie" eyes) A, psamMoma bodies, nuclear grooves (Papi and Moma adopted Orphan Annie). ↑ risk with *RET/PTC* rearrangements and *BRAF* mutations, childhood irradiation.
Papillary carcinoma: most prevalent, palpable lymph nodes. Good prognosis.

Answer: A

**Primary hyperparathyroidism and cancer account for 90% of cases of hypercalcemia

53. All of the following about parathyroid adenoma are true EXCEPT:

a) Sestamibi scan is the most accurate imaging technique used for localization of a parathyroid adenoma

b) It is the second most common cause of primary hyperparathyroidism Adenoma > Bilateral Hyperplasia > carcinoma

c) It usually affects one gland

d) It is more common in women

e) Hypercalcemia is seen on laboratory evaluation

1° Hyperparathyr.

Hyperparathyroidism

- Etiology unknown, but radiation exposure, and lithium implicated, associated with MEN1, and MEN 2A
- Enlargement of a **single gland** or parathyroid adenoma in approximately **80% of cases**
- **multiple adenomas** or hyperplasia in **15 to 20%** of patients and **parathyroid carcinoma in 1% of patients**

Answer: B

---

54. A 50-year-old male with a posterior neck lymph node enlargement of a few weeks duration. The history was inconclusive for malignancy or URT infection. Physical examination revealed a red, tender, enlarged lymph node. What is the most appropriate next step?

a) FNA biopsy

b) Start on antibiotics & observe

c) Excisional biopsy

d) Incisional biopsy

e) CT scan

Red + Tender → Signs of Inflammation not CA

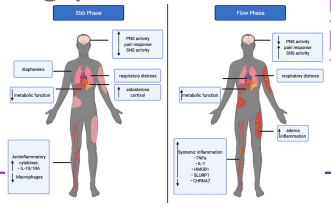
posterior neck lymphadenopathy is common among children with pharyngitis

Answer: B

Characteristics	Likely benign or inflammatory cause	Likely malignant or mycobacterial cause
Pain	Tender	Non-tender
Consistency	Soft	Hard
Fixation	Mobile	Fixed
Location	Cervical (anterior to the sternocleidomastoid muscle), inguinal	Cervical (dorsal to the sternocleidomastoid muscle), supraclavicular
Progression	Acute enlargement without long-term progression	Slow development combined with progressive enlargement

55. In neuroendocrine response to stress, which phase can be prolonged & cause metabolic imbalance?

a) Ebb phase
b) Flow phase
c) Balance phase
d) Healing phase



*EXPLANATION: Neuroendocrine response to stress consists of **3 phases**:*

*1. **Ebb phase:** the body is trying to protect the homeostasis by reducing metabolic rate & preserving the body's energy. The longer this phase can be maintained, the more likely one will survive (prolongation is kinda beneficial).*
*2. **Flow phase:** a period of catabolism that provides a compensating response to the initial stress. It is prolongation of THIS phase that leads to body damage & metabolic imbalances (it's a catabolic response).*
*3. **Anabolic phase (balance & healing):** this phase starts after the flow phase has ended & aims to restore metabolic balance & protein & fat stores.*

Answer: B

56. The most precise diagnostic screening procedure for differentiating benign thyroid nodules from malignant ones is: ✸✸✸✸✸

a) Fine-needle-aspiration biopsy (FNAB)
b) Thyroid Radioactive iodine scan
c) A very thorough history
d) Thyroid ultrasonography
e) Computerized tomographic scan (CT scan)

Follicular

Answer: A

57. Which of the following is true regarding the parathyroid glands?

a) They contain two main types of cells; follicular & C cells
b) Their blood supply is mainly by the superior thyroid artery
c) They secrete parathyroid hormone to control calcium levels
d) The superior & inferior parathyroid develop from the third & fourth branchial pouch, respectively
e) They drain ipsilaterally by inferior thyroid vein only

Histology
- Composed mostly of chief cells and oxyphil cells within an adipose stroma.
- Oxyphil cells derived from chief cells and increase as one ages
- Both types make Parathyroid hormone

Anatomy
- Superior glands usually dorsal to the RLN at level of cricoid cartilage
- Inferior glands located ventral to nerve
- Usually derive most of blood supply from branches of inferior thyroid artery, although branches from superior thyroid supply at least 20% of upper glands.
- Glands drain ipsilaterally by superior, middle, and inferior thyroid veins.

Superior → 4th
inferior → 3rd

Superior, middle, & inferior

Answer: C

58. What is the most common site of extra-adrenal Pheochromocytoma?

a) Abdomen
b) Neck
c) Mediastinum
d) Pelvis
e) Lung

Ectopic tissue: seen in sympathetic paraganglia along aorta, MC location at the organ of Zuckerkandl at aortic bifurcation.

Adrenalectomy:

Answer: A

59. Which of the following is treated with radioactive iodine ablation?

a) Carcinoma with no iodine uptake
b) Severe, uncontrolled thyrotoxicosis
c) Hashimoto's thyroiditis in a pregnant lady
d) Destruction-induced thyrotoxicosis
e) Multinodular goitre

- **Indications**
  - **Toxic MNG** and **toxic adenoma** with high nodular radioactive iodine uptake
  - Failure to achieve euthyroidism with antithyroid drugs (ATDs) in Graves disease, due to:
    - Refractory disease
    - Contraindications to ATDs, e.g., **liver disease**
    - **Major adverse reactions to ATDs**
  - **High surgical risk** due to comorbidities or **previous surgery or radiation of the neck**
  - **Limited life-expectancy**
  - Other: thyrotoxic periodic paralysis, post-surgical treatment of certain thyroid cancers, large/compressive nontoxic goiters [2]

To be treated by RAI, it should be a high uptake disease
Graves, TMG, Toxic adenoma

Answer: E

---

60. Hemi-thyroidectomy is effective for which of the following?

a) Anaplastic carcinoma
b) Graves' disease
c) Medullary carcinoma
d) Follicular carcinoma
e) Papillary carcinoma

Answer: D

---

61. All of the following regarding pleomorphic adenoma are true EXCEPT:

a) It is the most common salivary gland tumour
b) It increases the risk of malignancy with advancing age
c) It is ideally treated with total parotidectomy
d) Recurrence is treated with radiotherapy
e) It most commonly arises in the superficial lobe

Salivary gland tumors Usually benign and most commonly affect the parotid gland. Submandibular, sublingual, and minor salivary gland tumors are more likely to be malignant. Typically present as painless mass/swelling. Facial paralysis or pain suggests malignant involvement.

1. Pleomorphic adenoma (benign mixed tumor)—most common salivary gland tumor [3]. Composed of chondromyxoid stroma and epithelium and recurs if incompletely excised or ruptured intraoperatively. May undergo malignant transformation.
2. Warthin tumor (papillary cystadenoma lymphomatosum)—benign cystic tumor with germinal centers. May be bilateral or multifocal. Typically found in people who smoke. "Warriors from Germany love smoking."
3. Mucoepidermoid carcinoma—most common malignant tumor. Mucinous and squamous components.

Answer: C

---

62. A 31-year-old female came to the clinic complaining of recurrent submandibular swelling upon eating for 5 months. On examination, it was tender. What is the most likely diagnosis?

a) Sialolithiasis
b) Acute sialadenitis
c) Adenoid cystic carcinoma
d) Pleomorphic adenoma of the submandibular gland
e) Hematoma

Sialolithiasis

- Most common in the duct of submandibular salivary glands.

- Intermittent obstruction→ chronic sialadenitis → dilatation of the ducts and atrophy of acinar cells→superimposed infection and microabscesses .

Answer: A

63. All of the following are manifestations of hypercalcemia EXCEPT:

a) Kidney stones
b) Arrhythmias
c) Oliguria
d) Depression
e) Hyperreflexia

Hyperparathyroidism Clinical

Bones, groans, stones & psychiatric overtones

- **Kidney stones, painful bones, abdominal groans, psychic moans, and fatigue overtones**
- Kidney stones (calcium phosphate and oxalate)
- Osteopenia, osteoporosis, and osteitis fibrosa cystica. Increased bone turnover can usually be determined by documenting an elevated blood alkaline phosphatase level.
- Peptic ulcer disease, pancreatitis, constipation
- Psychiatric manifestations such as florid psychosis, obtubdation, coma, depression, anxiety, fatigue
- Polyurea, polydepsia

Answer: C

---

64. All of the following cause hypercalcemia EXCEPT:

a) Sarcoidosis
b) Medullary thyroid carcinoma ↑ calcitonin → ↓ Ca++
c) Vitamin D toxicity
d) Metastatic cancer
e) Thiazide diuretics

Answer: B

---

65. What is the incidence of bilateral Pheochromocytoma in paediatrics?

a) 10%
b) 25%
c) 50%
d) 75%
e) All cases are bilateral

Pheochromocytoma Rule's of 10

- Bilateral
- Familial (non-sporadic)
- Pediatric
- Malignant
- Normotensive
- Extra-adrenal
- Multiple
- *Childhood presentation breaks the rules- 25% bilateral, multiple, extra-adrenal

Answer: B

---

66. A 49-year-old lady came to the clinic complaining of a swelling in the right parotid area. The history & examination were consistent with facial nerve palsy of 6-month duration. What is the best next step?

a) CT scan
b) MRI to localize the facial nerve
c) FNA biopsy
d) Incisional biopsy
e) Sonography

Malignant Tumors

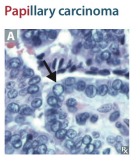
- 96% → discrete mass. (1)
- 4% → diffuse enlargement. (2)
- 12-24% → painful. (3) على الموقع
- 17% → fixed to masseter. (4)
- 8-26% → fascial nerve dysfunction. (5)
- 9% → skin ulceration. (6)
- Formication: parasthesia described as feeling of ants crawling on skin.

∴ Malignant

Answer: C

67. What is the most common thyroid cancer?

a) Papillary carcinoma
b) Medullary carcinoma
c) Follicular carcinoma
d) Anaplastic carcinoma
e) Fibrolymphovascular tumours



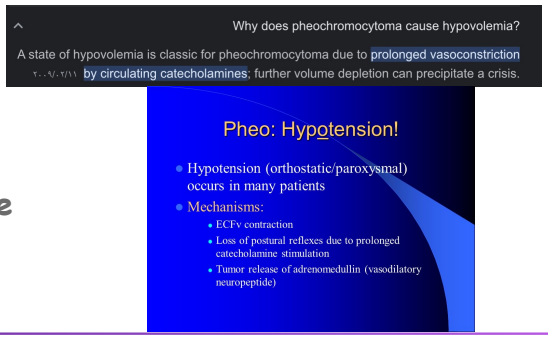
Most common. Empty-appearing nuclei with central clearing "Orphan Annie" eyes, psamMoma bodies, nuclear grooves (Papi and Moma adopted Orphan Annie). ↑ risk with *RET*/*PTC* rearrangements and *BRAF* mutations, childhood irradiation.
Papillary carcinoma: most prevalent, palpable lymph nodes. Good prognosis.

Answer: A

---

68. What is the mechanism of orthostatic hypotension in Pheochromocytoma?

a) Increased heart rate
b) Decreased contractility
c) Arrhythmia
d) Decreased venous return
e) Increased arterial vascular tone



Answer: D

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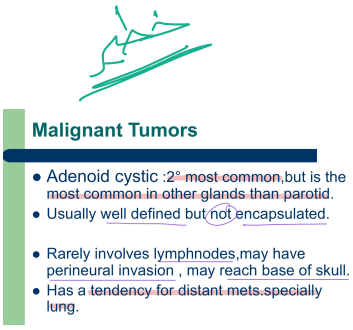
69. The most common malignant tumour of the submandibular gland is:

a) Mucoepidermoid carcinoma
b) Lymphoma
c) Adenocarcinoma
d) Adenoid cystic carcinoma
e) Acinar cell carcinoma



Answer: D

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70. A 50-year-old lady who has pancreatitis was found to have high parathyroid hormone. She doesn't have hypercalciuria. She had a sestamibi scan showing hyperactivity below the right thyroid lobe. What is the best next step?

a) Exploration of all 4 parathyroid glands
b) Excision of the single adenoma
c) Hemi-thyroidectomy with exploration
d) Total thyroidectomy with right parathyroidectomy

Answer: B

Total remove with autotransplantation 12-14 pieces into the belly of Brachioradialis muscle

OR

Subtotal parathyroid. ← 4 جل 131.
leaving 50 mg of parathyroid tissue

Pre-operative localization

- 99mTechnetium-labeled Sestamibi was initially introduced for cardiac imaging and is concentrated in mitochondria-rich tissue.
- It was subsequently noted to be useful for parathyroid localization because of the delayed washout of the radionuclide from hypercellular parathyroid tissue when compared to thyroid tissue.

71. Which salivary gland neoplasm only involves the parotid gland?

a) Warthin's tumour
b) Pleomorphic adenoma
c) Mucoepidermoid carcinoma
d) Adenoid cystic carcinoma
e) Acinar cell tumour

Papillary Cystadenoma Lymphomatosum(Warthin)

- Occurs only in Parotid.
- 10% bilat.
- More in males(90%)
- More in smokers.
- Cystic mass(may be fluctuant)
- Doesnot change into malignancy.

Answer: A

---

72. Bilateral adrenal hyperplasia (bilateral Conn's of the adrenals) is treated with:

a) Ketoconazole
b) PTU
c) Mitotane
d) Fludrocortisone
e) Spironolactone

Treatment of Conn's syndrome

A. Adrenal Adenoma
Surgical excision (unilateral adrenalectomy)

B. Adrenal Hyperplasia
Spironolactone (Aldactone)

Answer: E

---

73. A male patient presented with recurrent swelling upon eating. After imaging he was found to have a submandibular Stone 0.5 cm in its largest diameter, 1 cm away from the opening of Wharton's duct. What is the best management plan for this patient?

a) Intra-oral removal
b) Shock wave Lithotripsy → For severe cases only
c) Antibiotics for 2 weeks
d) Advise good oral hygiene

Treatment
- Mainly conservative
  - NSAIDs for pain relief
  - Stimulation of salivary flow by sucking sour candies, massaging the gland, and applying warm compresses
- Invasive (only in severe cases): dilatation of the salivary duct or ultrasonic lithotripsy

A procedure for breaking down a stone (e.g., kidney stone or gallstone) into smaller pieces that commonly involves shock waves or lasers.

Answer: A

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74. Most of the blood supply of the parathyroid is from which artery? Inferior thyroid artery.

75. Management of a non-functioning Bethesda 4 thyroid nodule? Lobectomy.