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INTEGRATED MEDICINE : PART 1

----- Active space -----

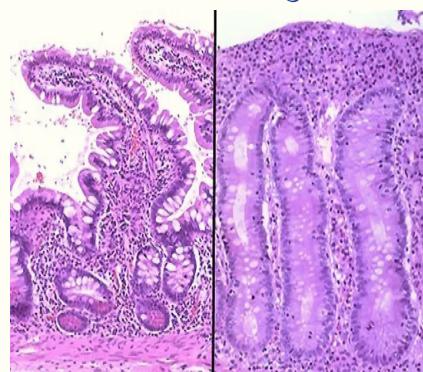
Global Malabsorption

00:00:45

Celiac : Proximal SI involvement		IBS : Large bowel predominant
Serology : <ul style="list-style-type: none"> IgA Anti-TTG IgA Anti endomysial Anti deaminated glutamine dipeptide (IgG) HLA DQ2/DQ8 	Rx : Gluten restriction x 6m. (Wheat, barley, rye, oats) ↓ 10% IBS/Refractory (Steroids)	Rome IV criteria : <p>Recurrent lower abdominal cramps (stress related); Atleast 1 day/week for 3 months</p> <ul style="list-style-type: none"> - Related to defecation - Change in stool frequency - Change in stool form <p>Non-colonic symptoms :</p> <ul style="list-style-type: none"> • 8 times more common • m/c : GERD <p>Examination :</p> <p>Cannett sign : Pain same/↓</p>
Biopsy (Proximal small intestine) : <ul style="list-style-type: none"> villous atrophy Crypt hyperplasia L. propria infiltration. 	Associations : <ul style="list-style-type: none"> Dermatitis herpetiformis Type I DM Down's syndrome IgA deficiency Hypersensitivity pneumonitis 	
C/F : (↓ vit E, D & Ca ²⁺) <ul style="list-style-type: none"> Iron deficiency anemia Ataxia Peripheral neuropathy Pathological # Short stature Steatorrhea 	Can cause : <ul style="list-style-type: none"> Transaminitis Cryptogenic cirrhosis 	<p>GLOBAL MALABSORPTION</p> <p>Refractory celiac</p> <ul style="list-style-type: none"> Enteropathy associated T cell lymphoma. Small intestinal adenocarcinoma. Esophageal squamous cell carcinoma. <p>Tropical sprue : Panintestinal</p> <ul style="list-style-type: none"> Tropical countries. A/w : E.Coli, Klebsiella. <p>Clinical :</p> <ul style="list-style-type: none"> ↓ B12, bile acid & mg²⁺ Folic acid deficiency. <p>Rx : Folic acid + Tetracycline</p>
<p>Whipples : Panintestinal (Proximal > Distal)</p> <p>Clinical :</p> <ul style="list-style-type: none"> B12, bile acid, mg²⁺ : ↓ Joint : Large joint migratory arthralgia (knee) GIT : Abdominal pain, mesenteric lymphadenopathy, diarrhea CVS : Culture negative endocarditis (mitral valve : m/c) CNS : <ul style="list-style-type: none"> Rapidly progressive dementia : m/c. Oculomasticatory/Occulofacial myorhythmia (specific) (Progressive supranuclear involvement) A/w relapse : poor prognosis <p>Ix : Gram +ve PAS +ve bacteria in macrophages of lamina propria (SI) (T. whipplei)</p> <p>Rx :</p> <ul style="list-style-type: none"> Induction therapy : Ceftriaxone > meropenem Long term prophylaxis : Cotrimoxazole (High CNS penetration) 		

Annexure :**T-cell lymphomas :**

- Angioimmunoblastic T cell lymphoma.
- Anaplastic large cell lymphoma.
- mycosis fungoides.
(Sezary syndrome)
- Enteropathy associated T cell lymphoma.

Celiac disease : Biopsy**Uncommon celiac disease presentation :**

- | | |
|---|---|
| Silent : <ul style="list-style-type: none"> • No symptom. • Only serological evidence. | Latent (Iceberg phenomenon) : <ul style="list-style-type: none"> • DQ2/DQ8. • No serological evidence. |
|---|---|

Carnett sign : Palpate point of maximum tenderness in supine position, then raise legs with knees extended :

- ↑ Pain : musculoskeletal.
- Same/↓ : IBS.

Drug S/E :

Tegaserod : Cardiotoxic.

Eluxadolene : Biliary complication.

Alaosteron : Ischemic colitis.

Bristol stool chart :

Type 1 & 2 : IBS-C (Constipation).

Type 6 & 7 : IBS-D (Diarrhea).

Anti-deaminated glutamine dipeptide :

To check for celiac disease in IgA deficiency.

c/f not seen in IBD :

- Nocturnal diarrhea.
- Steatorrhea.
- Blood in stools, ↑ stool volume.
- Fever

CNS-Ataxia

00:40:30

Ataxia	Features		
Vestibular Ataxia	<ul style="list-style-type: none"> • Vestibulitis • Nystagmus & vertigo 		
Sensory Ataxia	<ul style="list-style-type: none"> • Dorsal column (Proprioception) : Tingling, numbness, paraesthesia (↑ in darkness) • Pseudoathetosis, wash basin phenomenon (↓ visual stimuli) • Romberg's test : Positive 	Associated ganglionopathies : <ul style="list-style-type: none"> - Sjogren's syndrome - Paraneoplastic syndrome - SCLC 	
Cerebellar Ataxia	Rhombergism	Rostral vermis : (Alcohol) <ul style="list-style-type: none"> • Gait ataxia • Truncal ataxia • Arms spared • No nystagmus/dysarthria 	Caudal vermis (medulloblastoma) : <ul style="list-style-type: none"> • Truncal ataxia • Nystagmus • Titubation • No dysarthria

Autoimmune :

Antibody	Condition
Anti-gliadin	Celiac
Anti-GAD	TIAm (Limbic encephalitis)
• Anti-TPO • Anti-N terminal enolase	SREAT (Hashimotos encephalopathy) : Steroid response encephalopathy with autoimmune thyroid disease
Anti-GQ1b	miller fisher syndrome

----- Active space -----

Acquired :

- Vascular, demyelination.
- Infection :
 - Varicella zoster (Acute cerebellitis).
 - Listeria (Rhombencephalitis).
 - T. whipplei.
 - HIV.

Paraneoplastic :

Antibody	Cancers	Conditions/Features
Anti-Yo	Ovary, breast, lung	<ul style="list-style-type: none"> • Cerebellar degeneration. • Subacute cerebellar ataxia.
Anti-Ho	Small cell lung ca	<ul style="list-style-type: none"> • LEMS. • Ganglionopathy : Sensory ataxia. • Cerebellar involvement.
	Neuroblastoma	Opisthotonus
Anti-Ri	Breast	-
Anti-ma	Lung Ca	-

CAUSES OF CEREBELLAR ATAXIA

metabolic :

- B12 deficiency.
- vit E deficiency.

Toxin :

- Alcohol : Rostral vermian involvement.
- Anti-epileptic drugs : Na⁺ channel blockers.
- 5-FU.
- cytarabine.
- methotrexate.

Anti GQ1b : Gullian Barre

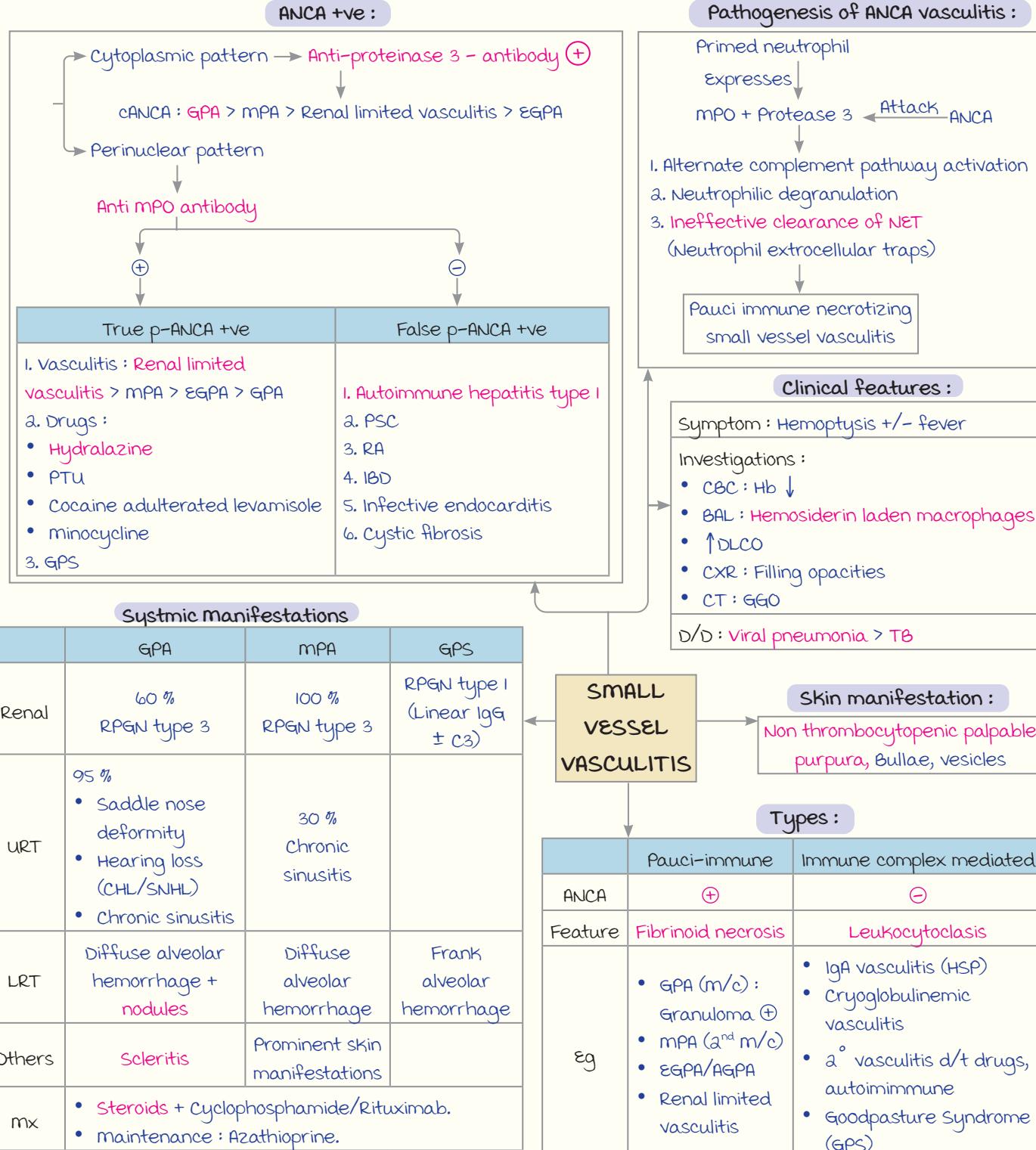
- Ophthalmoplegia
 - Areflexia
 - Ataxia
- } + Altered sensorium → Bickerstaff encephalitis

Lambert Eaton myasthenic Syndrome (LEMS) :

- Proximal limb weakness.
- Autonomic symptoms.
- Cranial nerve involvement.
- P/Q voltage gated Na channel Ab.

Small Vessel Vasculitis

00:00:24



1. S/o medium vessel involvement :

- Nodules, deep ulcers, gangrene.
- Severe neuropathy.

2. EGPA :

- Late onset asthma
- Lung infiltrates (+)
- DAH (-)

3. PAN : No lung or glomerulus involvement.

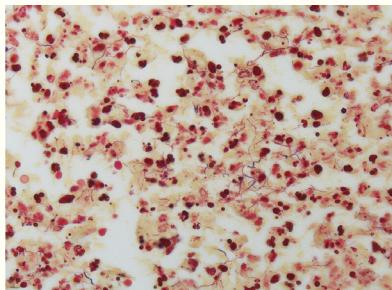
Nocardiosis

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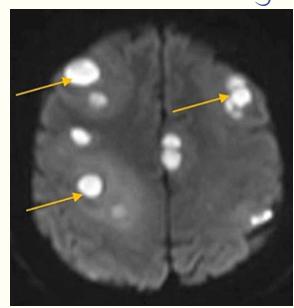
Causative organism :

Nocardia

- Gram +ve, AFB +ve.
- Aerobic, filamentous organism.
- Soil/aquatic saprophyte

**CNS involvement :**

- Brain abscess : m/c lesion.
- FND + seizures : m/c symptom.

**Lung involvement :**

- Exacerbation of chronic lung disease.
- Cough x 3-4 weeks.
- Imaging :
 - u/L or B/L cavitatory nodules.
 - GGO/consolidation.

**NOCARDIOSIS****MOI :**

Opportunistic infection (m/c) :

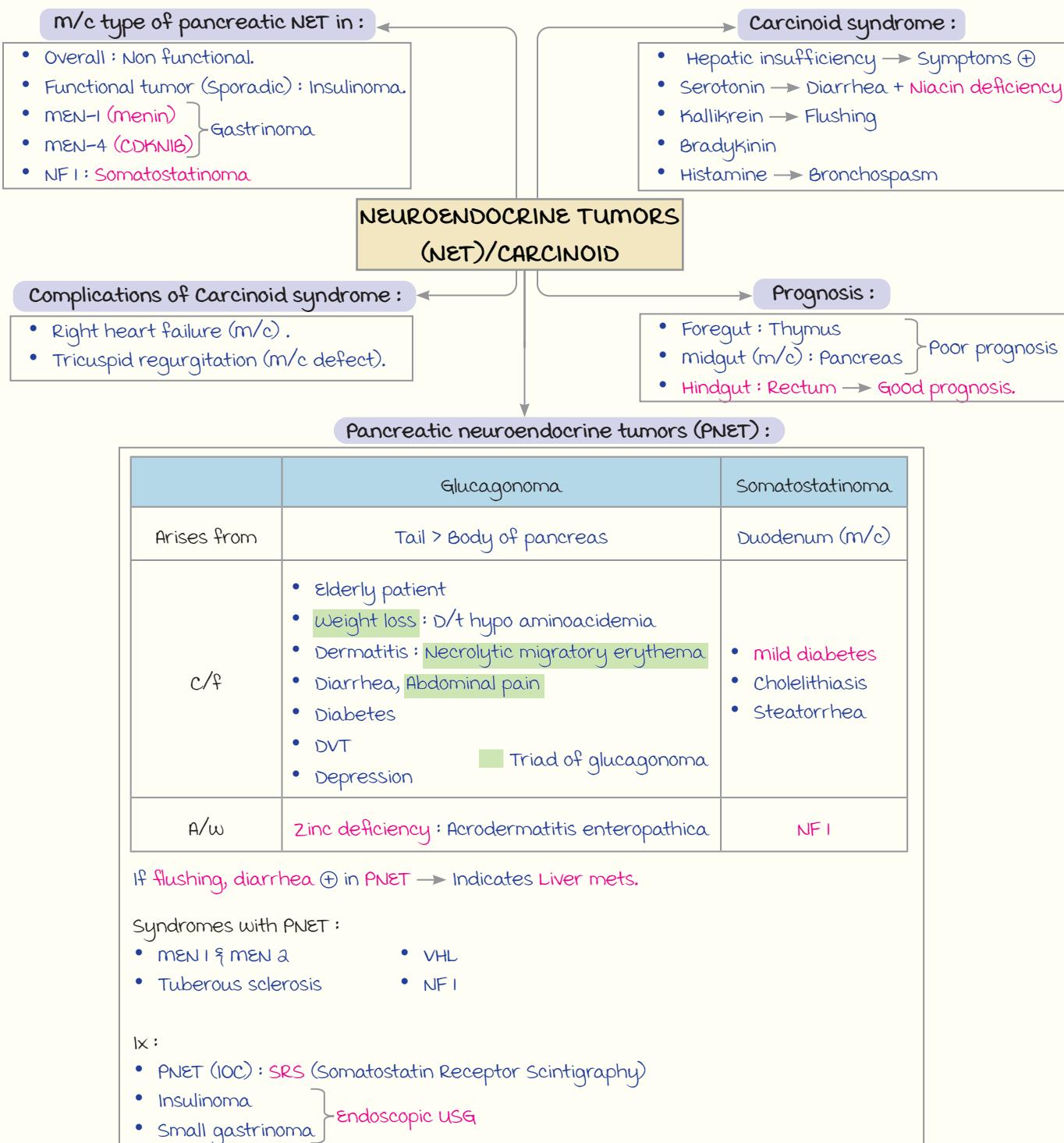
- Inhalation : Lung involvement.
- Inoculation : Skin lesion.

Skin manifestation :

- Nodules/ulcers.
- Nodular lymphangitis.
- mycetoma.

Treatment :

- CNS involvement
- - → Cotrimoxazole + Amikacin
 - + → Cotrimoxazole + Imipenem

**2° Causes Of Diabetes :**

- Hemochromatosis
- IgG4 related disease
- Ca. pancreas
- NET (Neuroendocrine tumors)

Endocrinopathies with Diabetes :

- Cushing's disease
- Acromegaly
- Hyperthyroidism
- Hyperparathyroidism
- Pheochromocytoma

Types :

	1° Insufficiency	2° Insufficiency (m/c)
Aldosterone	↓	Normal
K ⁺	↑	Normal
Na ⁺	Hypovolemic hyponatremia	↓
Salt craving	⊕	⊖
Postural hypotension	⊕	⊖
Glucocorticoid/Sex steroids	↓	↓
ACTH	↑↑ → Hyperpigmentation	Normal
Auricular calcification	⊕	⊖

Causes Of 1° Adrenal Insufficiency :

Children :

1. CAH
2. Triple 3A/4A/Algrove syndrome
3. X-linked adrenoleukodystrophy.
4. meningococcemia : Waterhouse Fredrichsen syndrome.

Adults :

1. TB (m/c in India).
2. Polyglandular autoimmune syndrome (PGA)/Autoimmune polyendocrine syndrome (Type 1 > 2).
3. Histoplasmosis in HIV.

ADRENAL INSUFFICIENCY

management :

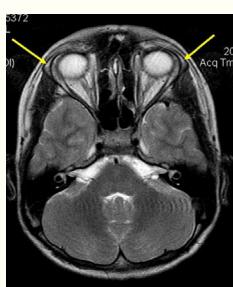
Ix :

- Fasting cortisol assay
 - ↳ <3 µg/L : Diagnostic.
 - ↳ 3-20 µg/L : Synacthen stimulation test.
 - ↳ >20 µg/L : Rules out Addison's.
 - Eosinophilia
- Rx : Steroids

Cushing's : Eosinopenia

TRIPLE A/ALGROVE SYNDROME :

Defect : Aladin gene defect.



4th A :
Autonomic dysfunction

Alacrimia

Achalasia cardia

Addison's disease

Hepatitis

00:00:36

Chronic hepatitis :

LFT : upto 5 times (ALT > AST)

Presentations :

Cirrhosis :

- Biopsy proven

Decompensation :

- Ascites
- Hepatic encephalopathy
- Upper GI bleed
- AST > ALT
- Splenomegaly
- Thrombocytopaenia

Causes :

- NASH
- Autoimmune
- Hepatitis B, C
- Hemochromatosis, Wilson

Liver failure :

- Jaundice

Portal hypertension :

- Splenomegaly
- Thrombocytopaenia

Acute hepatitis :

LFT : > 10 times (ALT > AST)

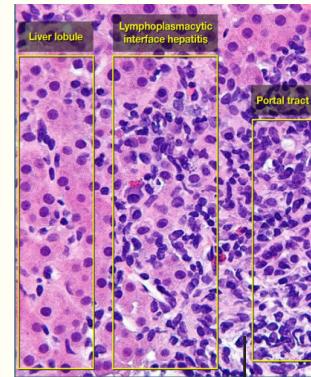
Viral prodrome → Jaundice

Antibodies in hepatitis :

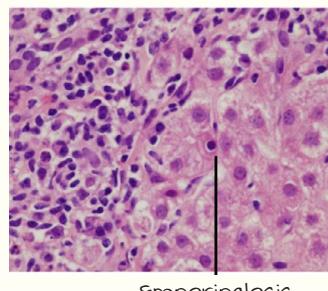
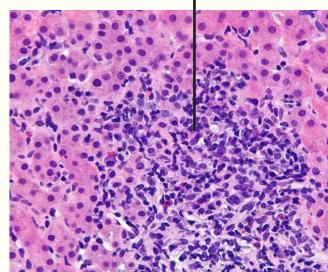
- LKM - 1 : Chronic HCV, Type 2 AIH
- LKM - 2 : Drug induced hepatitis
- LKM - 3 : Hepatitis D
- LC - 1 : Type 2 AIH

Interface hepatitis :

- HBV
- Primary biliary cirrhosis
- Primary sclerosing cholangitis



Piecemeal necrosis



HEPATITIS

Autoimmune :

Features :

- Hypergamma globinemia (IgG ↑)
- ↓A : G
- Waxing waning of jaundice
- Circulating autoantibodies
- Lupoid : A/w SLE, RA, TDM, Hashimoto

Biopsy :

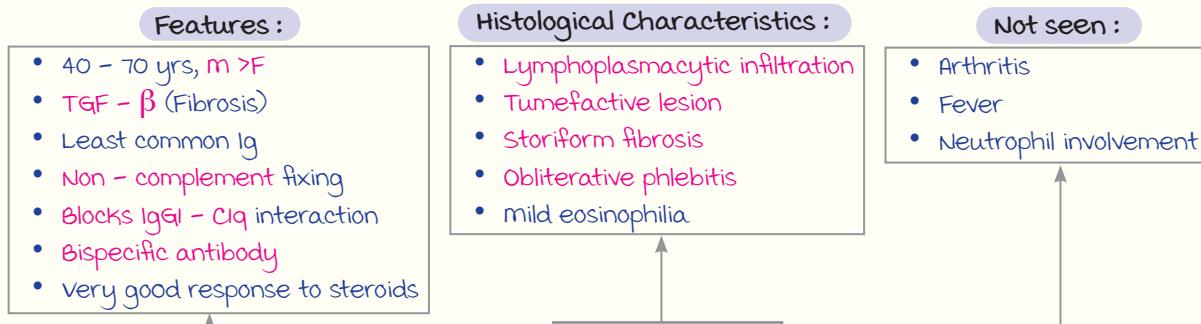
- Piecemeal necrosis/interface hepatitis
- Rosette formation
- Emperipoleisis

Antibodies (Type I AIH) :

- AAA (Anti-actin) : Specific (Good prognosis)
- Anti-SLA
- Anti - Ro/La
- SMA

Treatment :

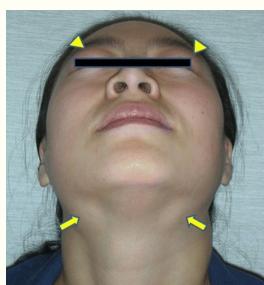
Steroids : 0.5 mg/kg/day then tapered off
+
Azathioprine or mmF
↓ Remission
maintenance : Azathioprine



Organ	manifestation
Pancreas	Type I autoimmune pancreatitis (MRI : Diffuse sausage appearance)
Salivary gland	Submandibular gland involvement (Steroid responsive sicca)
Orbit	Inflammatory pseudotumour
Lacrimal gland	Dacryoadenitis
Retroperitoneum	Fibrosis
CNS	<ul style="list-style-type: none"> • Lymphocytic hypophysitis (Central part) • Pachymeningitis without brain parenchymal involvement
Lung	<ul style="list-style-type: none"> • Thickening of bronchovascular bundle • ILD : NSIP (m/c)
CVS	Aortitis with paravertebral mass.
Liver	Primary sclerosing cholangitis
Renal	<ul style="list-style-type: none"> • Tubulointerstitial nephritis (Steroid responsive) • membranous nephropathy (Rare)



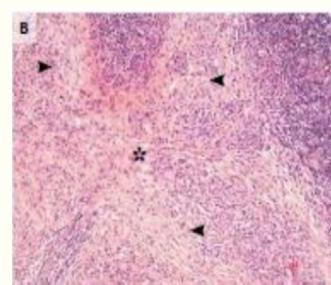
Pancreas : Diffuse sausage appearance



Submandibular gland involvement



Orbit : Inflammatory pseudotumor



Storiform fibrosis

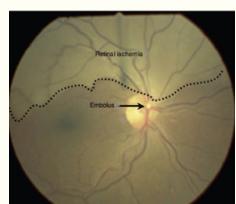
Findings :

Causes :

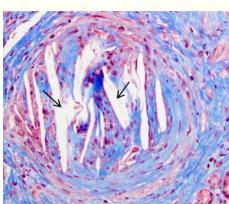
- Chronic atherosclerosis
- Post : Angiography/on anticoagulants
- Embolism in small vessels

ATHEROEMBOLIC RENAL DISEASE (SUBACUTE RF)

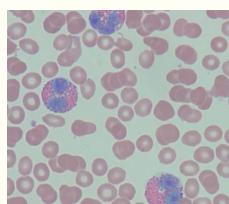
- Peripheral pulse palpable
- Inflammatory marker : CPK-MB, ESR, CRP
- Low C3 levels
- S. creatinine ↑, S. urea ↑
- Hypertension
- Edema ⊖
- Livedo reticularis
- Blue toe/blue nails



Fundus : Hollenhorst plaques



Skin biopsy : Biconvex cholesterol clefts



Eosinophilia

Renal conditions with ↓C3, ⊖ C4 :

- IRGN, PSGN.
- Atypical HUS.
- C3 GN.
- Atheroembolic renal disease.

Oliguric AKI

Causes :

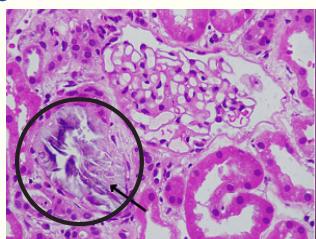
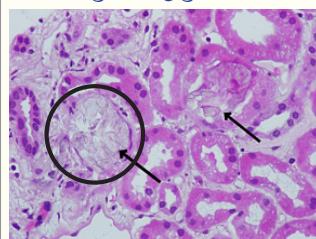
- Thrombotic microangiopathic (RPRF m/c)
- Ischemic ATN

Intratubular obstruction/crystal AKI

Uric acid induced :
Tumor lysis syndrome

Oxalate induced :

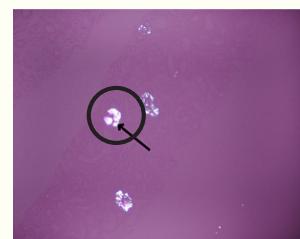
- Genetic primary hyperoxaluria
- Enteric malabsorption (LCFA high, Ca²⁺ → ↑ Oxalate)
- Excess Vit C
- Ethylene glycol poisoning



Drug induced :

mnemonic : MITARS

- Hydroxylmethotrexate
ALL/osteosarcoma
- Indinavir
- Triamterene
- Hydroxy acyclovir
- Sulphonamide

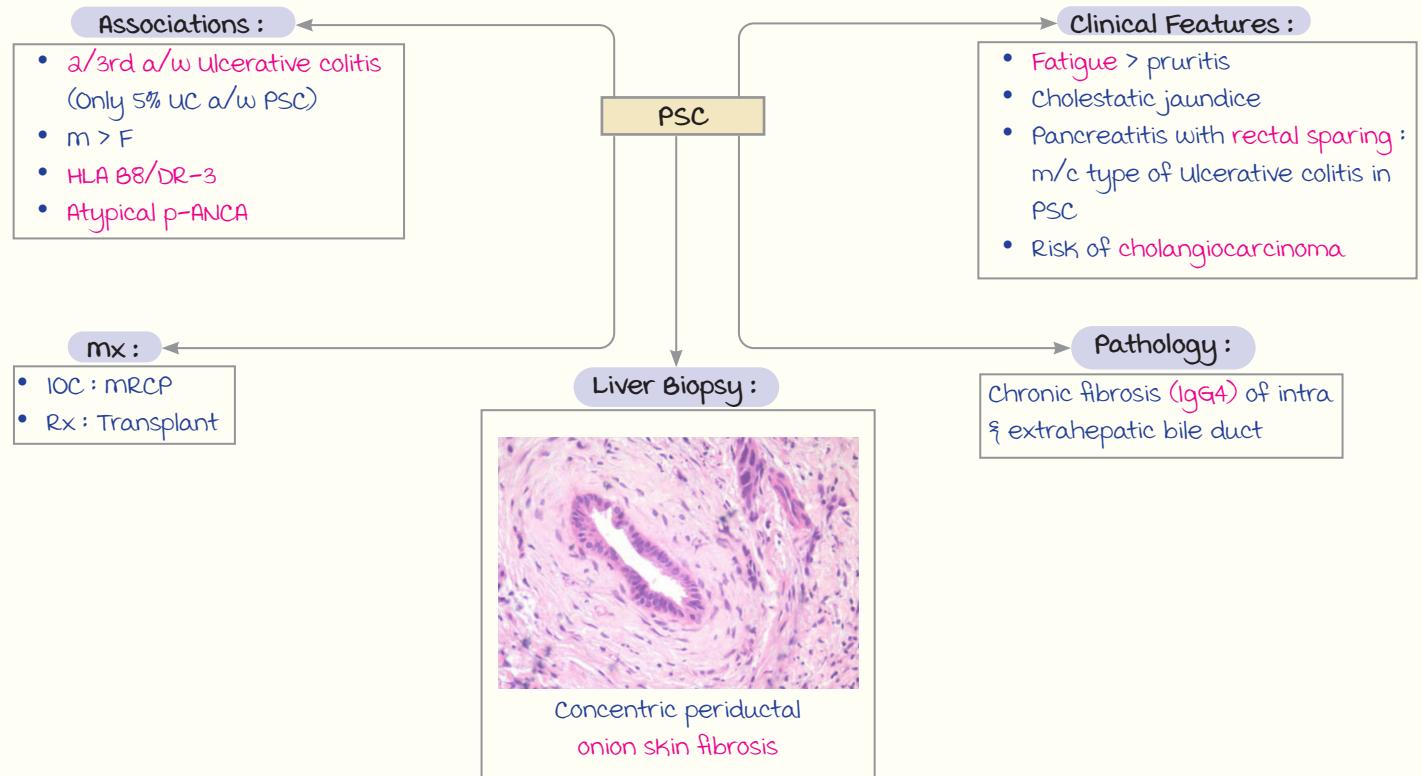


Chronic calcific pancreatitis : malabsorption (diarrhea) → Non-responsive oliguric AKI.
----- Active space -----

Lithium : Chronic tubulointerstitial fibrosis (Asymptomatic, non-oliguric).

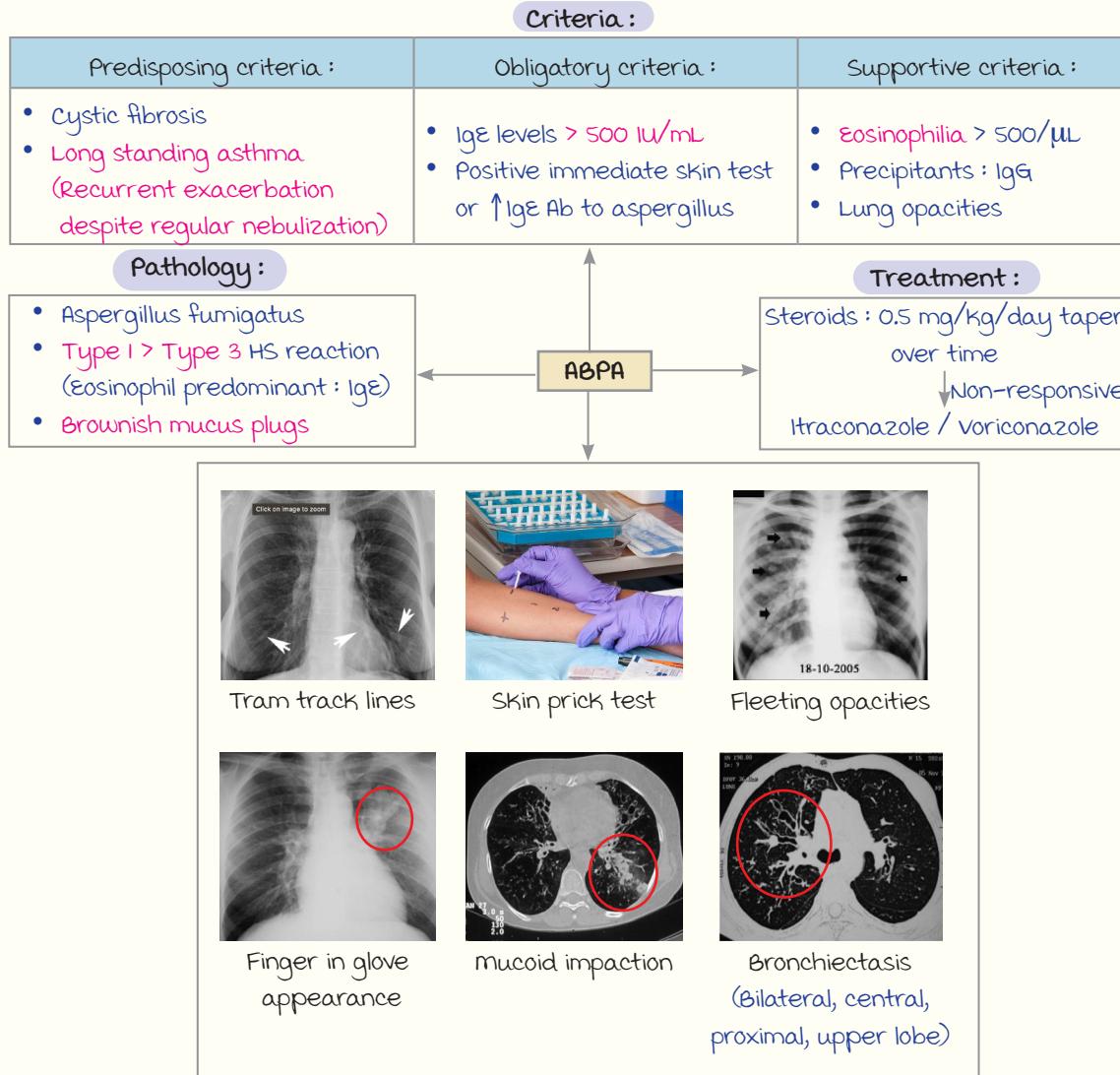
Primary Sclerosing Cholangitis (PSC)

00:45:40

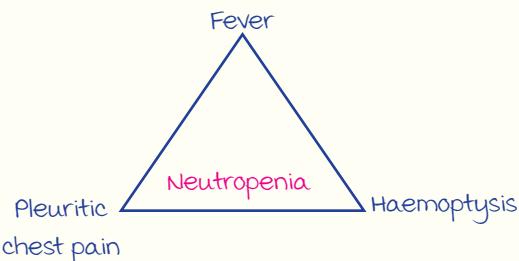


Primary biliary cholangitis :

- F > m.
- Anti - mitochondrial Ab.
- A/w Sjogren's disease & Smoking.



Invasive Aspergillosis :



Ix : Galactomannan, 1,3, β -D glucan assay

CT :

- Nodules \ddagger consolidation.
- Halo sign (Nodule surrounded by GGO).
- Air crescent sign (During recovery).

Rx : Voriconazole + Echinocandin.

Hypersensitivity Pneumonitis :

- Organic dust exposure.
- Type 4 > Type 3 HS.
- Lymphocytic.

APML (Acute Promyelocytic Leukemia)

00:00:21

Translocation :

AML with recurrent genetic abnormality $t(15:17)$ → PML; RAR α translocation

- Rearrangement/upregulation of tissue factors.
- \uparrow Annexin expression $\xrightarrow{+}$ Fibrinolysis → DIC.

Variants :

Hypergranular type (75%)

microgranular type (25%)

- Higher counts : Poorer prognosis
- Resemble myelomonocytes
 - NSE negative
 - mPO positive

Features :

- Age of onset : 2nd-3rd decade of life
- Gender : males > females
- m/c cause of death : DIC → Catastrophic bleeding
- Survival rate : >90% with Rx

APML

Investigations :

Bone marrow examination :

Atypical promyelocytes

- Large.
- \uparrow N : C ratio.
- Violet granules.
- Faggot cells (Stacked auer rods).
- Bilobed with dumbbell shaped nuclei.

Immunophenotyping :

- CD 13 \oplus , CD 33 \oplus
- CD 15 \ominus CD 117 : weakly positive

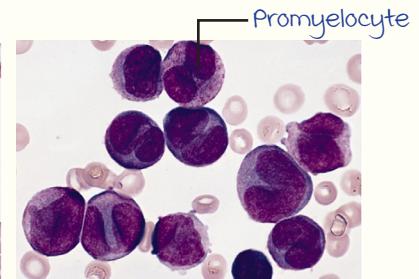
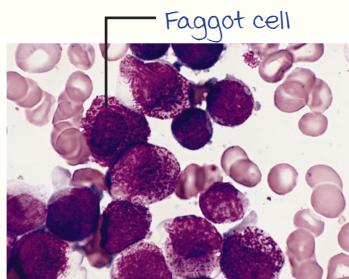
FISH : PML-RAR α

Karyotyping : PML-RAR α

PCR : PML-RAR α transcripts

Sainz criteria :

Risk	WBC	Platelet	Rx
Low risk	$\leq 10,000$	$\geq 40,000$	ATRA \ddagger Arsenic Trioxide
Intermediate risk	$\leq 10,000$	$\leq 40,000$	
High risk	$> 10,000$	$< 40,000$	ATRA \ddagger Anthracyclines



ADVERSE EFFECTS OF ATRA (ALL TRANS RETINOIC ACID)**I. Differentiation Syndrome :**

Onset : 2-21 days after starting ATRA.

C/F :

- Fever.
- Serositis.
- Edema.

- Lung infiltrate : Hypoxia.
- Hypotension.

Rx : **Dexamethasone**.

2. Idiopathic Intracranial Hypertension :

C/F : Headache, vomiting, ↑ ICH, papilledema.

Note :

Bone marrow examination :

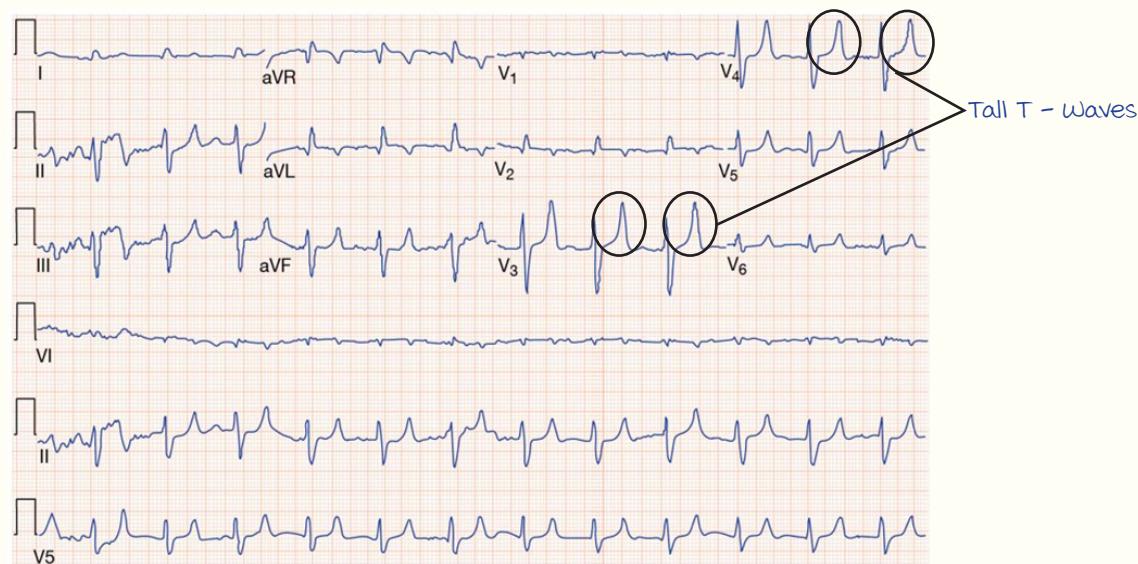
mandatory in all cases of pancytopenia.

Hyperkalemia

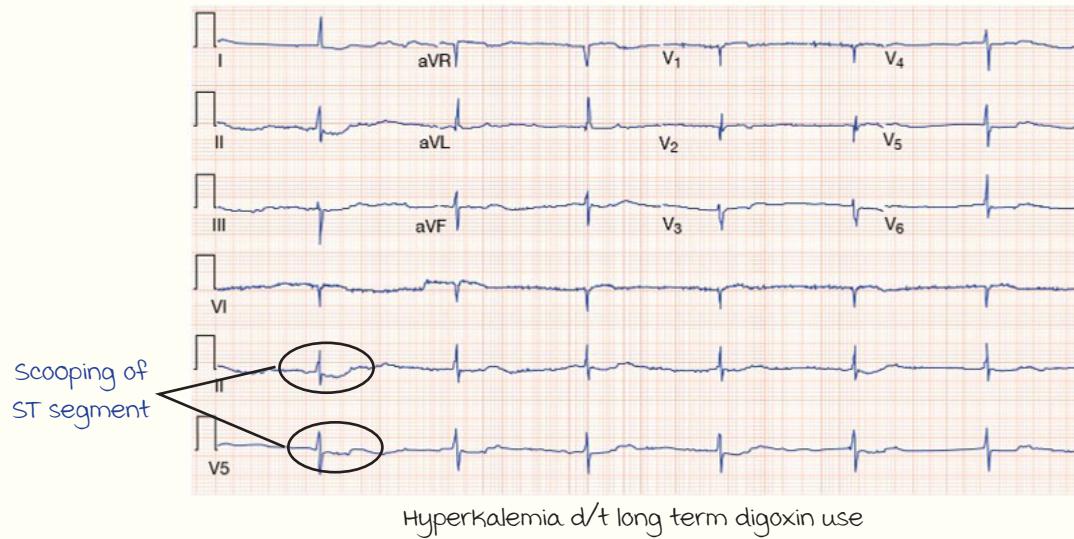
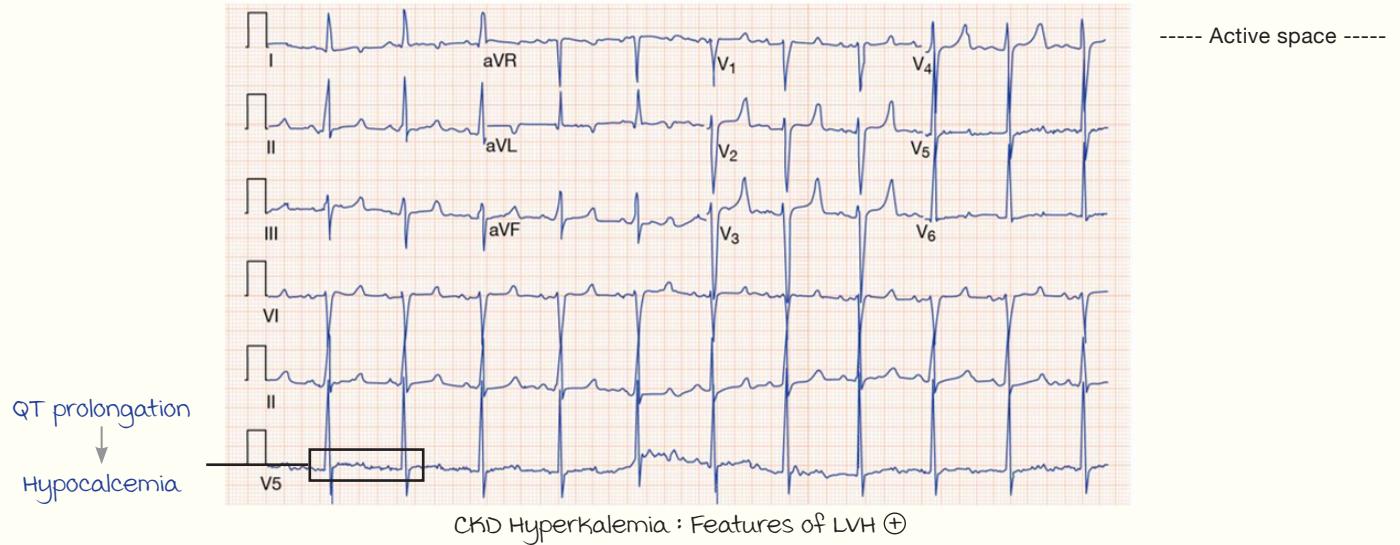
00:16:08

Clinical Features :

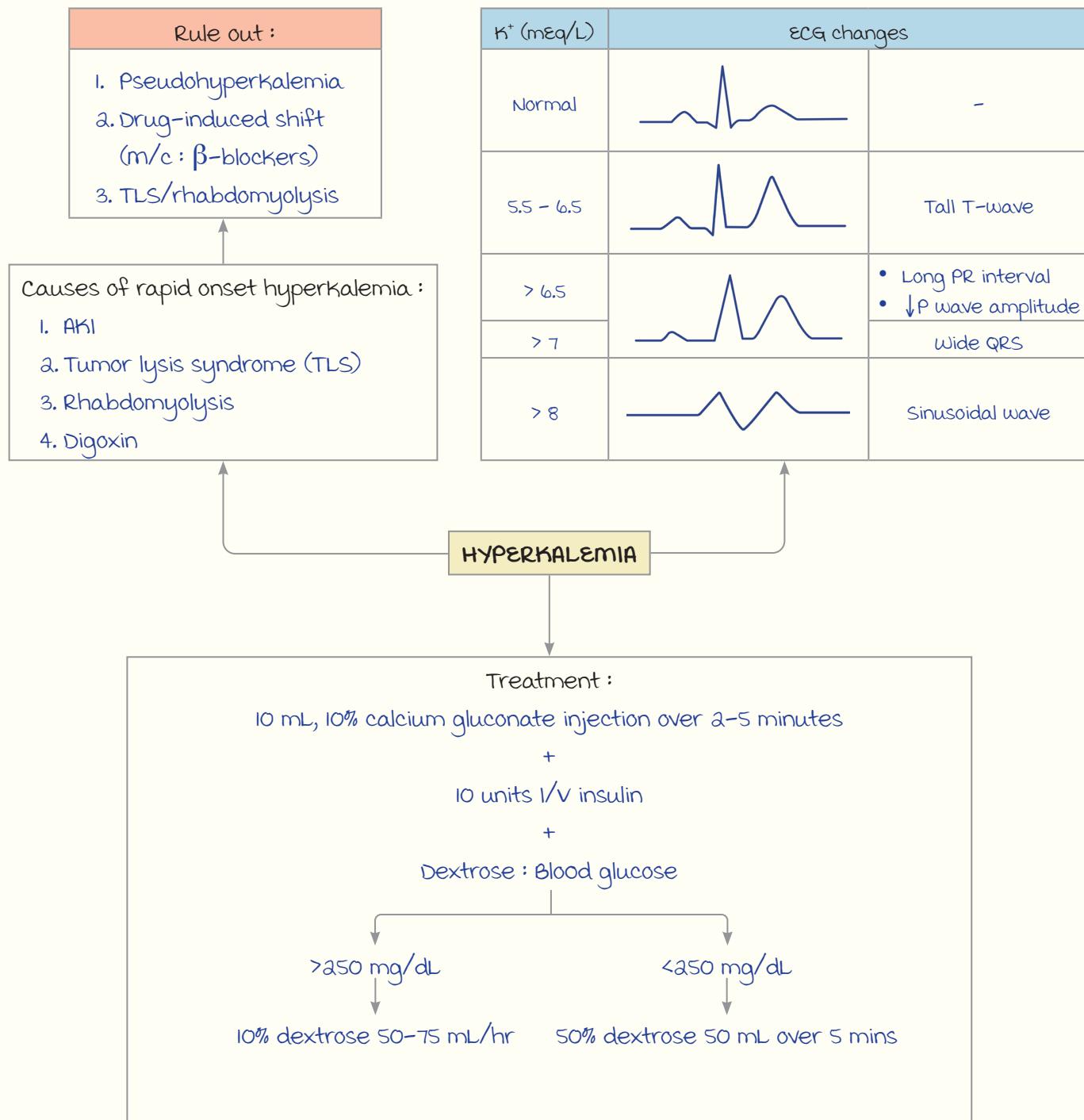
- muscle weakness.
- Arrhythmias.

ECG Findings :

Rapid onset hyperkalemia : Post chemotherapy for lymphoma (Burkitt's)



----- Active space -----



Features :

- Corresponds to RTA type 4
- Normal/mildly impaired RFT.
- Hyperkalemia disproportionate to degree & duration of renal failure.
- Cortisol \rightarrow ADH \rightarrow Low risk of hyponatremia.

HYPOALDOSTERONISM

True Hypoaldosteronism :

	Renin	Aldosterone	Causes
Hyporeninemic	↓	↓	<ul style="list-style-type: none"> • Diabetic Kidney disease • NSAIDs • β-blocker • Aloskiren • Calcineurin inhibitors (CNI)
Hyperreninemic	↑	↓	<ul style="list-style-type: none"> • Addison's disease • ACE \ominus • ARB • Heparin • Ketoconazole

Pseudo Hypoaldosteronism (PHA) :

Genetic : PHA type 1 & 2.

Acquired :

Chronic tubulointerstitial disease

Fibrosis of mineralocorticoid receptor

RTA-4

- Reflux nephropathy.
- SLE.
- Obstructive nephropathy.
- Drugs :
 - Spironolactone.
 - Eplerenone.
 - Triamterene.
 - Amiloride.
 - Trimethoprim.
 - Pentamidine.
 - CNI.

Types of RTA :

RTA 4 :

- HyperKalemia
- NAGMA
- Positive UAG (Urinary anion gap)
- Urine pH < 5.5

RTA 1 & 2 :

- Hypokalemia
- NAGMA
- Positive UAG

RTA 1 :

- Severe RTA
- Urine pH > 5.5
- Fractional excretion of $\text{HCO}_3^- < 3\%$
- Nephrocalcinosis

RTA 2 :

- Bone mineral changes
- ↑ Fractional excretion of $\text{HCO}_3^- \&$ uric acid

INTEGRATED MEDICINE : PART 5

----- Active space -----

Osteoporosis

00:15:32

Causes :

- Post menopausal female (m/c)
 - Smoker, alcohol use
 - T_a DM
 - Low muscle mass, Ca^{2+} , Vit D
- Drugs : Lithium, heparin, PPI, cyclosporin, steroids, eltroxin, anticonvulsants
- Endocrine : Hypogonadism (m/c), Graves, Cushings
- GIT : IBD, celiac disease
- Rheumatological : RA, sarcoidosis

markers :

- Formation : N-terminal procollagen peptide
- Resorption : C-terminal cross linked peptide

OSTEOPOROSIS (Fragility #)

↓ Bone mineral density (DEXA)
Bone microarchitecture distortion (TBS/Quantitative CT)

Indication for Rx :

- T Score :
- <-2.5 , <-2 if T_a DM \oplus
 - Osteopenia + #

- Frax score :
- $>20\%$ risk of major bone #
 - $>30\%$ risk of NOF #

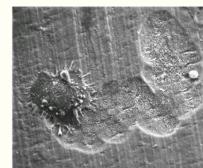
Bisphosphonates : Anti-resorptive (First choice)

- moA :
- \ominus Farnesyl pyrophosphate synthase
 - Direct apoptosis of osteoclasts

- S/E :
- Esophagitis : Taken in morning with glass of water, remain upright for 30-45 mins
 - Atypical non communitied transverse #
 - Collapsing FSGS
 - AVN jaw/mandible
- Drug holiday : 6 years oral/3 years IV

- IV :
- Zoledronate m/c : 4mg yearly (most potent) S/E : Atrial fibrillation.
 - Pamidronate

- Oral :
- Alendronate
 - Risedronate
 - Ibandronate



Osteoclasts



AVN : mandible

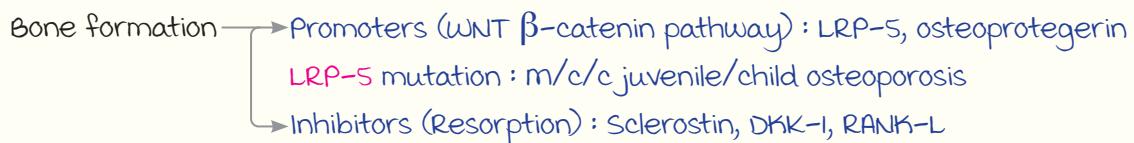
Strontium ranelate : Both anabolic & antiresorptive

Anabolic		
Teriparatide	Abaloparatide	Romosozumab
Recombinant PTH	Recombinant PTHrp	Sclerostin \ominus
s/c, daily	s/c, monthly	s/c, monthly
upto 2 years	upto 2 years	upto 1 years
S/E : Osteosarcoma	Best to \downarrow FRAX score	S/E : Ischemic events

Anti-resorptive	
Denosumab	
monoclonal Ab RANK-L	
60mg s/c, 6 monthly	
upto 10 years	
S/E : $\downarrow Ca^+$	

----- Active space -----

Annexure :



Renal failure markers for bone :

Formation : Bone specific alkaline phosphatase.

Resorption : TRAP_{sb}

DEXA :

	T score	Z score
Done for	<ul style="list-style-type: none">• male >50 years• Postmenopausal female	<ul style="list-style-type: none">• Children, males <50 years• Premenopausal female
Compared to	BMD of 25-29 year olds	Same age & sex

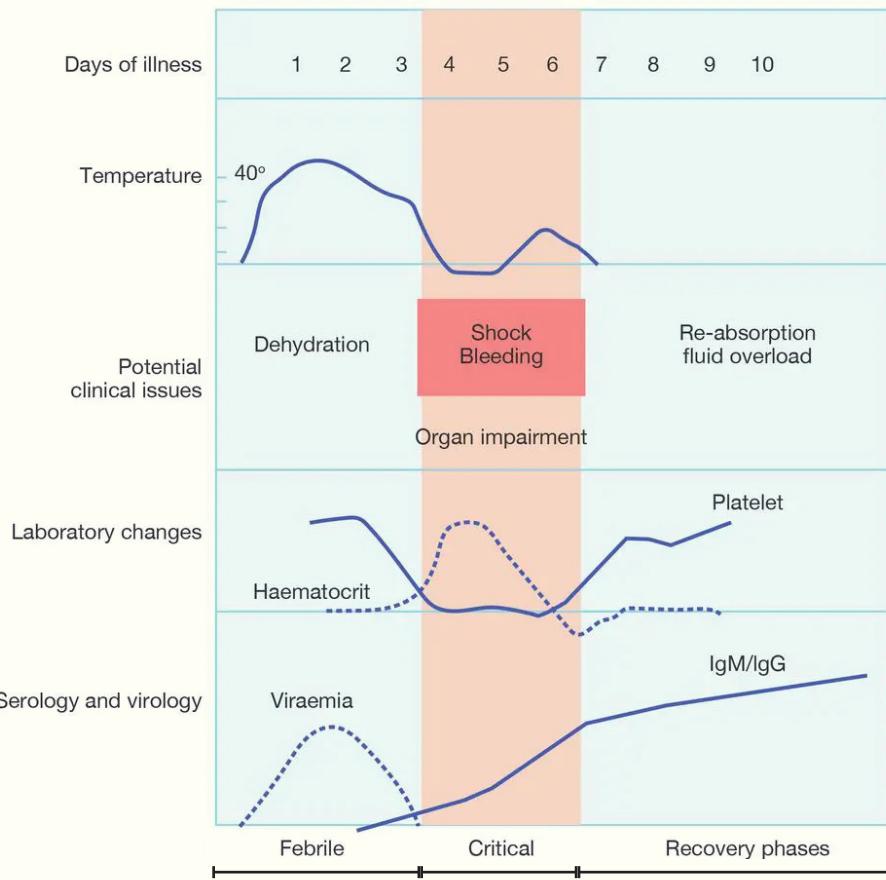
Screening :

- Females >65 years.
- males >70 years.
- Young :
 - H/o fragility.
 - Any risk factors.

Fluorosis : ↑ BMD.

- Organism : Flavi virus.
- Vector : Aedes.

Course of Illness :



- Retro-orbital pain
- Break bone fever
- NS, Ag : +ve

Antibody dependent enhancement (ADE) :

Day 5 : Check for platelets

Severe dengue :

- Significant thrombocytopenia : <30,000 platelet
- Capillary leak : ↑ Hematocrit, IVC collapsibility
- Organ failure : Derranged LFT, disorientation

mx : IVF

- Stable BP : 5-10 mL/kg/hr
- Unstable BP : 15-20 mL/kg bolus added, ICU

Annexure :

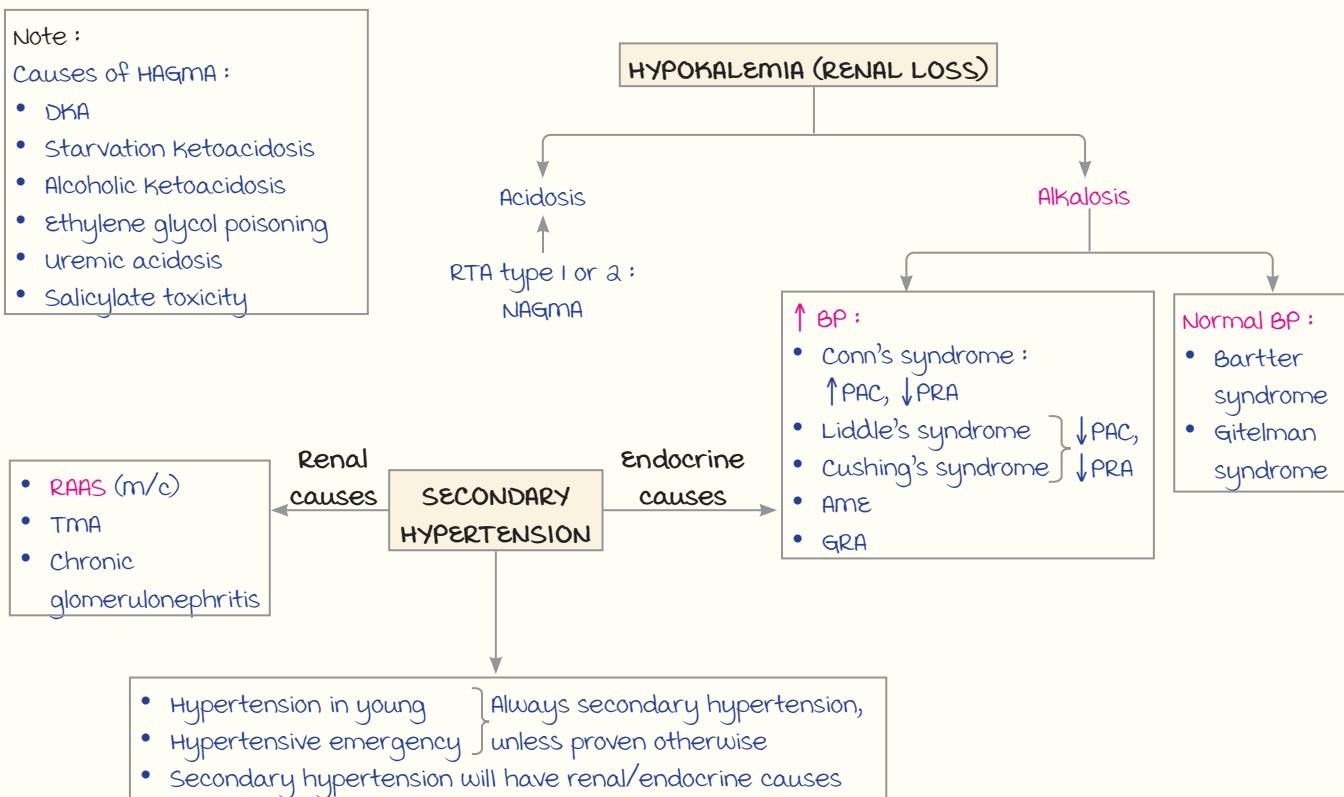
Transfusion when platelets :

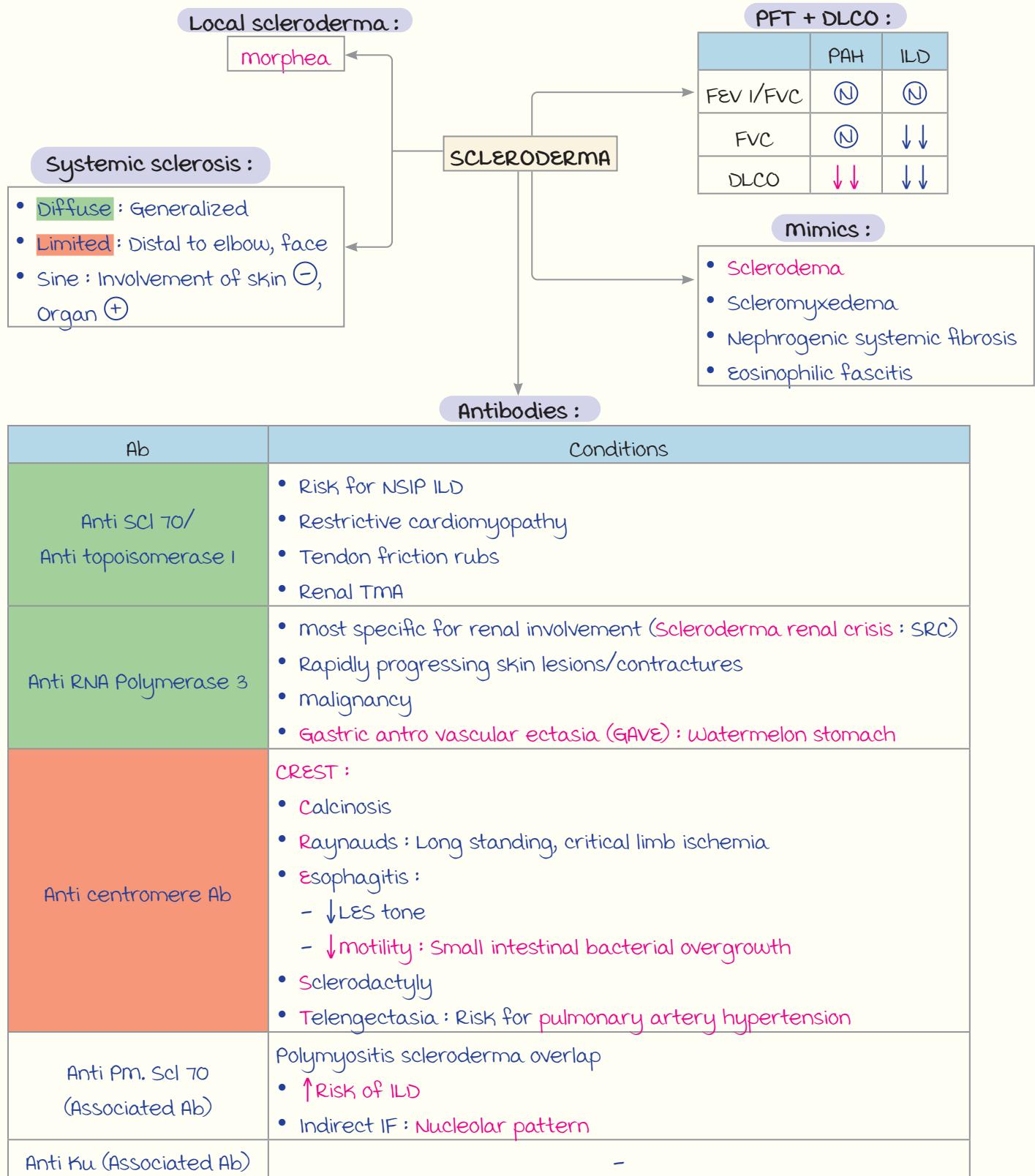
- <10,000.
- <20,000 + bleeding/symptoms.

Hematocrit : most important prognostic factor.

Metabolic Alkalosis with Hypertension

00:00:30





Score :

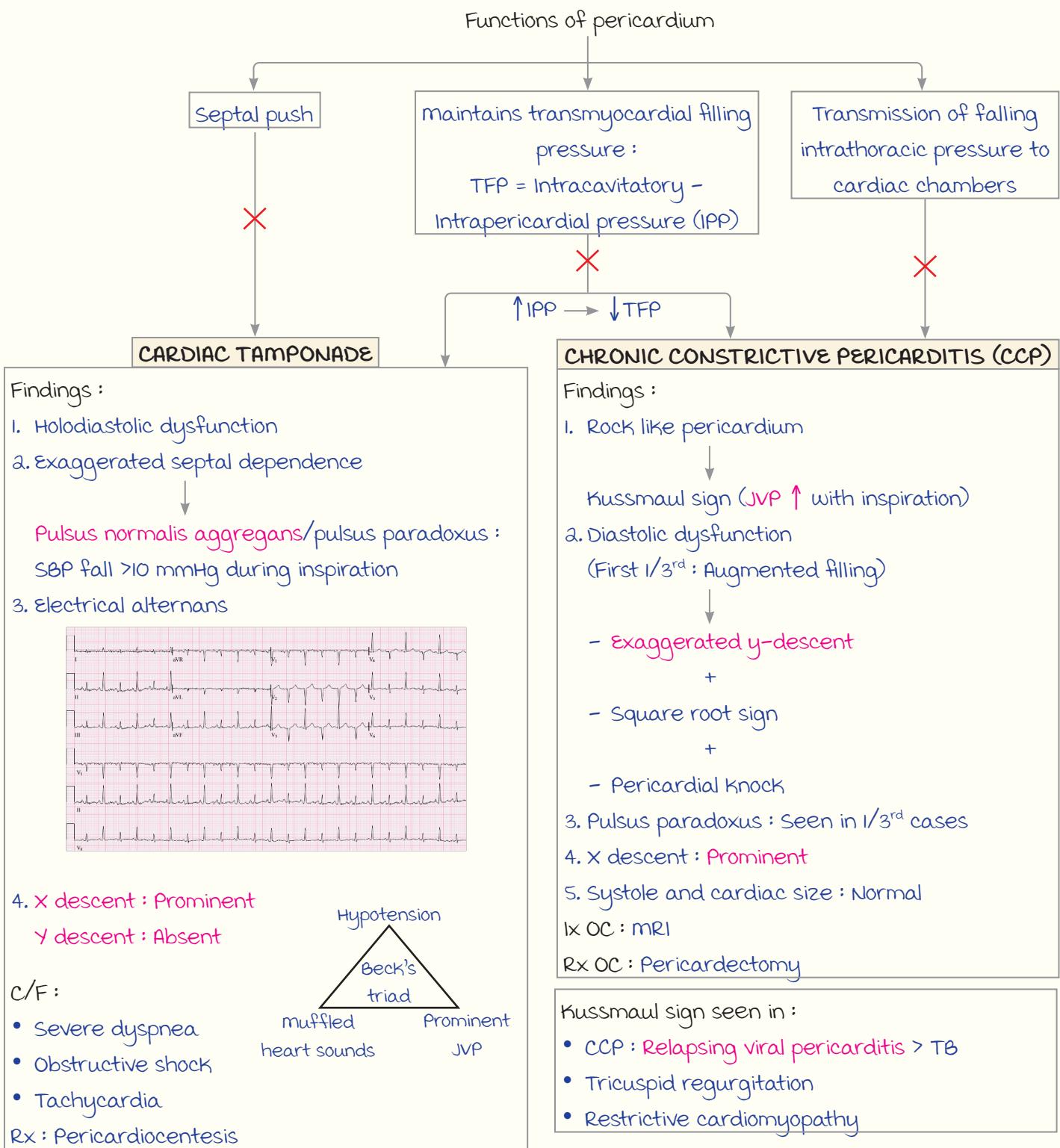
CURB 65

- Confusion
- Urea >7 mmol/L (BUN ≥ 21 mg/dL or blood urea ≥ 42 mg/dL)
- Respiratory rate >30/minute
- BP <90/60 mmHg
- Age : 65 years

CURB 65

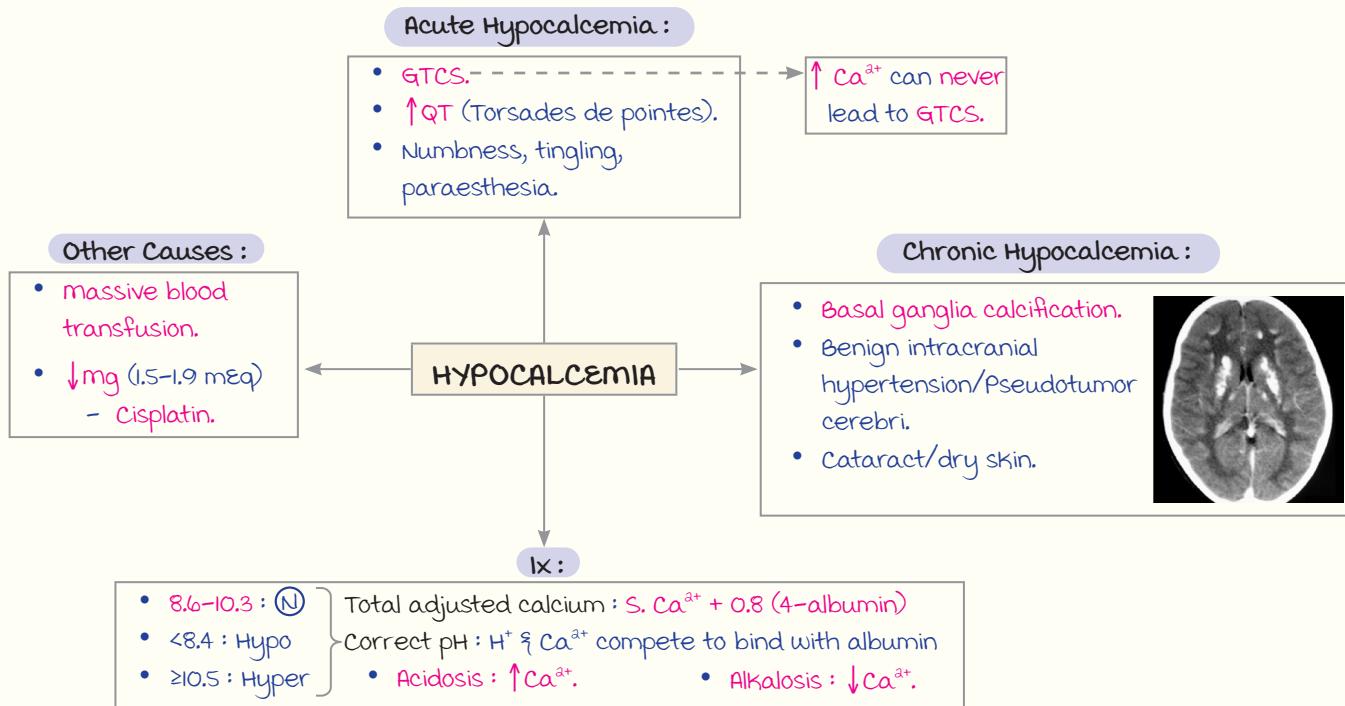
management:

Score	0-1	2	3
mortality	< 3%	>9-10%	>9-10%
Hospital admission	Not mandatory	Required	ICU admission
Rx	<ul style="list-style-type: none"> • Amoxicillin 1 g TDS + Azithromycin 500 mg on D1 f/b 250 mg on D2-5 • Comorbidities/resistance (+) : Amoxiclav 625 mg TDS + Azithromycin 	BL+BLI (Ampicillin sulbactam/ Piperacillin tazobactam) + macrolide (Azithro 500 mg OD /Clarithro 500 mg BD) or Levofloxacin 750mg OD	BL + BLI + macrolide or BL+BLI + Levofloxacin



Calcium, Phosphorus and PTH Abnormalities

00:00:30

**Annexure :****Polyglandular autoimmune syndrome/Autoendocrine polyendocrine syndrome type I :**

- Graves > Hashimoto's disease.
- Hypoparathyroidism.
- Addison's disease.
- T₁DM.
- APECED gene mutation :
 - A/w recurrent candidiasis.
 - Ectodermal dystrophy (Skin, nail changes).

Knuckle (K) & Dimple (D) :

K K D D : Pseudohypoparathyroidism.

K D K K : Down's syndrome.

K K D K : Turner's syndrome.

- Ca : 2.5 mmol/L = 5 meq/L = 10 mg/dL.
- mg : 1 mmol/L = 2 meq/L = 2.4 mg/dL.
- S. Phosphorus : 2.5-4.5 mg/dL.
- S. PTH : 50-100 pg/mL.

1° Hypoparathyroidism :

- Autoimmune destruction (APS/IgA type I)
- Genetic (DiGeorge syndrome)
- Post-op hypoparathyroidism
 - PTH: Transient ↑
 - ALP: N

Hungry bone syndrome : Post-op

- PTH: Prolonged ↑
- ALP: ↑

ca↓, P↑, PTH↓

ca↑, P↓, PTH↑↑

1° Hyperparathyroidism :

- Adenoma.
- Hyperplasia.

S. Ca, S. P, S. PTH

ca↓, P↑, PTH↑

2° Hyperparathyroidism :

- CKD : Renal osteodystrophy - -
- Cellular stress :
 - Tumor lysis syndrome
 - Rhabdomyolysis
 - Critical illness
 - massive blood transfusion
 - Haemolysis
 - Sepsis
 - Pancreatitis

VDDR :

VDDR - 1 :

- 1, α hydroxylase ↑
- 25(OH) $_2$ D $_3$ ↑
- 1, 25(OH) $_2$ D $_3$ ↓

VDDR - 2 :

- End organ disease
- 1, 25(OH) $_2$ D $_3$ ↑

ca↓/N, P↓, PTH↑

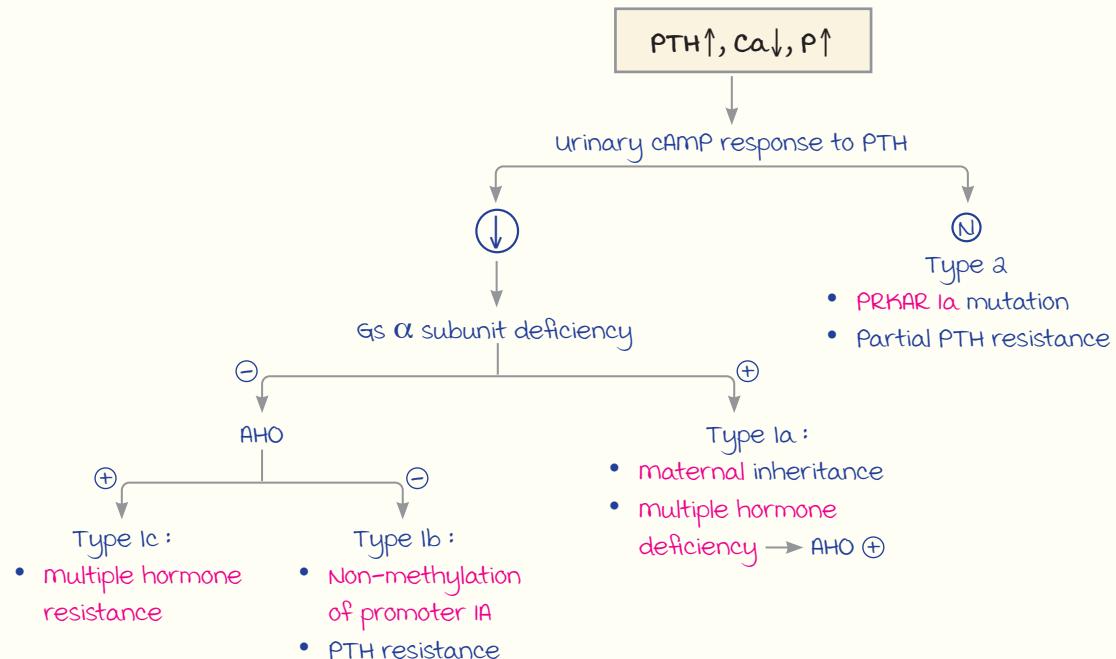
ca↑↑, P↑↑, PTH↑↑

3° Hyperparathyroidism :

Continuous longstanding
CKD → Autonomous ↑ PTH

In CKD :

- Initially : ↓S.P (FGF 23 potent phosphaturic agent)
- Later : ↑S.P (Klotho resistance → ↓FGF 23)
- ↑Ca $^{2+}$ d/t \ominus 1 α hydroxylase by FGF-23



Pseudopseudohypoparathyroidism :

- Genomic imprinting, paternal inheritance.
- Gs α subunit deficiency \oplus .
- AHO \oplus .
- Biochemically : Normal.

Albright's hereditary osteodystrophy (AHO) :

Bone mineral changes :

- Short stature.
- Round facies.
- mental retardation.
- Short 4th > 5th, metacarpal > metatarsal.

Albright's rule : $\uparrow \text{Ca}^{2+}$ + palpable mass \rightarrow Indicates parathyroid malignancy.

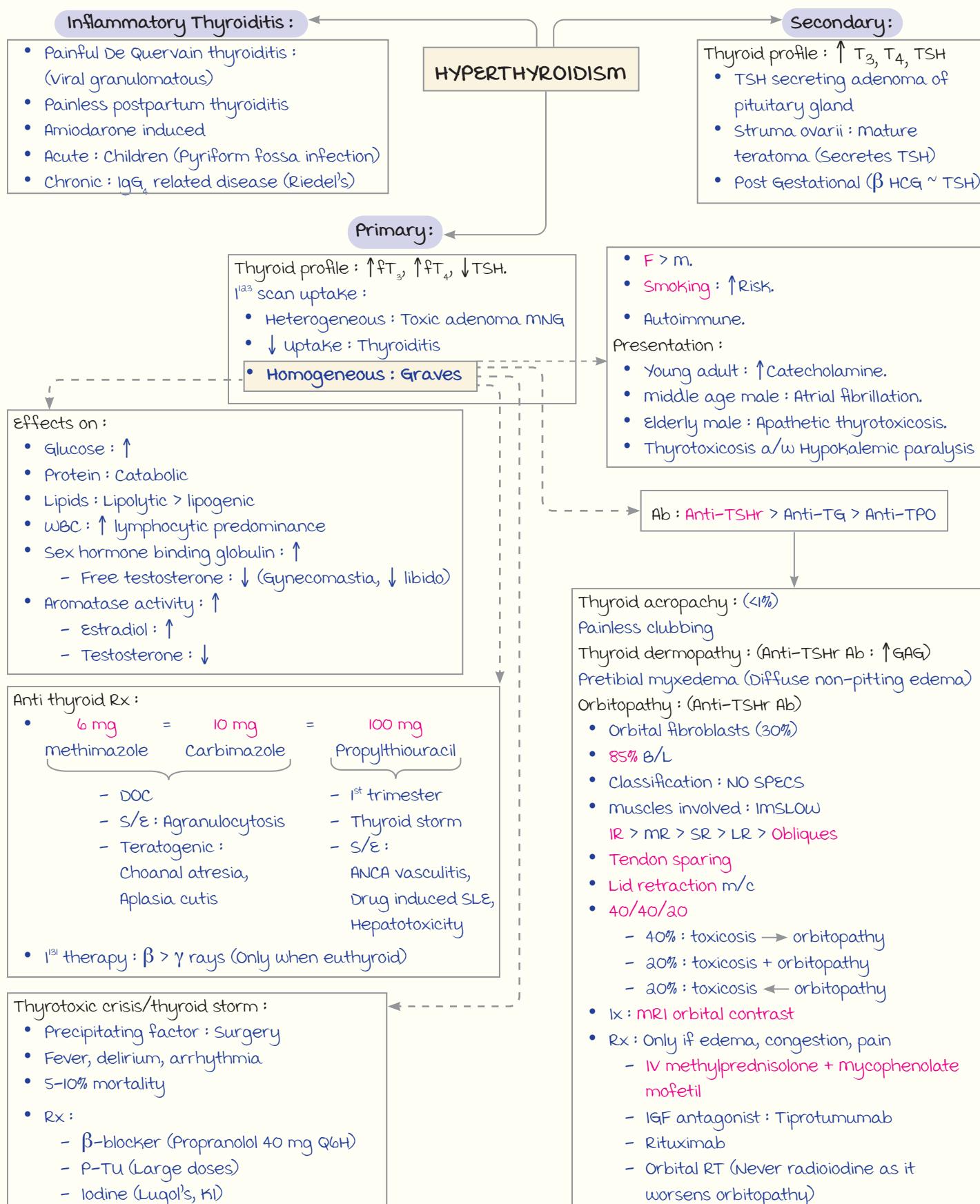
Note :

Hashimoto : Anti-TSHrAb < Anti-Thyroglobulin < Anti-TPO.

Total T₃, T₄ \uparrow : Euthyroid hyperthyroxinemia.

\uparrow TSH conditions :

- 2° hyperthyroidism.
- 1° hypothyroidism.
- T₃ T₄ resistance.

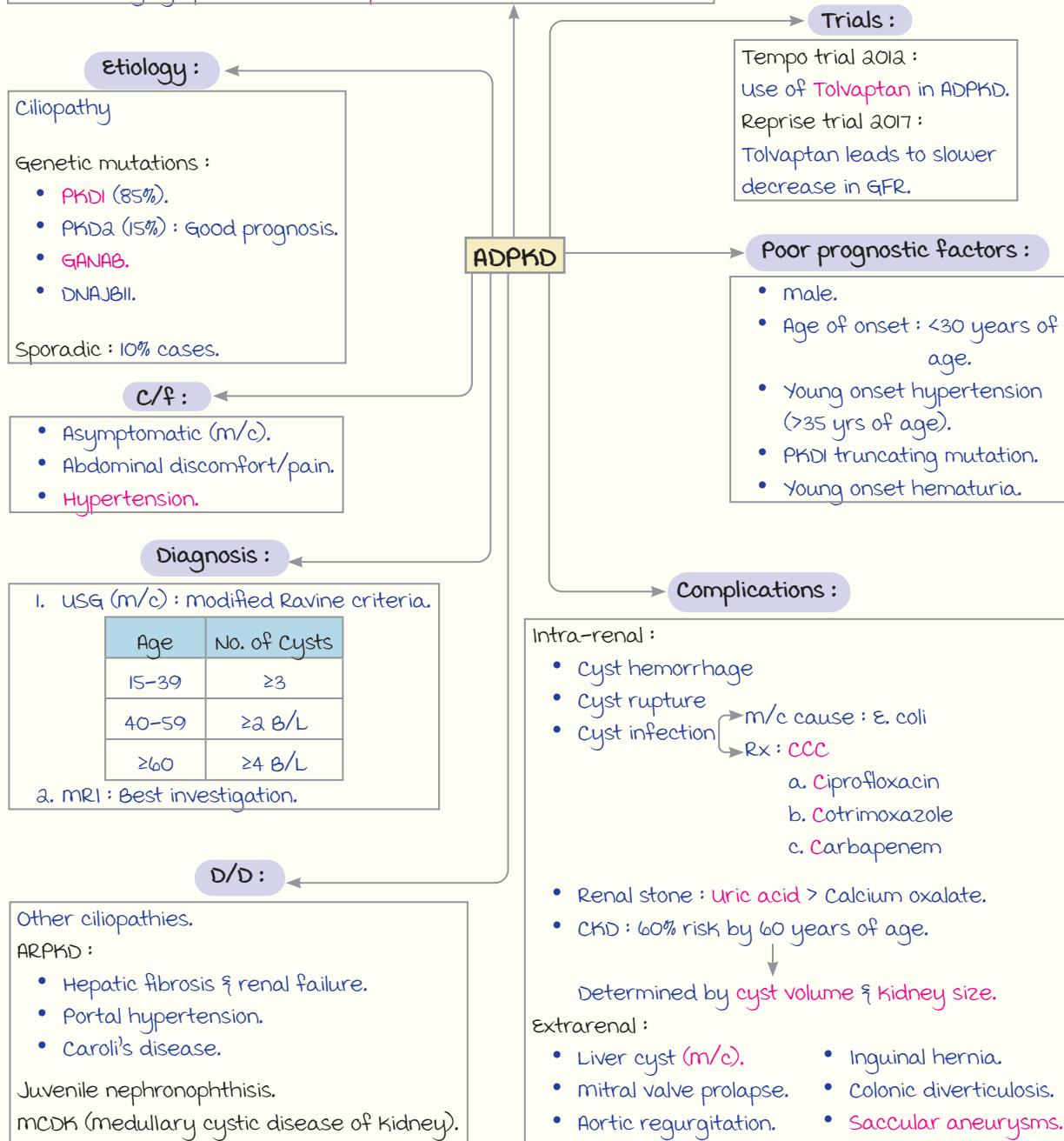


Autosomal Dominant Polycystic Kidney Disease(ADPKD)

00:00:05

General advice for patients with CKD and ADPKD :

1. Water intake : 5-6 L/day (To keep ADH under check).
2. **Tolvaptan** (C/I : GFR <25, monitor LFT).
3. ACE Inhibitors/ARBs for hypertension (Target BP : 90-110/60-75).
4. Warning symptom : Abdominal pain.





Renal cysts



Hepatic cysts

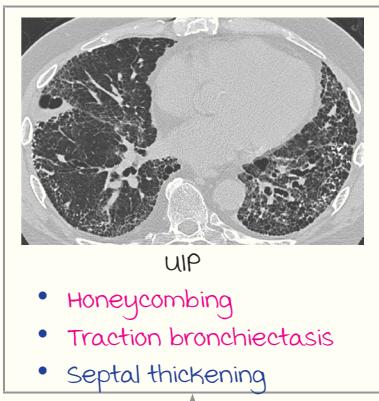


Seminal vesicle cysts :
Cause of male infertility

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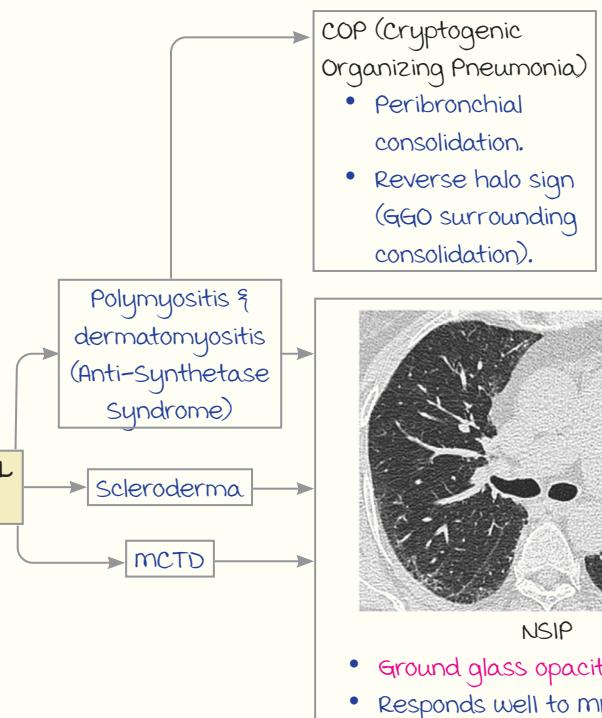
Respiratory Manifestations in Rheumatology

00:11:00



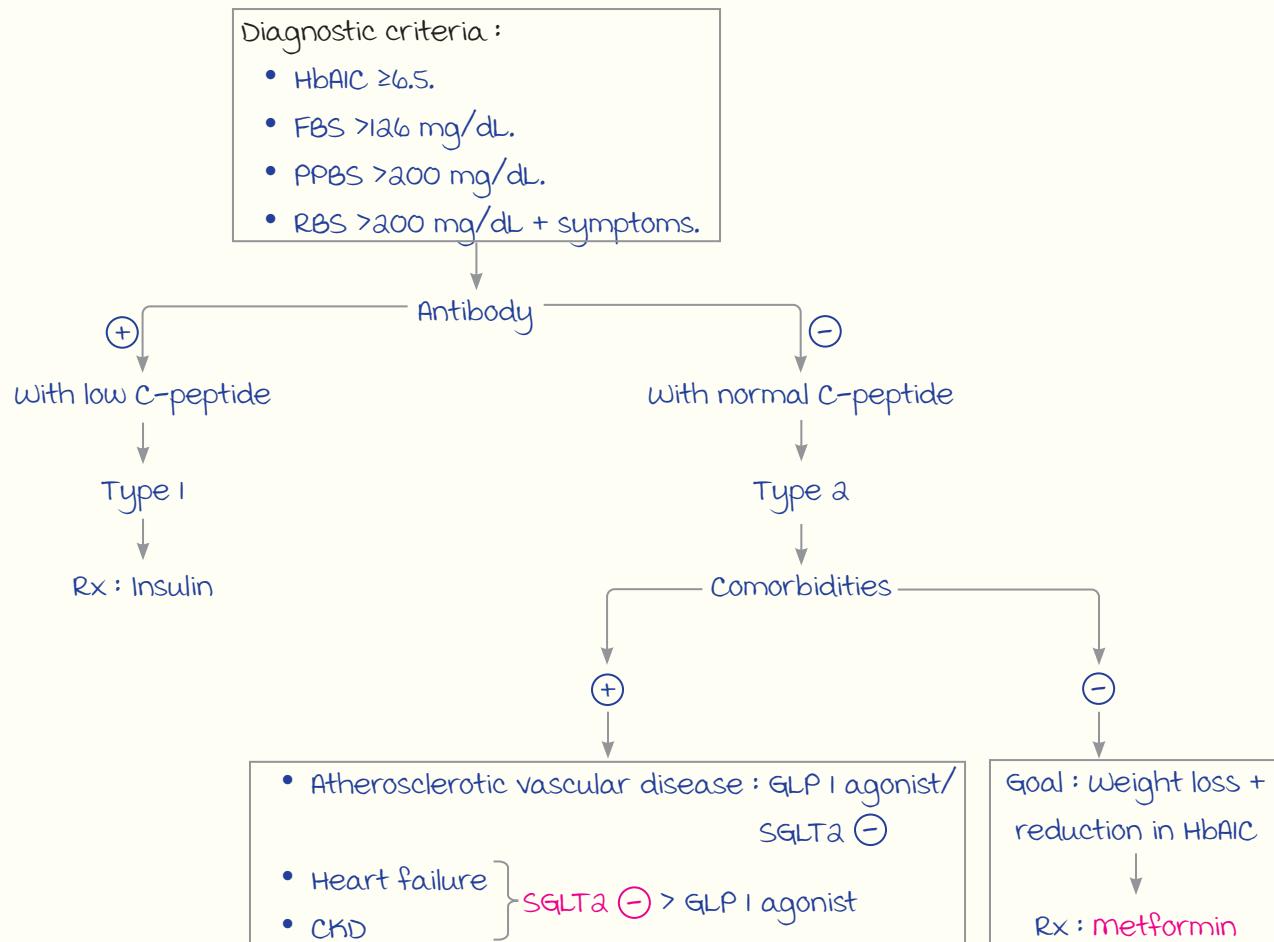
Rheumatoid Arthritis

RHEUMATOLOGICAL CONDITIONS



Annexure :

1. LIP (Lymphocytic interstitial pneumonia) : ↑ Cystic lesions.
 - HIV.
 - Sjögren's syndrome.
2. Sarcoid, ankylosing spondylitis : Upper lobe ILD.
3. Smoking is a risk factor in ILD with :
 - Langerhans cell histiocytosis.
 - Respiratory bronchiolitis.
 - DIP.
 - RA.

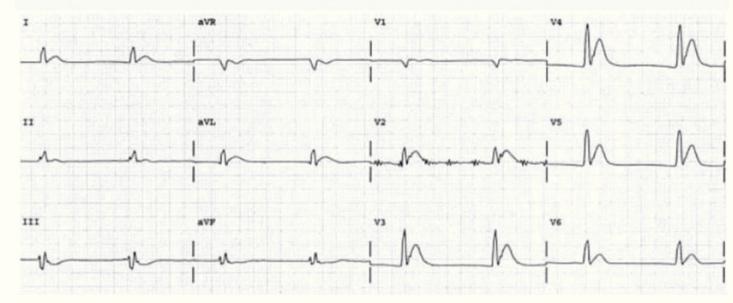
**Annexure :****1. Reserve options :**

- Gliptins : Nominal HbA1C reduction, cardiac/renal neutral, weight gain neutral, no hypoglycemia.
- Gliclazide : Anti-platelet, anti-thrombotic.

2. Tirzepatide : Dual GIP & GLP-1 agonist.

Clinical features :

- myopathy/myalgia.
- Renal stones, recurrent UTI, hematuria.
- Abdominal pain.
- Psychotic symptoms.
- Fatigue.
- ECG: ↓QT interval, arrhythmias.



Response to hypercalcemia :

Calcium sensing receptor

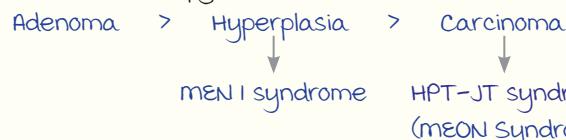
- ↳ Immediate action : Inhibit parathyroid gland.
- ↳ Delayed action : Hypercalciuria ($>4 \text{ mg/kg/24 hrs}$).

HYPERCALCEMIA

Etiology :

1. Genetic mutations :

- Familial Hypocalciuric hypercalcemia (FHH) : LOF mutation of Ca^{2+} sensing receptor.
- Type 5 Bartter (Hypocalcemic hypercalciuria) : GOF mutation of Ca^{2+} sensing receptor.

2. ↑PTH ($>20-35 \text{ pg/mL}$) :3. Drugs : Lithium ($\uparrow \text{Ca}^{2+}$, $\uparrow \text{PTH}$).4. PTH-rp related paraneoplastic hypercalcemia : SCC ($\downarrow \text{PTH}$).5. Hypervitaminosis : $\uparrow 25(\text{OH})\text{D}_3$, $\uparrow 1,25(\text{OH})_2\text{D}_3$ (Sarcoidosis/lymphoma).6. Osteolytic metastasis : multiple myeloma (Anemia, $\uparrow \text{ESR}$, $\uparrow \text{protein:creatinine}$, renal failure)

7. miscellaneous causes :

- | | |
|---|---|
| <ul style="list-style-type: none"> - Thiazides - milk alkali syndrome - Pheochromocytoma | <ul style="list-style-type: none"> - Addison's - Thyrotoxicosis - Acromegaly |
|---|---|

Note :

Sarcoidosis/lymphoma : Only $1,25(\text{OH})_2\text{D}_3 \uparrow$.