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PEDIATRICS OSCE



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Index

Topic	Page
✓ Red Urine ✓ ✓	3
✓ Arthritis ✓ ✓	6
✓ Convulsion ✓ ✓	9
✓ Febrile Convulsions ✓ ✓	12
✓ Jaundice – Child ✓	15
✓ Neonatal Jaundice - Indirect ✓	17
✓ Neonatal Jaundice - Direct ✓	20
✓ Pallor ✓ ✓	22
✓ Lower Limb Swelling ✓	25
○ Acute/Chronic Cough ✓	28
✓ Vomiting ✓	32
✓ Chronic Diarrhea ✓	34
✓ Headache ✓	37

✓ FT+

Approach to Red Urine

History

- ① • **Patient profile** (age, name)
- ② • **Chief Complain** (Red urine), and duration?
- ③ • **Previous episodes**
- ④ • **Urine color**: bright red (extra-glomerular), brown red (glomerular)
- ⑤ • **Timing**: initial (urethral), pan (ureter/kidney), terminal (bladder)
- ⑥ • **Clots**: Glomerulonephritis (GN), Stones

DDx	Questions
Vigorous exercise	
Trauma	
Food	Abx ↑ Chemotherapy
Drugs	Beet root, berries
UTI	Rifampicin, cyclophosphamide, anticoagulants
Urinary tract stones	fever, flank/loin pain, <u>dysuria</u> , <u>frequency</u> , <u>urgency</u> , <u>new onset enuresis</u>
Glomerulonephritis	(Obstructive): hesitancy, intermittency, oliguria headache, lower limb-edema, eye puffiness [typically upon awakening]
Poststreptococcal glomerulonephritis (PSGN)	<u>sore throat or skin infection</u> (in past 1-2 weeks)
IgA nephropathy (Berger's)	URTI in the past 1-2 days <i>legi</i>
Systemic lupus erythematosus (SLE)	<i>SUSA</i> <i>MD</i> malar rash, painless oral ulcers , photosensitivity, chest pain
Henoch-Schönlein purpura (HSP)	abdominal pain, joint pain, rash over lower extremities
Hemolytic uremic syndrome (HUS)	G6PD abdominal pain, bloody diarrhea (past 10 days) fava beans ingestion, jaundice, pallor, FHx of (G6PD, thalassemia, sickle cell disease)
Good pasture (Wegner granulomatosis)	hemoptysis, nasal ulcers , night sweats
Alport Syndrome	deafness, family hx of renal failure (FHx of RF)
Wilm's Tumor	weight loss, anorexia, abdominal mass
Hemophilia	nasal, gum bleeding, FHx of hemophilia

Co

contact with sick pt

Physical Examination

- **General look**
- **Vital Signs:** blood pressure is very important as nephritis causes HTN
- **Growth parameters**



Organ	What do you look for
Eye	✓ Jaundice, pallor (<i>Hemolysis</i>)
Face	Malar rash (<i>SLE</i>)
Oral	Ulcers, pharyngitis (<i>IgA nephropathy</i>)
Abdomen	- <i>Inspection</i> - <i>Palpation</i> : masses, tenderness (suprapubic, flank, costovertebral angle CVA), bladder, organomegally - <i>Percussion</i> : shifting dullness, transmitting thrills - <i>Auscultation</i> : over renal artery
Genitalia	meatal erosions/ulcers, swelling
Legs	edema, rash, arthropathy (<i>SLE/HSP</i>)



Investigations

Test	What do you look for
CBC	Anemia (G6PD), leukocytosis (infection)
Urine Analysis	- RBCs (dysmorphic suggests GN) - RBC Casts (suggests GN) - Protein (suggests GN)
Urine dip-test	leukocyte esterase, nitrite (<i>UTI</i>)
Urine culture	
Antibodies	<u>C3, C4</u> (low in PSGN), ANA, Anti-DsDNA Ab, Anti-smith, Anti-GBM <i>KJFA, SLE, can be positive</i>
Other	Anti-streptolysin O (ASO), Anti DNase B
KFT	↑ SCr & BUN suggest nephritis
Electrolytes	
KUB	Stones
CT	Trauma, Wilm's tumor
G6PD Analysis	
Biopsy	

Kidney Biopsy Indication (common question):

2- For the cause → Renal biopsy

- Not indicated if MCNS is suggested.

- Indications.

Before treatment:

- Age < 1 or >12 years.
- / - Gross hematuria.
- / - Renal failure
- / - Low C3

After treatment:

- / - Steroid resistant nephrotic syndrome.
- / - Frequent relapser

Management

Dx

Mx

UTI

- Antibiotic choice: Sensitivity testing.
- Outpatient: Co-trimoxazole, 2nd generation cephalosporins
Fluoroquinolones
- Inpatient: Aminoglycosides., 3rd/4th generation cephalosporins.
- Duration: 5 days in lower UTI, 10-14 days in upper UTI

PSGN

- Sodium restriction,
- diuresis (IV furosemide)
- calcium channel Blocker (CCB)
- vasodilator
- ACEIs used to treat HTN

SLE

- Mild: NSAIDs, hydroxychloroquine
- Moderate: High dose glucocorticoids, mycophenolate mofetil
- Severe: Cyclophosphamide, prednisone







Approach to Arthritis

History

- **Patient profile** (age, name)
- **Chief Complain** (painful knee swelling), duration?
- **Previous episodes**

- **Other Joints Involved?**
- **SOCRATES**
- **Progression?** Improving or worsening

2 limited range of motion

DDx	Questions
1 Trauma	
2  Septic Arthritis	fever, chills, rigors, fatigue
3  Brucellosis	ingestion of unpasteurized milk, contact animals
4  Rheumatic fever (RF)	is the joint improving and another joint is getting involved (migratory arthritis), Hx of sore throat, skin infection (SOB, cough, less exercise)
5  Reactive arthritis	Triad (mnemonic: can't pee can't see, can't bend my knee): dysuria, Hx of GI/UTI infection
6  Inflammatory Rheumatoid Arthritis (IRA)	morning stiffness
[SLE]	malar rash, photosensitivity, chest pain, seizures
[IBD]	abdominal pain, eye Sx, oral ulcers, bloody diarrhea
[HSP]	abd. pain red urine, rash over lower extremities
[Hemophilia]	nose/gum bleeding, FHx of hemophilia
[Malignancy] <i>osteosarcoma</i>	pallor, weight loss, bruises (leukemia)
[FHx]	FHx of IRA, Familial Mediterranean fever (FMF) 
[Vaccines]	<i>arthralgia</i> Hib, PCV-13
[Surgical Hx]	Hx of Appendectomy <i>abd. pain</i>

سبب جوع آب لیسیده، عفونت، ulcer

hemophilic influenza

Staphylococcal conjunctivitis

Physical Examination

- **General look**
- **Vital signs:** HR, RR, Temp, BP, O2 sat
- **Growth parameters:** weight, head circumference, height

Organ	What to look for
Eye	Conjunctivitis, Uveitis, lazy cornea, hypopion, Redness, Pallor
Face	rash (discoid, malar), micrognathia (small jaw) <i>URA</i>
Oral	ulcers, pharyngitis
Neck	LN examination
Chest	<p>a. CVS: pericardial rub, murmurs (aortic insufficiency: diastolic murmur heard on left upper sternal border / mitral regurgitation (pansystolic systolic murmur heard on the apex with radiation to the axilla))</p> <p>b. RS: pleural rub</p>
Abdomen	Organomegaly
Knee (Joint)	<ul style="list-style-type: none"> - inspection: redness, swelling, scars - palpation: tenderness, temperature - movement: passive and active movement - special movement tests: <ul style="list-style-type: none"> juxtra-patellar hollow test, tap test, effusion test, milking test - inspect gait - limb length disturbance

Investigations

Test	What to look for
CBC	Leukocytosis (inflammation), Anemia
ESR/CRP	Elevated in inflammation
Aspiration	For septic arthritis
Antibodies	C3,C4 (low in PSGN), ANA, Anti-DsDNA Ab, Anti-smith, Anti-GBM
ASO	Evidence of bacterial infection for Rheumatic fever

Management

Dx	Mx
Rheumatic Fever	<ul style="list-style-type: none"> ➤ Bed rest, ➤ Antibiotics (Penicillin G or Amoxicillin, Erythromycin, Azithromycin, clindamycin), ➤ Corticosteroids
Septic Arthritis	<ul style="list-style-type: none"> ➤ Drainage and debridement <i>ru Ant</i>
SLE	<ul style="list-style-type: none"> ➤ Mild: NSAIDs, hydroxychloroquine ➤ Moderate: High dose glucocorticoids, mycophenolate mofetil ➤ Severe: Cyclophosphamide, prednisone

Jones Criteria for Rheumatic Fever (common question):

Rheumatic Fever: Criteria



knowmedge

Mnemonic: "JONES CAFE PAL"

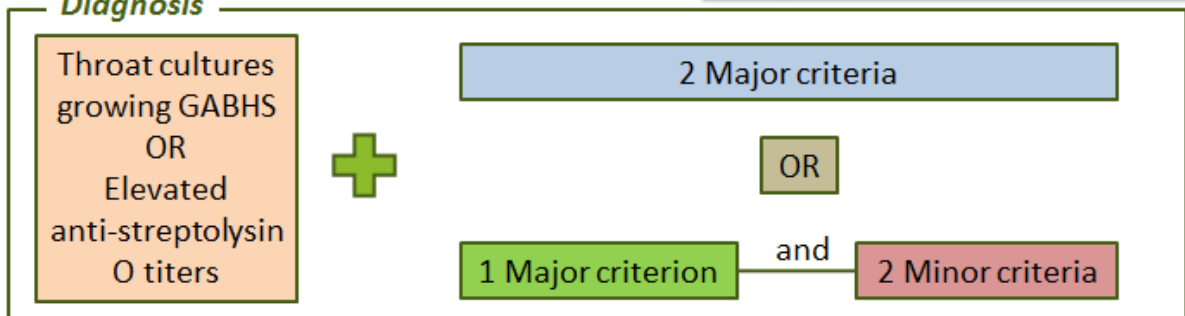
Major Criteria

J	Joint Involvement
O	O looks like a heart = myocarditis
N	Nodules, subcutaneous
E	Erythema marginatum
S	Sydenham chorea

Minor Criteria

C	CRP Increased
A	Arthralgia
F	Fever
E	Elevated ESR
P	Prolonged PR Interval
A	Anamnesis of Rheumatism
L	Leukocytosis

Diagnosis



Approach to Convulsions

History

- **Patient profile** (age, name) !
- **Chief Complain** (Abnormal movements, sensations), and duration?
- **Previous episodes**
- With **fever/not** ?
- How many times (**frequency**)?

Pre-ictal stage	<ul style="list-style-type: none"> ➤ What was he doing before the attack (crying, playing, sleeping,.. etc) ➤ before the attack did she complain of anything?
Ictal stage	<ol style="list-style-type: none"> ➤ Duration of the attack? ➤ did it involve part or the whole body? (Was it symmetrical on both sides?) ➤ was he responsive during the attack? ➤ Was there any abnormal movements (tongue bite, eye rolling, ...) ➤ type: clonic (rhythmic), tonic (rigid), myoclonic (muscle contractions), atonic (flaccid) ➤ how did it stop? Spontaneously or with medications
Post-ictal	<ul style="list-style-type: none"> ➤ How was the child after the attack (sleep, crying, in pain..) ➤ did he remember what happened?

DDx	Questions
Trauma	
neurocutaneous disorders	Skin rash
Feeding	Hypoglycemia – type, frequency
Dehydration	thirst, oliguria, dry mouth, absent tears
Malignancy	weight loss, anorexia, vomiting, early morning headaches
FHx	FHx of epilepsy, neurological disorders, heart problems
Developmental Hx	hx of visual disturbances ataxia
medications taken	hx of heart problem cyanosis, SOB, FT & squaring
Hx of meningitis	headache, photophobia, neck pain, vomiting, rash
Prenatal	complications, drugs, smoking
Perinatal	delivery complications, birthweight, ICU admission

hypothyroidism

asphyxia

hx of sudden death

Jaundice → Kernicterus

Physical Examination

- General look
- Vital signs
- Growth parameters
- Signs of dehydration
- Glasgow Coma Scale (GCS) (eye, verbal & motor response)
- Mental status (place, time, person)
- Glucose check

Organ	What to look for
1 Eye	sclera, conjunctival telangiectasias, Lisch spots, coloboma, cataract, fundoscopy (for papilledema)
2 Ear	Otitis media
3 Face	dysmorphic, port wine stain (sturge weber), sebaceous adenomas (TS)
Cardiac 4	murmurs
Abdomen 5	organomegally
Skin 7	Ash-leaf spots (TS) Café au lit spots (neurofibromas NF1) axillary freckles
Hands 6	for deformities <i>lump on skin, lump under the skin</i>
Neurological 8	- Meningeal signs: nuchal rigidity, Brudzinksi, Kernigs sign - Cerebellar signs - Cranial nerve examination (CN) - Muscle tone, reflexes, clonus, Babinski sign

Investigations

Test	What to look for
CBC	
Electrolytes	hypocalcemia, magnesemia, hyponatremia, hypernatremia
Blood glucose	
ABG & pH	
Blood urine toxicology	
Metabolic workup	
Anti-seizure drug level	
EEG	
Neuroimaging	MRI superior to CT

zf

MCN

Management

ABC

2 IV lines

Pulse oximeter

Benzodiazepines

to stop seizure

- **IV benzodiazepines** (**diazepam**, **lorazepam**), slow IV push over minute if not stopped additional 2nd dose (wait for 5 min from the 1st), be aware of respiratory depression, if not:
- **Phenytoin** continuous infusion wait for 5 min, if not additional 2nd dose is given, risk of local pain and injury including venous thrombosis, purple gloves syndrome (edema, discoloration, pain distal to site of infusion) in severe cases limb ischemia & skin necrosis that may require amputation
- **Phenobarbital & valproate** then induction of coma via continuous infusion of **midazolam**, **propofol** then prophylactic management based on the lecture

hypoglycemia

give bolus IV 10% **glucose saline**

Approach to Febrile Convulsions

History

- **Patient profile** (age, name)
- **Chief Complain** (Abnormal movements, sensations), and duration?
- **Previous episodes**
- **with fever/not?** Height route of measuring, duration, progression

Pre-ictal stage	<ul style="list-style-type: none"> ➤ What was he doing before the attack (crying, playing, sleeping,.. etc) ➤ before the attack did she complain of anything?
Ictal stage	<ul style="list-style-type: none"> ➤ Duration of the attack? ➤ did it involve part or the whole body? (Was it symmetrical on both sides?) ➤ was he responsive during the attack? ➤ Was there any abnormal movements (tongue bite, eye rolling, ...) ➤ type: clonic (rhythmic), tonic (rigid), myoclonic (muscle contractions), atonic (flaccid) ➤ how did it stop? Spontaneously or with medications
Post-ictal	<ul style="list-style-type: none"> ➤ How was the child after the attack (sleep, crying, in pain..) ➤ did he remember what happened?

DDx	Questions
Meningitis	headache, photophobia, neck pain, vomiting, rash
Otitis Media	ear pain, discharge
URTI	nasal congestion, discharge, sore throat, cough
Gastroenteritis	abdominal pain, distention, blood in stool (shigella)
UTI	frequency, urgency, dysuria, blood
Skin infection	
Joint pain, swelling, redness	
Exposure to a pt with infection	
Trauma	
Hx of cardiac disease, edema, cyanosis, SOB	
Feeding	Appetite
Vaccines	recent DTP/MMR, PCV-13, meningococcal
Hx of meningitis	
Prenatal and perinatal Hx	complications, drugs, smoking / delivery complications, birthweight, ICU admission

Physical Examination

- *General look*
- *Vital signs*
- *Growth parameters*
- *Glasgow Coma Scale (GCS)*
- *Mental status* (place, time, person)
- *Glucose check*

Organ	What to look for
<i>Eye</i>	<i>fundoscopy (for papilledema)</i>
<i>Ear</i>	Otitis media, Mastoiditis
<i>Skin</i>	Rash
<i>Neurological</i>	- <i>Meningeal signs</i> : nuchal rigidity, Brudzinski, Kernigs sign - <i>Cerebellar signs</i> - <i>Cranial nerve examination (CN)</i> - <i>Muscle tone, reflexes, clonus, Babinski</i> sign

Investigations

Test	What to look for
CBC, ESR, CRP	
Electrolytes and blood glucose	
LP with CSF analysis & culture	
Throat swap culture	
EEG, Neuroimaging	

Management

Empiric Mx	Ceftriaxone or Cefotaxime + Vancomycin (Ampicillin + Gentamicin for newborns)
Bacterial	Ceftriaxone + Vancomycin
Viral	Acyclovir mostly
Steroids	Might be given in some cases

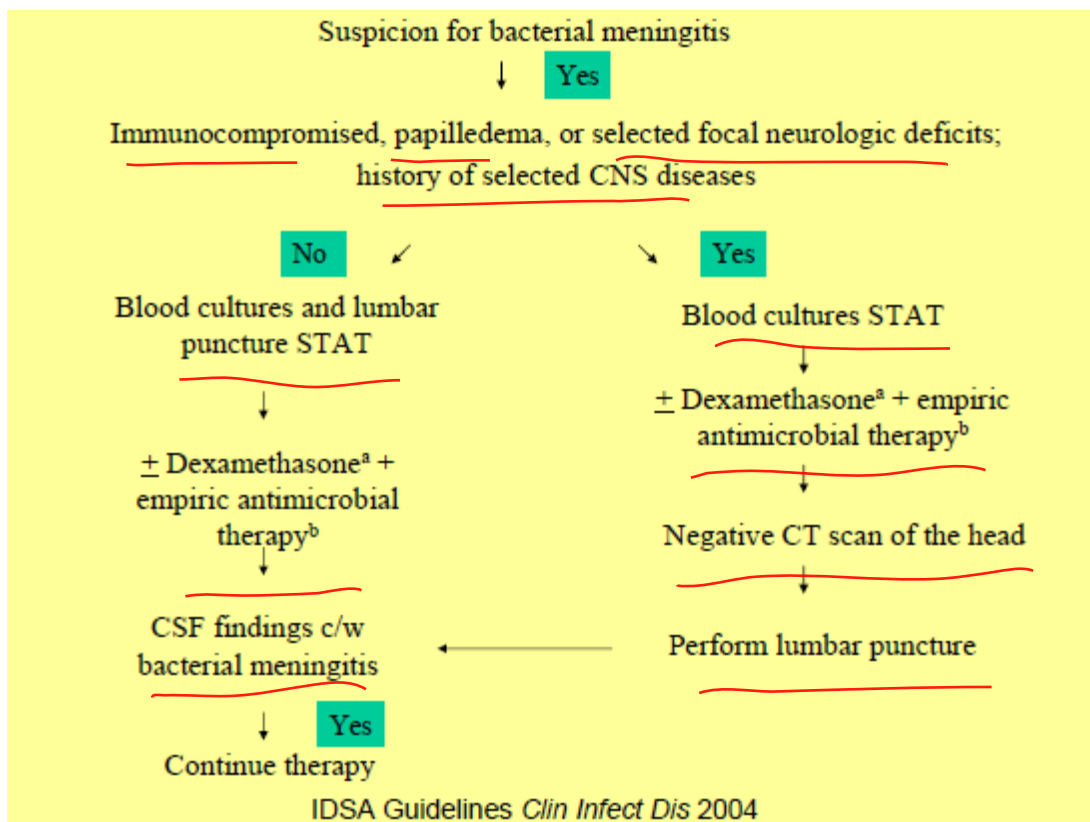
Duration of treatment Bacterial Meningitis

- **S. pneumoniae**: 10-14 days
- **N. meningitidis**: 5-7 days
- **Hib**: 7-10 days
- **L. monocytogenes** – 14 to 21 days
- **S. aureus** – at least 2 weeks
- **Gram -ve**: 3 weeks

N
H
S
—
L
S
G

Contraindication for LP

- Suspected brain abscess or subdural empyema (20% herniation)
- Bleeding disorders
- Skin infection at site of LP
- Papilledema? (1-6% herniation after LP)



Approach to Jaundice – Child

History

- **Patient profile** (age, name)
- **Chief Complain** (yellow discoloration), and duration?
- **Previous episodes**

• **Describe it:**

- SOcraTEs
- S – **site**: where was it noticed?
- O – **onset**: sudden or gradual?
- T – **Intermittent** or **constant / progression**?
- E – **E/R** factors

distribution

→ Fever
→ poor feeding
→ irritability
→ wk cry

associating SX → Thalassemia, SX of Sepsis

→ Hx of blood transfusion
→ sickle
→ sphero

DDx	Questions
Pre-hepatic	<ul style="list-style-type: none"> - G6PD: pallor, exercise intolerance, ingestion of fava beans - FHx of G6PD, hemolytic anemias, Splenectomy
Hepatic	<ul style="list-style-type: none"> hepatitis: fever, fatigue, anorexia, abdominal pain, diarrhea, Chills, vomiting, epigastric - Hx. exposure to a jaundice patient / hepatitis patient / liver + blood transfusion surgeries - Personality changes, behavioral changes, seizures, hematemesis (vomiting blood), blood in stool, easy bleeding, bruises and edema
Post-hepatic	<ul style="list-style-type: none"> - Obstructive features: color of stool (pale), urine (dark), itching - Cystic fibrosis: chronic diarrhea, steatorrhea, recurrent sinopulmonary infection, failure to thrive (FTT), family Hx of CF - Hypothyroidism: cold intolerance, fatigue, lazy, weight gain, wk cry
Extra-hepatic	<ul style="list-style-type: none"> - Hx of thyroid diseases + constipation + Fatigue. poor feeding - Consanguinity - FHx of liver transplant/disease - Drug hx, travel hx
Other	<ul style="list-style-type: none"> - Perinatal care: if the mother had hepatitis A/B/C at time of delivery

hemolysis
↓
antibiotic
viral
↓
drug induced
↓
Paracetamol
↓
Cirrhosis
hepatic
encephalopathy

biliary atresia
↓
+ dx

gynomastia
milk dribbling



→ direct hyper

brown tea

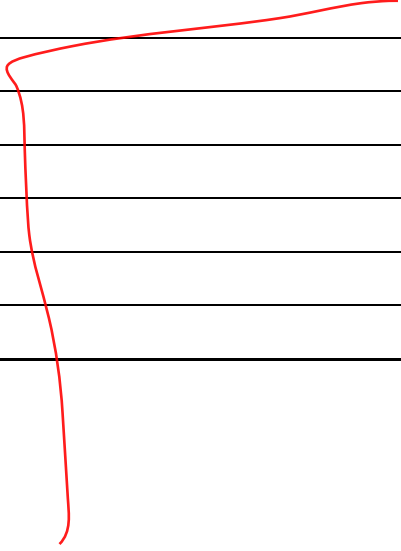
blood transfusion }
vaccination }
feeding }
breast milk }
breast feed }

Physical Examination

- General look: pallor, jaundice, ill, malnourished, muscle wasting
- Vital Signs
- ~~Growth parameters~~

Organ	What to look for
<u>Eye</u>	dysmorphism 
Face	pallor, jaundice, Kayser-Fleischer (KF) rings , Alagile features
Neck	spider angiomas  <i>goiter</i>
Chest	spider angiomas, murmurs
Abdomen	- <i>inspection</i> : distention, dilated veins, <i>scar</i> - <i>palpation</i> : tenderness, organomegally, liver span, transmitted thrills - <i>percussion</i> : shifting dullness - <i>auscultation</i>
Hands	palmer erythema
Legs	edema
Skin	rash, itchy mark

Investigations

Test	What to look for
CBC	
LFT (ALT/AST)	
ALP/GGT <i>) biliary system</i>	
PT, PTT, INR, Albumin, Glucose	
Anti-HAV IgM, HBsAg, HBc RNA, PCR	
✓ TFT (TSH, T3, T4)	
✓ Sweat chloride test	

Septic workup

- blood culture
- CBC
- CSF analysis + culture
- urine analysis + "

Approach to Indirect Jaundice – Neonatal

History

- **Patient profile** (age, name)
- **Chief Complaint** (yellow discoloration) & duration, which day of life noticed?
- **Previous episodes**
- **Describe it:**
 - SOcraTEs
 - S – **site**: where was it noticed?
 - O – **onset**: sudden or gradual?
 - T – **Intermittent** or **constant / progression**?
 - E – **E/R** factors

ABO, Rh

DDx	Questions
Pre-hepatic <i>Fever → neonatal hepatitis</i>	<ul style="list-style-type: none"> • Isoimmune hemolysis: mother and baby blood groups, & previous pregnancies • Sepsis: fever, hypoactivity, irritability, poor feeding • TORCH: have you been exposed to rubella, did you have it, unexplained fever, rash, do you have cats • G6PD: pallor, hx of hemolytic anemias, G6PD
Hepatic	<ul style="list-style-type: none"> • Biliary atresia: abdominal distention, easy bleeding, bruising, edema
Post-hepatic	<ul style="list-style-type: none"> • Pyloric stenosis: abdominal distention after feeding with projectile vomiting of anything he eats, delay passage of meconium
Extra-hepatic <i>low birth weight infection</i>	<ul style="list-style-type: none"> • Hypothyroidism: macroglossia, weak cry, infrequent stooling • Ear discharge, cough, vomiting, crying upon micturition, strong urine • Cystic fibrosis (CF) <i>smell, joint swelling</i>
Other	<ul style="list-style-type: none"> • maternal Hx of thyroid disease, or anti thyroid drugs, and thyroid screening newborns
Consanguinity	<ul style="list-style-type: none"> • Breast fed, milk jaundice: type of feeding, duration, and frequency • Family Hx. Of hemolytic anemias, splenectomy, blood disorders, liver disorders, <i>hydrops</i> • Perinatal Hx: <u>maternal DM</u>, <u>gestational age</u>, <u>birth weight</u>, <u>birth trauma</u>

Perinatal: delivery mode, asphyxia, prematurity, low birth weight (LBW), trauma, if he was a part of twins, if instruments were used

Physical Examination

- **General look:** pallor, jaundice, ill, malnourished, muscle wasting
- **Vital Signs**
- **Growth parameters**

head → cephalohematoma

cyanosis

Organ	What to look for
Face	dysmorphism <i>macrocytosis, nasal polyp</i>
Eye	pallor, jaundice, red reflex (cataract), retinitis pigmentosa (ophthalmoscope), Kayser-Fleischer (KF) rings <i>syphilis</i>
Neck	spider angiomas, <i>goiter</i>
Chest	murmurs, Congestive heart disease (CHD – Alagile features)
Abdomen	- <i>inspection</i> : distention, dilated veins, <i>scar</i> , <i>→ mass</i> - <i>palpation</i> : tenderness, organomegally, liver span, transmitted thrills,.. - <i>percussion</i> : shifting dullness, transmitting thrills - <i>auscultation</i>
Legs	edema, <i>bruises</i>
Skin	petechial rash, itchy mark }

Investigations

Test	What to look for
CBC	
LFT (ALT/AST), ALP/GGT	
PT, PTT, INR, Albumin, Glucose	
Anti-HAV IgM, HBsAg, HBc RNA, PCR	
TFT (TSH, T3, T4)	
If Wilson suspected	<ul style="list-style-type: none"> ✓ Serum ceruloplasmin (low) ✓ Blood copper (high) ✓ 24 urine for copper (high)
If Autoimmune hepatitis (AIH) suspected	<ul style="list-style-type: none"> ✓ Gamma-globuline level (high) ✓ ANA, ASMA, LKM1
If G6PD suspected	<ul style="list-style-type: none"> ✓ G6PD enzyme analysis
US	
ERCP	
Liver biopsy	

Management

- based on the cause

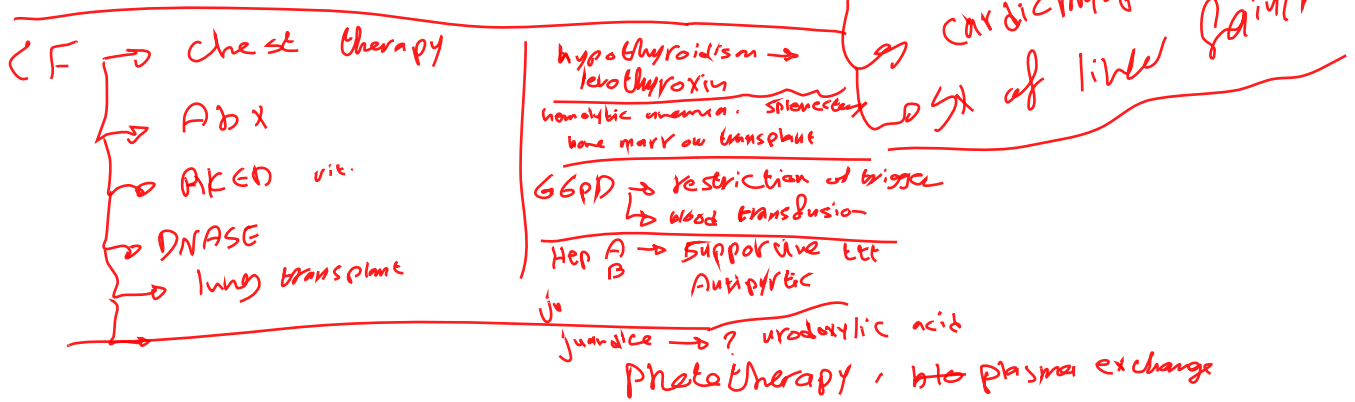
Wilson Disease

- **Compensated liver disease**
 - ✓ Chelating agents: Penicillamine or Trientine
 - ✓ **Zinc therapy** to suppress Cu intestinal absorption
 - ✓ Dietary restriction for food containing **Cu**
- **Liver transplant** for decompensated cirrhosis or fulminant liver failure (curative)
- **Screen the siblings** with ceruloplasmin or genetic mutation if it is known from proband case

St of DM & liver
penicillamine
behavioral changes
St of eye
Chronic diarrhea

Kayser
Fleischer ring

hemocromatosis
St of DM
bronze color
cardiomyopathy
St of liver failure



biliary atresia
kasai procedure

gs → cholecystectomy

Approach to Direct Jaundice – Neonatal

History

- **Patient profile** (age, name)
- **Chief Complain** (yellow discoloration) & duration, which day of life noticed?
- **Previous episodes**

• **Describe it:** SOcraTEs

S – **site:** where was it noticed?

O – **onset:** sudden or gradual?

T – **Intermittent** or **constant / progression?**

E – **E/R** factors

- **Color** of urine and stool: dark urine, pale stool, *itching*
brown, tea



DDx	Questions
Pre-hepatic	• Sepsis: fever, hypoactivity, poor feeding, irritability
Hepatic	<i>hepatitis</i>
Post-hepatic	• Biliary atresia: abdominal distention, easy bleeding, bruising, edema
Extra-hepatic	• Hypothyroidism <i>wk activity, poor sleep, constipation, poor feeding</i> • Cystic fibrosis (CF): recurrent sinopulmonary infections, statorrhea, FHx
Other	• Consanguinity • Feeding: type, amount, frequency • FHx of liver disease, transplant • Perinatal: delivery mode, asphyxia, prematurity, low birth weight (LBW), trauma, if he was a part of twins, if instruments were used

prenatal → Anemia, rash
Torch

Vaccination

breast feeding jaundice

Physical Examination

- Same as the previous topic “the indirect jaundice approach”

clay color stool +

Investigations

Test	What to look for
Total & Direct serum albumin	
ALT, AST, GGT, ALP	
Function of liver (PT, PTT, INR, Albumin, Glucose)	
CBC	
Urine analysis and culture	
Urine testing of reducing substances	
Blood culture	
TFT	
Alpha-1-antitrypsin	
Sweat chloride test or gene testing	
Ammonia, pH, CO	
US	
HIDA scan	
MRCP	
Biopsy	
Intra-operative cholangiogram	

Management

- based on the lecture

Biliary Atresia

Dx	Mx
<ul style="list-style-type: none"> ✓ Abdominal US: <ul style="list-style-type: none"> - Gallbladder absent/irregular - Triangular cord sign ✓ Hepatobiliary scintigraphy: <ul style="list-style-type: none"> - Failure of tracer excretion ✓ Liver biopsy ✓ Intra-operative cholangiogram: GS! 	<ul style="list-style-type: none"> ✓ Kasai procedure ✓ Liver transplantation

Approach to Pallor

History

- **Patient profile** (age, name)
- **Chief Complain** (Pallor), and duration?
- **Previous episodes**

- **Describe it:**

S – **site**: where was it noticed?

O – **onset**: sudden or gradual?

T – **Intermittent** or **constant / progression?**

E – **E/R factors** *exercise rest* Associated cardio-respiratory symptoms (SOB, palpitations, loss of consciousness)

- **General Sx of anemia**: headache, dizziness, SOB & less exercise intolerance

DDx	Questions
Iron Deficiency Anemia (IDA)	diet, anorexia, pica , melena, hematochezia (fresh stool blood)
Folate/B12	meat and vegetables, paresthesia's (CNS involvement)
Malabsorption	failure to thrive (FTT), abdominal distention, chronic diarrhea
Consanguinity	
Hemolysis	dark urine, gallstones
G6PD	ingestion of fava beans, drugs (PAINS) , FHx (P: <u>Primiquine</u> , A: <u>Aspirin</u> , I: <u>Isoniazide</u> , N: <u>Nalidixic acid</u> , S: <u>Sulphamethaxone</u>)
Sickle	recurrent hand, foot, chest, abdominal pain, FHx of sickle
Spherocytosis	FHx of splenectomy
FHx	FHx of anemia, <u>thalassemia</u> , <u>gallstones</u>
Bleeding	bleeding, epistaxis, gums bleed, skin rash, bruises , FHx
Leukemia	<i>aplastic anemia, Panconi</i> fever, weight loss, hypoactivity, FHx
Chronic disease anemia	hx of liver, cardiac, renal, recurrent hx of admissions
Perinatal care	Neonatal jaundice, NICU admission, <i>B2</i>
Blood loss	signs of dehydration (thirst, oliguria, tears), hemorrhage, post-surgical bleeding
HSP	<u>easy bleeding, joint pain, rash, abdominal pain</u>
Diet	

lead poisoning r

Physical Examination

- **General look:** pallor, jaundice, ill, malnourished, muscle wasting
- **Vital Signs**
- **Growth parameters**

Organ	What to look for
Eye	pallor, jaundice, Haematopoiesis
Face/head	features of extramedullary hematoporosis: frontal bossing, prominence of malar eminence, depressed nasal bridge, exposed upper central teeth, dysmorphic features (like fanconi anemia)
Mouth	Glossitis, angular stomatitis
Neck	Lymph nodes for malignancy
Chest	lung for infiltration due to malignancy, cardiac for murmurs Cardiac: flow murmur
Abdomen	hepatosplenomegaly, scars (splenectomy)
Hand	absent thumb (fanconi), kolionycia (iron deficiency)
Legs	Edema, rash <i>Σ 906v</i>
Skin	Café au lit spots (fanconi), petechial, purpuric rash, bruises (bleeding)

Investigations

Test	What to look for
CBC	(Hb level, WBCs, Platelet), MCV (micro, normo, macro)
TIBC, Ferritin	
B12 level	
Reticulocyte count	(increase – hemolysis / decrease – anemia of decreased production or bone marrow failure)
Peripheral blood smear	
G6PD analysis	
Osmotic fragility test	hereditary spherocytosis
Coombs test	for immune
PT, PTT, bleeding time	if bleeding present
Bone marrow biopsy	
Chromosomal breakage	Fanconi
Hb electrophoresis	

Management

- based on the cause
-

IDA

- **Mx of IDA:**
 - ✓ Start supplemental iron
 - ✓ Increase consumption of iron rich food like: meat, fish
 - **Duration of Mx:**
 - ✓ Around 3-4 months
 - **If there is no response to the iron Rx: what is your explanation?**
 - ✓ Non-compliance
 - ✓ Malabsorption
 - ✓ Thalassemia minor
-

Approach to Lower Limb / Periorbital / Generalized Swelling

History

- **Patient profile** (age, name)
- **Chief Complain** (Swelling), and duration?
- **Previous episodes**

- **Describe:**

- Sudden/gradual
- Constant/intermittent
- Other sites

progressive

associated Sx

muscle wasting

*Sx of AKED Debrau
Diarrhea, vomiting*



DDx	Questions
Trauma	<i>cellulitis, OM, Septic Arthritis</i>
If leg swelling	<u>Fever, erythema, hotness, pain, restriction of range of movement</u>
Allergy	<i>insect bite</i> , drug
FHx of Allergy	FHx of asthma, eczema, allergy
Cardiac CHF	Shortness of breath, orthopnea, exertional dyspnea, cyanosis, FHx
Liver failure	<i>proteinuria, loss of enteropathy</i> <u>jaundice, fatigue, malaise, hematemesis, blood per rectum,</u> bruises, <u>exposed to hepatitis patient</u> , previous blood transfusions, FHx of transplant
Renal failure	headache, facial puffiness, <u>oliguria, red urine</u>
Nephrotic Syndrome	<u>Other sites of swelling, frothy urine</u> <u>(ASK about the nature of urine!)</u>
PSGN	recurrent skin, throat infection
HUS	Hx of gastroenteritis (<i>GE</i>), bloody diarrhea - <i>abd pain</i>
SLE	malar rash, photosensitivity, oral ulcers, chest pain
Alport syndrome	Deafness, FHx of renal transplant/chronic kidney diseases
hypothyroidism	<u>cold intolerance, weight gain, lazy</u>

malignancy

we cry


Physical Examination

- *General look*
- *Vital Signs*
- *Growth parameters*

Organ	What to look for
Eye	Jaundice, periorbital swelling
Oral	ulcers (SLE)
CVS	(full examination) 
RS	(full examination): crepitation, pleural effusion (dullness & less air entry) signs of pleural effusion 
Abdomen	Masses (liver, ascites, shifting dullness, transmitted thrills) Organomegally, Signs of liver disease (caput medusa,..)
Groin	scrotal swelling
Lower limb	edema <i>rash, hives</i>
Back	sacral edema

3 3 2

Investigations

Test	What to look for
CBC	Hemoglobin, WBC, Platelets
Urine analysis, Urine Dipstick	RBCs, Casts,  Protein: 1 + = 0.3 gm/L 2 + = 1 gm/L 3 + = 3 gm/l 4 + > 4 gm/L
KFT	urea, creatinine, HCO-3, Na+, K
LFT	
Total protein, Albumin	
24-hour protein	
urine Prot./Creat. Ratio.	
C3, C4	
ANA, Anti-DsDNA	
HBsAg	
Serum Lipids	Cholesterol, TG, LDL, HDL
Kidney Biopsy	

Causes of Nephrotic Syndrome:

Primary "Idiopathic" (95%)

- Minimal lesion NS (MCD, lipoid nephrosis)
- Focal segmental glomerulosclerosis (FSGS)
- Mesangiocapillary GN (MCGN, MPGN)
- Membranous nephropathy

Secondary (5%)

- Complication / part of
 - Systemic disease (Vasculitis/SLE/HSP etc.)
 - Drugs
 - Infections etc.

Indications for kidney biopsy:

- Secondary N.S (Hematuria/significant proteinuria)
- Frequent relapsing N.S
- Steroid resistant N.S
- Hypertension.
- Low GFR / RPGN

Rapidly progressive glomerulonephritis

Management

- based on the cause

Nephrotic Syndrome

✓ Admission

- ✓ Family Education: Diet, Steroid SE, ..
- ✓ **Albumin + Lasix (Diuretics), thiazide**
 - ✓ Vaccination: PCV 13
- ✓ Anticoagulation in children with thromboembolic events
 - ✓ **Steroids** (oral, IV bolus)
- ✓ Immunosuppressives: Cyclophosphamide. Mycophenolate
 - ✓ **Anti-platelet: Aspirin**
 - ✓ **ACEI/ARBs**

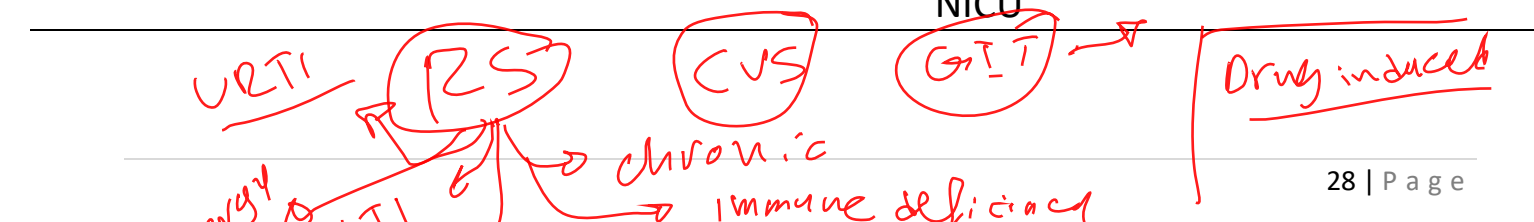
Approach to **Acute/Chronic (recurrent) Cough**

History

- **Patient profile** (age, name)
- **Chief Complain** (cough <3 week duration), and duration?
- **Previous episodes**
- **Describe:**
 - Character: productive or not, with blood or not (amount, color, blood)
 - Severity *briskly*
 - continuous/intermittent *→ E/R*
 - bouts of cough (episodic)

= put them
pharyngitis
sinusitis
otitis media
tonsillitis
E/R

DDx	Questions
URTI	fever, headache, facial pain, nasal congestion & discharge, sore throat, hoarseness of voice, chest pain
Hx	Hx of respiratory infection/exposure <i>to it with these</i>
Tuberculosis (TB)	night sweat, weight loss, elderly in the house, contact with a TB <i>SV</i>
Vaccines	PCV-13, HiB, BCG <i>last vaccine</i>
Allergy	allergy to drugs, season, weather, food, eczema, rash, pets, smoking, well ventilated house
FHx	FHx of asthma, atopy <i>CF, Car D, GI</i>
Cardiac	cyanosis, shortness of breath (SOB), exertional dyspnea, Hx <i>edema</i>
GERD & TEF	recurrent vomiting <i>puemonia</i>
Respiratory	Cough worse at night, wheezes <i>chest pain</i> <i>Fever, chills, SOB</i>
Consanguinity	
Foreign Body	choking, Did he swallow anything, last seen <i>social</i>
Cystic fibrosis	recurrent chest infection, abdominal distention, diarrhea, FTT, <i>asthma → at night, wheezing, FHx allergy, eczema, rash, hctcs</i>
Immunodeficiency	recurrent skin and OM, recurrent hospital admissions
Pre-natal	premature, birth weight, delayed meconium passage, jaundice, NICU







allergic
Fovoiden body



Physical Examination

- **General look, Vital Signs, Growth parameters**
- **Signs of respiratory distress:** nasal flaring, retractions, rapid breathing, grunting and tachypnea, *use of accessory muscle, cyanosis*

Acute Cough Physical Examination

Organ	What to look for
Eye	Redness, Cyanosis
Nose	Nasal polyps, allergic sallute  
Chest	<p><i>post nasal drip</i></p> <p><i>save throat</i></p> <p><i>mouth</i></p> <p><i>central cyanosis</i></p> <p><i>left lip</i></p> <p><i>palate</i></p> <p><i>neck</i></p> <p>- Inspection: deformities (scoliosis, pectus craniatum, excavatum), scars, masses, visible pulsations</p> <p>- Palpation: tracheal deviation, masses, tenderness, chest expansion, tactile vocal fremitus </p> <p>- Percussion: on both sides</p> <p>- Auscultation: breathing sounds, air entry, added sounds</p>
Hands	clubbing, <i>peripheral cyanosis</i>
Skin	Rash (signs of atopy) 
ENT	Full ENT exam

Chronic Cough Physical Examination

Organ	What to look for
Face	Dysmorphic features ✓
Eye	Redness, Cyanosis allergic shiners
Autoscopy	for foreign body (autogenic reflux), otorrhea with tympanic membrane, scaring (primary ciliary dyskinesia PCD)
Nose	nasal salute (behavioral rubbing of the nose), anterior rhinoscopy (look for polyps), hypertrophied turbinates, check the mucosa
Mouth	mouth breathing, hypertrophied tonsils
Neck	lymph nodes malignancy ✓
Hand	clubbing, cyanosis 
Cardiac	dextrocardia, murmurs (for primary ciliary dyskinesia (PCD))
Respiratory	Full respiratory examination! 
Abdomen	distention, organomegally
PR Exam	rectal polyps <i>↑ pressure</i>
Lower limb	Edema
Skin Rash (signs of atopy)	

Investigations

Dx	Test
Infections	<ul style="list-style-type: none"> ✓ CBC, ESR, CRP ✓ Sputum & Blood culture
Asthma	<ul style="list-style-type: none"> ✓ Spirometry ✓ Skin prick test ✓ Other: peak flow, methacholine, histamine, exercise challenge tests, sputum eosinophils, IgE, Eosinophils
TB	<ul style="list-style-type: none"> ✓ TST, PPD, PCR ✓ Interferon-gamma release assay (IGRA) ✓ Ziehl-neelsen stain for sputum
CF	<ul style="list-style-type: none"> ✓ Sweat chloride test, Fecal Elastase, Gene testing
Foreign body	<ul style="list-style-type: none"> ✓ Bronchoscopy
Cardiac	<ul style="list-style-type: none"> ✓ Echo, ECG
GERD	<ul style="list-style-type: none"> ✓ Esophageal pH monitoring & upper endoscopy
Other	<ul style="list-style-type: none"> ✓ Electrolytes, ABG's, CXR (AP/L)

CXR

Management

Dx	Mx
Bronchiolitis	<ul style="list-style-type: none"> • Supportive • Oxygen, cpap, intubation • IV fluid if unable to take PO or too tachypnic (RR > 60b/min) • Bronchodilators Albuterol and epinephrine may help • Steroids are not recommended in previously healthy children • Hypertonic saline not routinely recommended
Asthma	<p>Acute asthma management:</p> <ul style="list-style-type: none"> • Inhaled albuterol, continuous, frequent • Systemic steroids---- Oral or IV • Inhaled anticholinergics • If no improvement consider <ul style="list-style-type: none"> - Subcutaneous terbutaline - Magnesium sulphate - Heliox - Intubation and ventilation

Cystic Fibrosis

- ✓ • Airway clearance
 - ✓ • Disease modifying therapies: Ivacaftor for class 3 mutation
 - ✓ • Ibuprofen
 - ✓ • Azithromycin
 - ✓ • Steroids: not routinely indicated
 - ✓ • Pancreatic enzyme replacement therapy
 - ✓ • Fat soluble & AKED vitamins
 - ✓ • Manage the complications
-

Pneumonia

- ✓ • Oxygen
 - ✓ • IV fluids if unable to do PO feeds
 - ✓ • Antibiotics:
 - Newborns: ampicillin gentamicin or ceftazidime
 - Older children: ampicillin or ampicillin clavulanic acid, in severe cases 3rd generation cephalosporins
 - If older than 5 and mycoplasma suspected: macrolides can be used
 - If patient is toxic looking add vancomycin
-

Approach to Vomiting

History

- **Patient profile** (age, name)
- **Chief Complain** (vomiting), and duration?
- **Previous episodes**
- **Describe:**
 - frequency
 - color, amount, blood
 - projectile/not
 - related to food or not

Think of the Dx in these scenario's:

A. Vomiting + Headache:









- Meningitis

B. Vomiting + Diarrhea:

- Gastroenteritis (GE)

C. Vomiting in neonate:

- Biliary Atresia (BA)

DDx	Questions
✓ Meningitis 	headache, photophobia, neck pain, rash
{ Otitis media	discharge, ear pain
URTI	cough, nasal congestion, sore throat
✓ Gastroenteritis (GE)	fever, abdominal pain, diarrhea, did they get exposed to a similar case, eating outside (junk food), or drank unclean water
UTI 	dysuria, frequency, urgency, flank pain, loin pain, incontinence, red urine, oliguria
✓ ↑ ICP 	chronic headache, mainly upon waking, seizures, focal weakness, altered personality and behavior 
DKA  	FHx, altered mental status, dehydration ^{wt loss, anorexia} _{DM, FHx} ^{abd pain} _{renal} ^{Sx}
✓ GERD 	dysphagia, odynophagi  heartburn, hoarseness of voice
✓ Hepatobiliary	jaundice, fatigue, anorexia, dark urine, itching, blood in stool, exposed to hepatitis patients
✓ Intestinal Obstruction	abdominal distention, constipation - Think of biliary atresia if neonate!
✓ Trauma	To the head

Drugs

(IBD, IBS)

~~~~~

junk food, Hx of traveling  
source of water

# Physical Examination

- **General look** *(normal breathing)*
- **Vital Signs** *GSC, mental status check*
- **Growth parameters**
- **Dehydration status:** sunken eyes, dry mucus membrane, skin turgid >15 sec, capillary refill > 2 sec *↓ BP, ↓ RR, oliguria*

| Organ        | What to look for                                                                                                                                                                                                                                |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Eye          | <u>jaundice</u> , <u>pallor</u> , <u>conjunctivitis</u> , <u>uveitis</u> (for inflammatory bowel disease), <i>fundoscopy for papilledema</i> ↑ ICP                                                                                              |
| Ear          | <u>otitis media</u>                                                                                                                                                                                                                             |
| Mouth        | ulcers, dental erosions                                                                                                                                                                                                                         |
| Lung         | auscultation                                                                                                                                                                                                                                    |
| Abdomen      | - <i>Inspection</i> : distention & visible bowel loops (obstruction), dilated veins<br>- <i>palpation/percussion</i> : <u>superficial/deep</u> , <u>costovertebral angle tenderness</u> , organomegally, shifting dullness, transmitted thrills |
| Genitalia    | hernia                                                                                                                                                                                                                                          |
| PR Exam      |                                                                                                                                                                                                                                                 |
| Lower Limp   | arthritis (Familial Mediterranean fever <u>FMF</u> , <u>HSP</u> ), edema, rash                                                                                                                                                                  |
| Neurological | <u>Meningeal signs</u> , <u>Cranial nerves</u> , <u>tendon</u> , <u>Babinski</u> , <u>clonus</u> , <u>cerebellar</u> and <u>mental status</u>                                                                                                   |

# Investigations

| Test                 | What to look for      |
|----------------------|-----------------------|
| <u>CBC</u>           | Signs of inflammation |
| <u>XRAY</u>          | Abdomen, Chest        |
| <u>US</u>            |                       |
| <u>LP</u> <i>MRI</i> | For elevated ICP      |
| <u>Electrolytes</u>  |                       |
| <u>Glucose check</u> |                       |
| <u>LFT, KFT</u> ↓    |                       |
| <u>Endoscopy</u>     | For GERD              |
|                      | <i>Stool analysis</i> |




# Approach to **Chronic Diarrhea**

## History

- **Patient profile** (age, name)
- **Chief Complain** (chronic diarrhea), and duration?
- **Previous episodes**
- **Describe:**
  - **frequency**
  - **stool character:** color, amount, blood, odor, mucus, greasy, foul smelling
  - **constant/intermittent**
  - **progression**



GE → Fever, abd. pain, abd. disten, vomiting

| DDx                                                                                                         | Questions                                                        |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>Malabsorption</b>                                                                                        | abdominal distention, weight loss, failure to thrive FTT         |
| <b>Diet</b>                                                                                                 | is he given food now                                             |
| <b>Cow milk allergy</b>                                                                                     | type of feeding, dietary products, rash, vomiting                |
| <b>Celiac</b>                                                                                               | does he consumes wheat & its products, pallor, FHx of celiac     |
| <b>Cystic fibrosis</b>                                                                                      | delayed passage of meconium, recurrent chest infection, CF FHx   |
| <b>Consanguinity</b>                                                                                        |                                                                  |
| <b>Protein Loosing</b>                                                                                      | edema, muscle wasting, hair loss                                 |
| <b>IBD</b>                                                                                                  | eye redness, inflammation, oral ulcers, arthritis, FHx of IBD    |
| <b>IBS</b>               | does diarrhea alternate with constipation <i>in chronic just</i> |
| <b>Giardiasis</b>        | water source & <i>contact with person have disease</i>           |
| <b>Immunodeficiency</b>  | recurrent skin infection, otitis media, FHx                      |
| <b>Hepatobiliary</b>                                                                                        | jaundice, dark urine, pruritus (itching), Hx of liver disease    |
| <b>Pancreatitis</b>                                                                                         | Steatorrhea                                                      |
| <b>Allergic enteropathy</b>                                                                                 | allergic to food, drug, rash, asthma, spring allergy             |
| <b>Hyperthyrodism</b>                                                                                       | head intolerance, sweating, hyperactivity, anxiety, palpitation  |
| <b>Fruit juice</b>                                                                                          | does he consumes alot of juices                                  |
| <b>Toddler</b>                                                                                              | does the diarrhea become worse and more watery at night          |
| <b>Travel Hx</b>                                                                                            | Traveler's diarrhea                                              |
| <b>Drug</b>                                                                                                 | laxatives, <i>Abx</i>                                            |

sign FTT GAND CHIP

# Physical Examination

- **General look, Vital Signs, Growth parameters**

✘ **Signs of dehydration:** sunken eyes, dry mucus membrane, skin turgid >15 sec, capillary refill > 2 sec

| Organ      | What to look for                                                                                                                                                               |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Eye        | pallor, jaundice, redness, exophthalmos, <b>led lag</b> , conjunctivitis, uveitis                                                                                              |
| mouth      | teeth problems, Aphthous stomatitis, oral ulcers                                                                                                                               |
| Neck       | Lymph nodes and thyroid                                                                                                                                                        |
| Chest      | auscultation                                                                                                                                                                   |
| Abdomen    | - <b>Inspection:</b> mainly distention<br>- <b>palpation:</b> organomegally, liver span, transmitted thrills<br>- <b>percussion</b> shifting dullness<br>- <b>auscultation</b> |
| PR         | rectal prolapse, anal fissures, tags, sphincter tone                                                                                                                           |
| Lower limb | sweaty, tremor                                                                                                                                                                 |
| Hand       | edema                                                                                                                                                                          |
| Skin       | rash, bruises                                                                                                                                                                  |

# Investigations

| Test                                       | What to look for                                                                                                |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>CBC</b>                                 | (Anemia, Lymphopenia, Thrombocytosis, Protein losing enteropathy (Reactive)), Anemia: IDA, B12, folate, chronic |
| <b>Allergy</b>                             | <b>Skin prick test, specific IgE levels</b>                                                                     |
| <b>ESR</b>                                 | Immune deficiency                                                                                               |
| <b>If Celiac</b>                           | Anti- <b>TTG</b> , Total IgA                                                                                    |
| <b>Albumin</b>                             | If edema is found                                                                                               |
| <b>EMA, HLA (DQ2,8)</b>                    |                                                                                                                 |
| <b>Stool culture</b>                       | ova, parasites, C.difficile, pH, occult blood                                                                   |
| <b>Reducing substances</b>                 | fecal hydrolysis for non-reducing carb                                                                          |
| <b>Fecal elastase, Alpha 1 antitrypsin</b> | For pancreatic insufficiency                                                                                    |
| <b>Sweat chloride test</b>                 |                                                                                                                 |
| <b>Endoscopy with biopsy</b>               | For Celiac, Lymphangiectasia                                                                                    |

# Management

- based on the cause

---

## Celiac Disease

- ✓ lifelong strict adherence to a gluten-free diet. This requires a wheat-, barley-, and rye-free diet.
  - ✓ Periodic measurements of TG2 antibody levels to document reduction in antibody titers can be helpful as indirect evidence of adherence to a gluten-free diet
- 

### Name the histological changes in each:

#### A. Celiac:

- Villi to crypt ratio 3:1
- Flattening of the villi
- Lymphocyte infiltration


#### B. Lymphogiectasia:

- variable degree of lymphatic dilatation in mucosa/submucosa

# Approach to Headache

## History

- **Patient profile** (age, name)
- **Chief Complain** (headache), and duration?
- **Previous episodes**
- **Describe:** → *Radiation / migration*
  - **SOCRATES:** *frequency, site exactly, constant/intermittent, progression*
  - *Associated with fever or not*

| DDx                                                 | Questions                                                                                                                    |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Trauma                                              |                                                                                                                              |
| Tension <i>(في التوتر)</i>                          | Any stressful event, usage of phone frequently                                                                               |
| Migraine                                            | FHx, nausea, vomiting, photophobia, aura  |
| Cluster                                             | Localized to one eye, very severe headache                                                                                   |
| Meningitis                                          | headache, photophobia, neck pain, rash                                                                                       |
| Sinusitis                                           | Nasal discharge, cheek bone pain                                                                                             |
| ↑ ICP <i>Projectile</i>                             | Vomiting, <u>chronic headache, mainly upon waking</u> , seizures, focal weakness, altered personality and behavior           |
| Drugs                                               |                                                                                                                              |
| Abdomen                                             | Any change in the bowel habits                                                                                               |
| <i>Signs of HTN or kidney dz (edema, epistaxis)</i> |                                                                                                                              |

## Physical Examination

- **General look, Vital Signs, Growth parameters**

| Organ        | What to look for                                                                                                                                                                                                                                                         |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Eye          | Fundoscopy for papilledema                                                                                                                                                                                                                                               |
| Ear          | Discharge, inflammation                                                                                                                                                                                                                                                  |
| Mouth        | teeth problems, tooth decay                                                                                                                                                                                                                                              |
| Neurological | <ul style="list-style-type: none"> <li>- <b>Meningeal signs:</b> nuchal rigidity, Brudzinski, Kernigs sign</li> <li>- <b>Cerebellar signs</b></li> <li>- <b>Cranial nerve examination (CN)</b></li> <li>- <b>Muscle tone, reflexes, clonus, Babinski sign</b></li> </ul> |

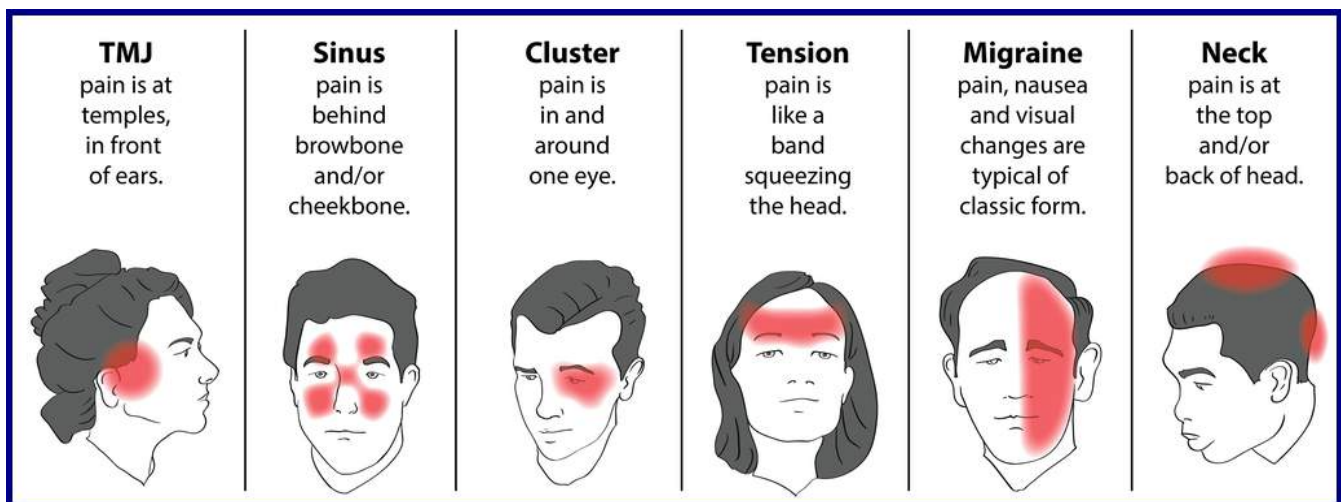


# Investigations

| Test         | What to look for |
|--------------|------------------|
| CBC          |                  |
| Head imaging |                  |
| LP           | For meningitis   |

## Management

- based on the cause





# BEST WISHES

*MD. Muiamen*

---

Done By:  
Yazan Omar Alawneh