

UNITED STATES

Sprinter's choice

Decoding the exam

Antidotes

Hydroxycobolamin

- Amyl nitrate, Sodium nitrite, Sodium thiosulfate

CO + CN = use Hydroxycobalamin

- Cyanide
 - Bitter almonds
 - Coma
 - AGMA
 - Lactate > 8

1x

- Coma with Cheyne's Stokes respiration
- Where's the dysfunction?

Cerebrum dysfunction
Torsade breathing

1n

a Cheyne-Stokes

b Central neurogenic hyperventilation

c Apneustic

d Cluster

e Ataxic

Thalamus
Midbrain
Pons
Medulla

1n

Causes of Epididymitis

- Men > 35 yo
 - E-coli
- Men < 35 yo
 - Chlamydia and N gonorrhoea

1i

Venous air embolism

Penetrating neck injury
Machinery murmur

- Trendelenburg position
- L lateral decubitus
- Jugular vein most common vessel injured in penetrating neck trauma

1n

Know your Formula

Mean Arterial Pressure

MAP

$$DBP + [(SBP-DBP)/3]$$

or

$$DBP + 1/3 PP$$

1d

CO poisoning

Does not cause cyanosis

1e

KEYCEPT of Care

- Transport and maintain pregnant females > 20 weeks in left lateral decubitus position

1f

MOTOR (precentral gyrus) SENSORY (postcentral gyrus)

Hand, Arm, Trunk, Leg, Trunk, Arm, Hand
Face, Foot, Genitals, Face, Tongue
Tongue

Anterior cerebral artery Middle cerebral artery Posterior cerebral artery

1g

Left middle cerebral artery stroke

- Right sided weak/numb:
 - Face/Arm > Leg
- Aphasia
 - Wernicke's – receptive
 - Broca's – expressive
- Left homonymous hemianopsia

99% of the population is L side dominant

1h



Atherosclerosis

- The most common underlying pathologic condition found in abdominal aortic aneurysm is...
 - Atherosclerosis
 - Diabetes mellitus
 - Hypertension
 - Smoking

1n

Contraindication to t-PA in ischemic stroke

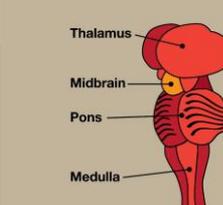
- Hypoglycemia

1n

- Coma with central neurogenic hyperventilation
- Where's the dysfunction?



Midbrain Rapid breathing



1n



Complete heart block in the newborn is associated with what maternal disease?

- CMV
- SLE**
- Rubella
- HIV
- Leukemia

1p

Acute Tubular Necrosis

- Most common cause of intrinsic renal failure in the ED
 - 10% - 45% of all ARF: kids >> adults
- Causes:
 - Ischemia from: sepsis, post op, trauma
 - Drugs: aminoglycosides, NSAIDs
 - Toxins: rhabdo, hemolysis
 - Contrast agents

Pigmented granular casts in urine



Antidotes

Dig FAB Fragments

- Digoxin



1x

HUS – Hemolytic Uremic Syndrome

- Ate hamburger 3 days ago
- Diarrhea for few days
- Abdominal pain and bloody diarrhea
- Most common cause of renal failure in pediatrics

- No Abx, no anti-diarrheals which increase risk of HUS
- Test any bloody diarrhea for e-coli 0157:H7

1h

TTP – thrombotic Thrombocytopenic Purpura

- Obese AA female (flu, pregnant, HIV, plavix)
- Thrombocytopenia
- MAHA – Schistocytes
- CNS findings (CrN, aphasia, hemiparesis, confusion, coma)
- Fever, renal dysfunction

- Make sure no other cause (sepsis etc...)
- No platelets
- Rx: steroids + emergent plasmaphoresis 10% mortality (without Rx 90% die)

1h

MAHA - Schistocytes



- < 40% present with full pentad
- > 75% present full triad
- Fever < 25% have a fever (low grade)
- CNS Sx TTP: > 90% have CNS Sx at one point or another (AMS, CrN,)
- Renal dysfunction ARF more severe in HUS
- Thrombocytopenia

The TTP/HUS Pentad

1h

Severe Headaches




Causes

1h

Cerebral venous thrombosis

Rx:

- anticoagulation
- control of seizures
- invasive neuro consult

- Pregnant
- Severe diffuse headache progressive over days
- Loss of venous pulsations on fundoscopic exam
- Recent epidural blood patch
- Focal neurologic deficits (e.g. bilat leg > arm weakness)
- ALC (e.g. confusion, lethargy)
- Next best step for Dx: MRV

1h



A 35 yo male scuba diving at 100 feet for suddenly looks drunk, confused, trying to take off his mask. Which of the following is most likely?

- a. Arterial gas embolism
- b. Nitrogen narcosis**
- c. Pulmonary overpressurization syndrome
- d. Oxygen toxicity

1p 



Nitrogen narcosis

- Diver at depth, looks drunk, confused, disoriented Dx...
- due to high concentration of nitrogen in blood
- Only lasts as long as diver is down under
- Gets better as diver goes up

1e 



Oxygen toxicity

- Diver at depth, has seizure, vomits in mask Dx.....
- More likely in divers diving deep using EANx32
- Facial muscle twitching, nausea, tunnel vision, vertigo are warning sign

1e 



Decompression sickness

- Type I
 - Extravascular gas bubbles
 - The Bends (pericardicular joint pain – MC DCS)
- Type II
 - Intravascular nitrogen gas emboli
 - Chokes (SOB, cough, RSCP)
 - Staggers (low back pain, heavy legs paresthesias, bladder dysfunction)




1e 

Things that differ, but seem the same

- A 28yo male scuba diver on nitrox has a seizure at 80 feet for the last hour (lost track of time), the most likely cause for his seizure is ...

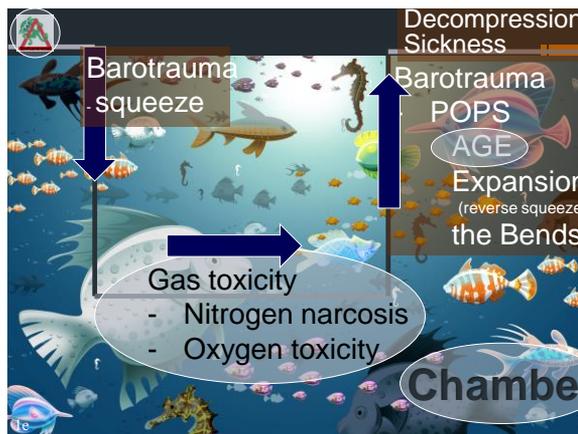
Oxygen toxicity

- A 28 yo male scuba diver on nitrox has a seizure on surfacing from 80 foot dive. The most likely cause for his seizure is...

Arterial gas embolism

Accounts for 20% - 30% of all scuba related deaths

1e 



MC sites of esophageal FB to lodge

- In children**
Cricopharyngeus muscle
- In adults**
Lower esophageal sphincter

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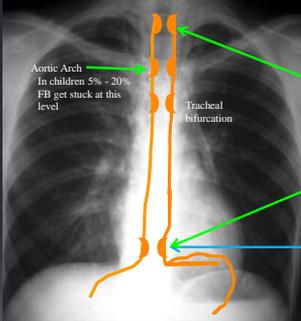
Areas of esophageal narrowing

- Cricopharyngeus muscle, thoracic inlet... C-6
(most common in children)
- Aortic arch..... T-4
- Tracheal bifurcation..... T-6
- Gastroesophageal junction..... T-11
(most likely in adults/least common in children)

- Emergent endoscopy for button batteries, sharp, complete obstruction

og 

Foreign Bodies

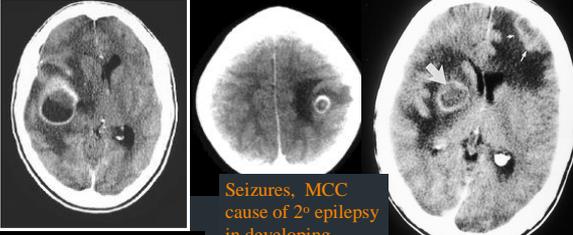


Aortic Arch
In children 5% - 20% FB get stuck at this level

Tracheal bifurcation
Most likely location in children is at the level of the cricopharyngeus muscle (C-6) (60% - 80%)
In children 10% - 20% FB get stuck at this level

LES
Most likely location in adults is at the level of the LES (T11 - T12)

ig 



Brain Abscess
Triad (< 30%): H/A(90%)/fever (50%) / focal neuro finding or AMS (< 33%)
Immunocompromised
Frontal/Mastoid sinusitis
Endoscopy, head injury
Rx: drainage, High dose 6-8 wks Abx: depends on site

Ring Enhanced Lesions
Seizures, MCC cause of 2^o epilepsy in developing country
Tapeworm: taenia solium
Rx: Praziquantel, steroids, NS consult

Toxoplasmosis
AIDS patient, H.A +, seizures, confusion, lethargy, focal neuro deficits, cerebellar
Rx: Pyrimethamine sulfadiazine, folic acid

og 

Vibrio Vulnificus

- With bacteremia has 50% mortality
- Abrasion
- Sea water
- Bright red cellulitis
- Later brawny with bullae

Rx: Doxycycline

ii 

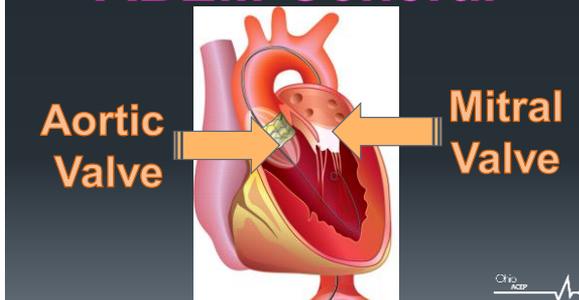
Vibrio Parahaemolyticus

- Can be lethal in alcoholics with liver disease
- Vomiting / diarrhea
- Abdominal pain
- After shell fish (oysters) meal
- Patients with liver disease have higher mortality

Rx: Doxycycline

ie 

Murmurs at ABEM General



Chordae tendineae rupture from papillary muscle disruption

- 57 yo male presents with SOB, diaphoresis. Was treated for acute anterior STEMI one week ago. One exam you hear a grade III systolic murmur heard best at the apex. What is the most likely cause for his murmur?

Systolic MM ^{AS} Radiates SOUTH
MR

The Most Common Cause of Acute Mitral Regurgitation is ruptured chordae tendinae from papillary muscle disruption

Acute Thoracic Aortic Dissection

- 75 yo male with known HTN, comes with severe chest pain, SOB and diaphoresis. He has a grade III diastolic murmur heard best at the parasternal second intercostal space. What is the cause of the murmur?

Diastolic MM ^{AR} Radiates North
MS

The Most Common Causes of acute aortic regurgitation is thoracic aortic dissection, Acute infective endocarditis

Most Common Causes of Valvular Diseases

- MCC of Aortic Stenosis
 - < 65yo Congenital bicuspid valve
 - > 65yo idiopathic calcific degeneration
- Scenario will be old person who has syncopal episode – think Aortic Stenotic Disease
 - A for angina – has 5 yr survival
 - S for syncope – has 3 yr survival
 - D for dyspnea (CHF) – has 1 yr survival

Most Common Causes of Valvular Diseases

- MCC of all other valvular diseases
 - Rheumatic heart disease (RhHDz)

3 other patients with valvular heart disease at ABEM General

- IVDA patients at ABEM General have one more valve than the rest of us they have a tricuspid valve that regurgitates due to IVDA
- Mitral valve prolapse in young female patients with a mid systolic click – but not much of a problem for the most part
- Young athlete with exertional syncopal episode – here you must think about what makes murmur louder and what makes the murmur softer



Q – fever Pneumonia
Coxiella brunetii

- Slaughterhouse worker
- Goat, sheep, cattle farmer
- Sudden shaking chill, febrile
- cough, malaise, looks sick

1r

Know your Formula

ET-Tube Size

Age/4 + 3

Cuffed tube

1p

Heat Illness: Spectrum of Illness

Heat Cramps

Heat Edema

Heat Syncope

Heat Exhaustion

Heat Stroke

Temp > 104 AMS

Temp < 104 Normal MS

1e

Quantify blood loss during menstruation

20 cc of blood in a soaked pad

1f

COMA and MIOSIS

- Cholinergics
- Clonidine
- Opiates
- Pontine stroke
- Phenothiazines

COMA COP

1x

The drugs most commonly associated with torsades de pointe are...

- Class 1A anti-arrhythmics
 - Quinidine
 - Procainamide
- Class 1C agents
 - Flecainide
 - Propafenone



Supracondylar fracture

- 3yo fell
- Elbow pain
- Most likely injury

12 yo elbow trauma

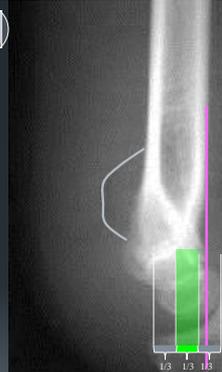
- Most likely injury

Radial head fracture



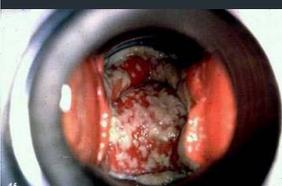

Supracondylar Fracture

- accounts for 50% of elbow fractures in kids
- FOOSH (fall on outstretched hand) injury
- angulation of the distal humerus usually occurs
- Look for anterior and posterior fat pad signs
- Complications:
 - nerve injuries
 - vascular injuries
 - compartment syndrome
 - Volkmann's ischemic contracture




Candida Vaginitis

- Thick cottage cheese discharge
- Pseudohyphae, spores
- Rx: Clotrimazole, Diflucan





Sigmoid volvulus

- The wall between the 2 volvulated loops points to the RUQ

MC type of volvulus

- Elderly or nursing home patient
- Chronic constipation
- Abdominal pain
- Abdominal distension

TRIAD





Boehler's angle

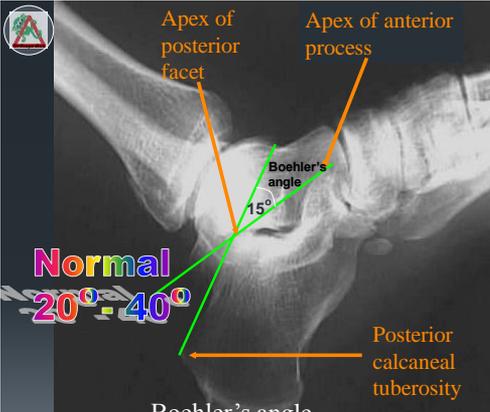
Apex of posterior facet

Apex of anterior process

Boehler's angle 15°

Normal 20° - 40°

Posterior calcaneal tuberosity






Associations:

- May be bilateral
- Tibial plateau fracture

10%

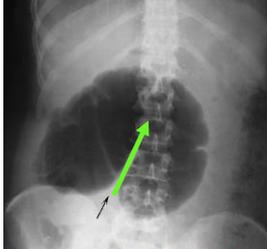


Associations:

- Dorsolumbar compression fracture

10%

1o



Cecal Volvulus

- The wall between the 2 volvulated loops points to the LUQ

Pregnant female with constipation, abdominal pain, and abdominal distention and this Xray Dx?

1g

Pediatric Trauma KEYCEPTS

- Blanket roll under shoulders to intubate
- Normal blood volume 8 - 10 % of body wt
- Crystalloid bolus: 20 cc/Kg x 2
 - then blood: 10 cc/Kg
 - Urine output at least 1cc/Kg/hr
- Needle cricothyroidotomy < 8 y.o.
- Obligate nose breathers 6 months old
- Miss child abuse 50 % are DEAD 2 yrs later

1p



Baby walks at...

12 – 15 months

1p



Dacryoadenitis

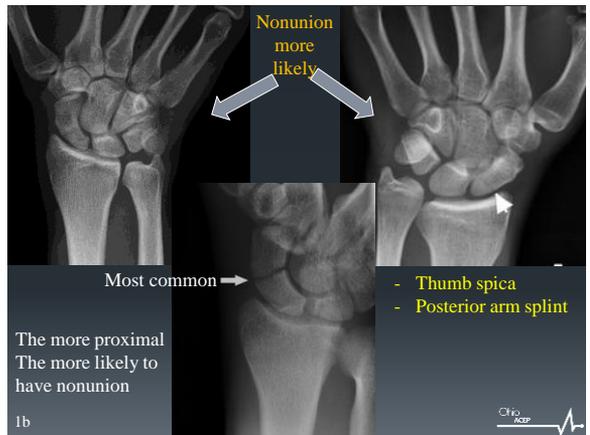
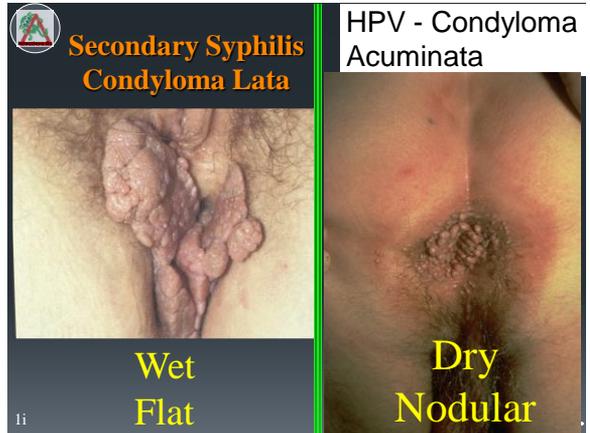
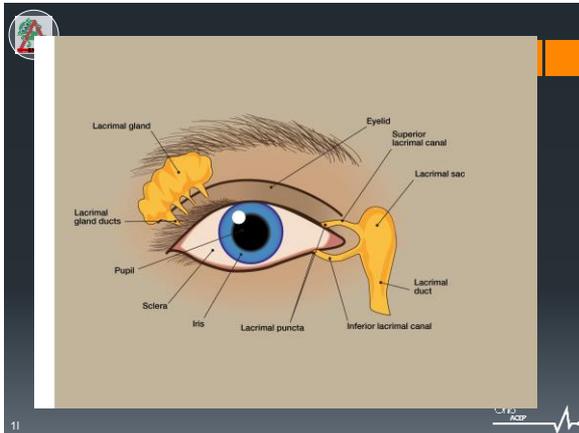
- Inflammation lacrimal gland
- Supratemporal region

Dacryocystitis

- Inflammation (usually from infection) and obstruction of nasolacrimal duct
- Tears
- Infranasal region
- Strep Pn, Staph au, Staph epi, Haem infl




1i



Cecal volvulus

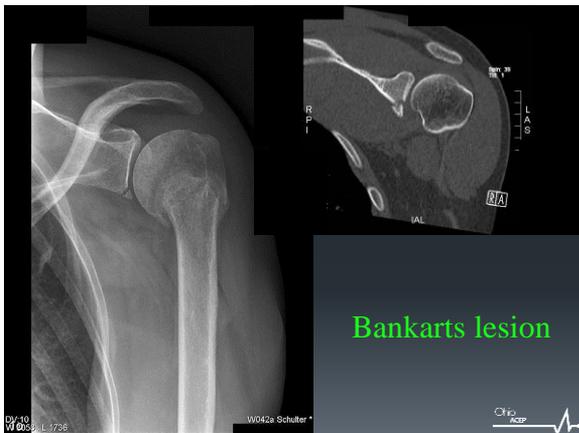
MCC of bowel obstruction in pregnancy

The MC site of basilar skull fracture is the petrous portion of the temporal bone

Anterior shoulder dislocation - > 95%
 - Arm abducted and externally rotated

- Most common complication:
Hill-Sachs deformity: Humeral head # > 40%
- The 2nd MC complication
Axillary nerve injury: deltoid numbness 10 - 15%
- The 3rd MC complication
Bankart's lesion: glenoid rim disruption 10%

10  



Where does the spinal cord end?

- Adult cord at L2
- Infant cord at L3-4
 - LP at L4-L5

Lumbar Puncture

- N pressure: 5-20 cm H2O
- Pressure must be measured with patient in recumbent position

10  

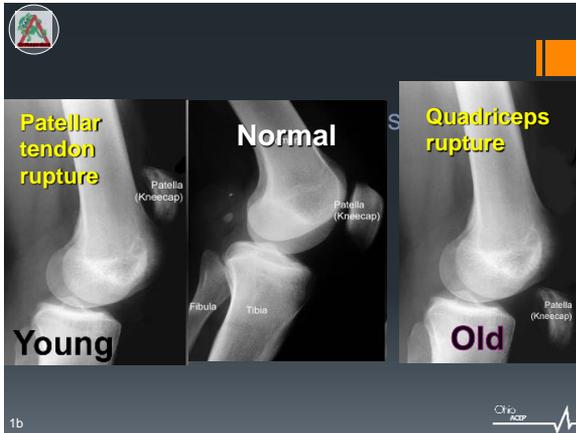


Patellar tendon rupture

Patella (Kneecap)

30 yo soccer player
 Injured during the game
 Complains of pain in the knee
 Diagnosis?

10  

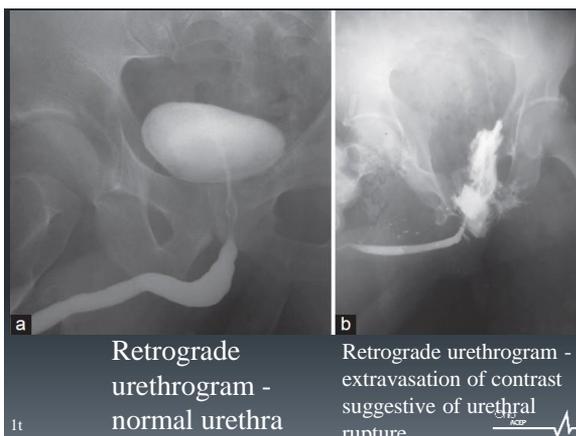
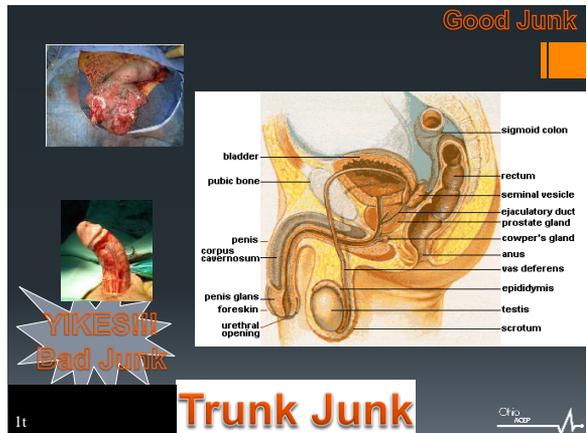


A 29 yo male fell from ladder, landed straddling a fence a few feet down. He complains of pain in the perineum. All of the following are most consistent with this type of urethral injury EXCEPT:

- a. Likely to present with blood at the urethral meatus
- b. Fistula may be a complication to this type of injury
- c. Impotence is a likely complication in this type of injury
- d. Incontinence is unlikely with this type of injury
- e. Stricture may be a complication to this type of injury

Urethral Trauma		
	Anterior	Posterior
Type of injury	Straddle, iatrogenic, FB	Pelvic # Shearing mechanism
S&S	Hematuria blood at meatus	Distended bladder Abd pain, HRP (high riding prostate)
Complication	Fistula, Stricture	Impotence Incontinence

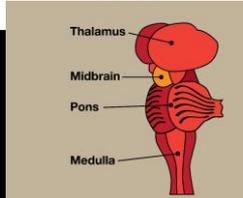
more common



- Coma with Slow Gasping respiration
- Where's the dysfunction?



Pontine dysfx Apneustic



Afferent Pupillary defect Marcus-Gunn pupil

- What is this called
- Optic nerve problem between the retina and the optic chiasm (or also severe retinal disease)
- Light to good eye (L) both pupils constrict
- Light swung to bad eye the R pupil seems to dilate as it cannot see the light

Oculocephalic response "Doll's eyes"

- Patient in coma
- Eyes lag behind when you turn head
- What is the reflex called?
- What does it mean?

- The brainstem is intact

Antidotes

Fomepizole

- Ethylene Glycol
- AGMA
- Osmolar gap

Metabolic causes

- The most common cause of new seizures

Bacterial vaginosis

3 of 4 must be present

1. Thin, white, homogenous discharge
2. Fishy smell
3. Clue cells
4. pH > 4.5

■ Rx: **Metronidazole**
Clindamycin if pregnant

Amsel criteria



Rule of Fives

- **Conjunctivitis in neonates**
 - **day 1:** Look for infection chemical is rare
 - **day 1 to day 5:** GC
 - **day 5 to 10 (60):** Chlamydia
 - **5 wks – 5 yrs:** Strep and H.flu

Chf2 RCP



HSV Encephalitis

- HSV-2 encephalitis in the neonate
- HSV-1 encephalitis in adults

- Patient with headache
- Healing sores on lips
- Fever
- Neurologic finding (ALC, focal, seizure)
 - 30% cases in < 20yo
 - 50% cases in > 50 yo
 - Anyone who you think has encephalitis add Acyclovir to your usual antibiotics
 - Dx: PCR
 - CSF: RBC but no WBC

Chf2 RCP

Meningitis	Encephalitis
Infection of membranes of brain and spinal cord	Infection of brain parenchyma
? Septic, fever, H/A, stiff neck	<i>clear change LOC (focal neuro changes, seizures, hallucinations, aphasia)</i>
Strep pneumo → adults N. Meningitidis → children/adolescents Consider Listeria → elderly and neonates Enterovirus → most common virus	<i>Herpes simplex virus is MC (Also arbovirus, West Nile virus)</i>
Bacterial: high WBC neutrophilic Viral meningitis: WBC < 500/mm3 monos	WBC < 500/mm3 in CSF mostly mononuclear
S Gluc/CSF Gluc < 0.5 CSF protein > 150 mg/dL	CSF glucose > 60 CSF protein low < 100
Unenhanced CT brain negative Contrast CT - enhancement of meninges	CT → Hypodense areas temporal lobes MRI → Hyperdensity on temporal lobes
Outcome: Generally better outcome, but is variable	Outcome: Poorer outcome: seizures, developmental deficits, personality deficits

Chf2 RCP

Foxglove ingestion




- Child with N/V, abdominal discomfort
- Visual disturbances
- Hyperkalemia, cardiac conduction abn
- Was playing in the garden
- Dx:
- Rx: supportive care

1x



Traumatic Iritis



- Trauma to eye
- Photophobia - consensual
- Flare in anterior chamber on slit lamp exam

- Rx: cycloplegics
? Steroids (after ophtho consult)



Chf2 RCP



Paroxysmal Atrial Tachycardia (PAT)

- The most common dysrhythmia associated with WPW is...

1c



Malrotation with Midgut volvulus

- The most common cause of small bowel obstruction in neonates

1p




Cardiology KEYCEPT

- Patients with inferior AMI and coexistent RV infarction have a high rate of in-hospital morbidity and transient high grade AV block

1c




PID outpatient treatment

Ceftriaxone 250 mg IM
+
Doxycycline 100 mg PO
Q-12-H x 14 days
+/-
Metronidazole 500 mg
Q-12-H x 14 days

1f




TAD

- In a patient with chest pain and neurologic symptoms assume...
or
- In a patient with chest pain and findings above and below the diaphragm, think...

1c




Hematology KEYCEPT

- Abnormalities in platelets produce increase bleeding time

1h




32 yo in MVA, ankle pain and swelling

Talar fracture

- Highest incidence of AVN
- 2nd most common tarsal fracture
- Commonly missed – bad outcome

1b





Use one 100 cc bag of 3% saline at a time

- In correcting severe hyponatremia, 3% saline should only be used in the following conditions:
 - Seizures
 - Serious arrhythmias
 - Severely altered mental status

1n



Rheumatic Fever

Major Criteria		Minor Criteria
J	Arthritis	Athralgia
●	Carditis	Fever
N	Subcutaneous nodules	Elevated ESR/CRP
E	Erythema marginatum	Prolonged PR interval
S	Sydenham's chorea	

The most common presenting sign that leads to the diagnosis of rheumatic fever is a new cardiac murmur



Finger grasp at...

9 months

1p

