COMMON CHILDHOOD EMERGENCIES

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COMMON CHILDHOOD EMERGENCIES

WE ARE GOING TO LOOK AT :

- Abdominal Pain
- Headaches
- Head Injuries
- Ears
- Seizures
- Respiratory emergencies
- Shock
- Rash

IF WE HAVE TIME :

- Toothaches
- Broken Teeth
- Abrasions
- Cuts
- Wounds
- Eyes
- Burns
- Bleeding
- Safety

Vomiting and/or Diarrhea

abdominal pain is not specific complain so if we have in addition diarrhoea or vomiting we should worry now.

Why do children who are younger age develop this problem more than elder age ?.
- bigger surface area
- They can't drink by themselves, this the major factor

- Vomiting and/or diarrhea can require emergency care if a child becomes dehydrated.

The first organ to be shut down is skin, the first thing to be seen is pale, but it's subjective.
The first sign of :
- Mild dehydration is thirsty
- Moderate dehydration is tachypnea and tachycardia
- Severe dehydration is abnormality in blood pressure and level of consciousness

The most specific indicator for dehydration ? Difference in body weight !!! 1kg loss = 1000ml , 500g = 500ml

- If the child can't keep anything down or has severe diarrhea, watch for signs of dehydration such as
  - Sunken eyes
  - Dry mucus membranes
  - Abnormally low amounts of urine.

Mild-Moderate ⟺ NO ⟺ Moderate-Severe

either Mild / Moderate / severe

↓ Thirst ↓ HR / RRT

Most specific Indicator for Dehydration? Difference in Body weight.

Head Injury

Head injury is a common during childhood, we can say about 95% of general population had head injury that time.

Case 3

- 6 month old samy fell of a chair
- Landed on his head

What are the expected findings in a such a case ?
Ulceration, contusion, hematoma, vomiting, decrease LOC, dizziness, neurological sx, skull base fracture signs.

In such a case you have ask about :
- height of chair
- Type of chair (Chinese chair , sitting chair, heigh chair)

If you fall down 3 times your height you will have severe injury and you may die.
It is important to know the floor that he lands on ? And which part of the body

What would you do ?

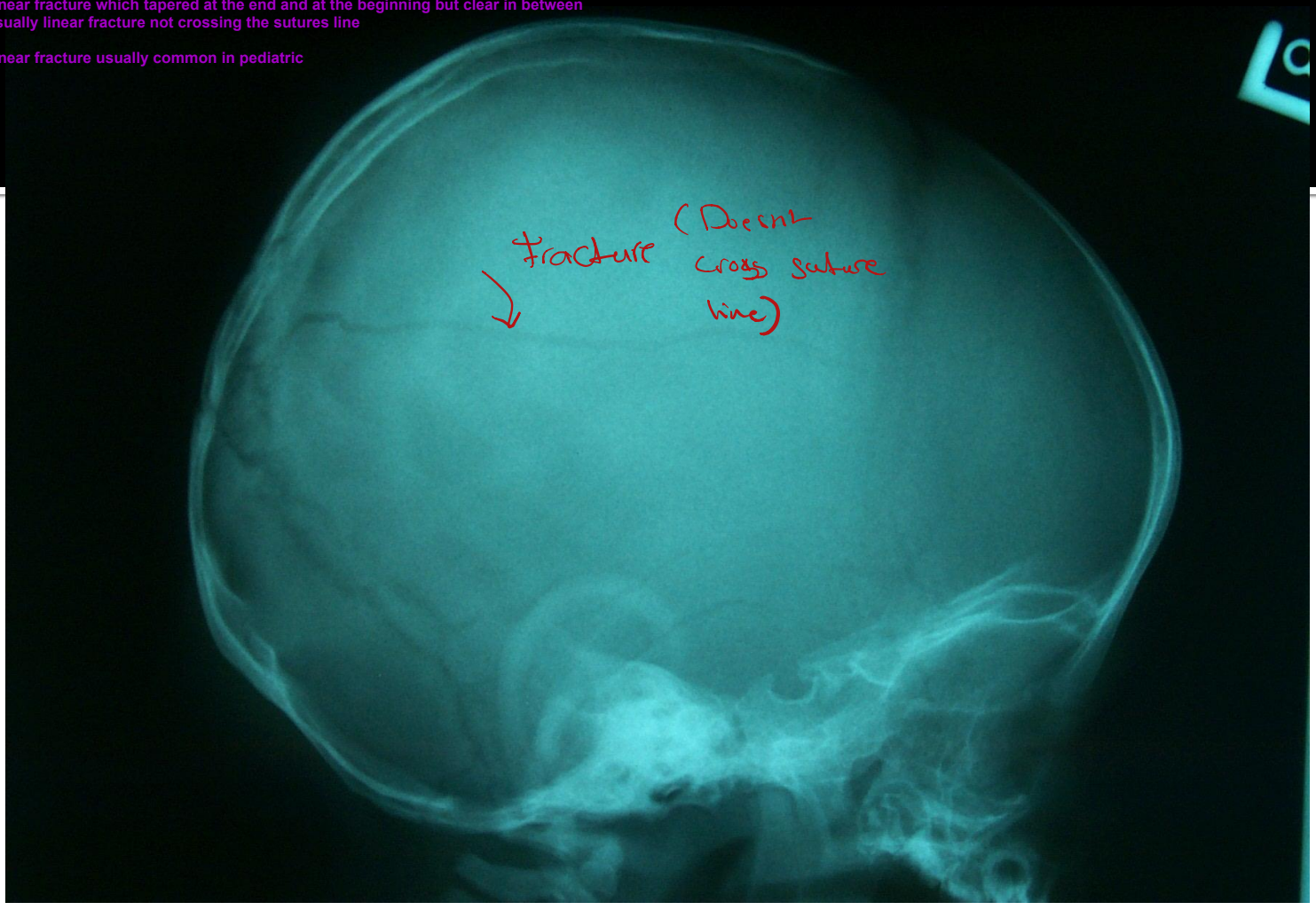
- Skull X-ray
- CT scan of Brain → More comprehensive, alot of Info.

What determined your choice regarding the type of investigation?
Differential diagnose , so we need the best one that give me more information to confirm or rule out them

Things I am worried about in case of head injury ? I really care about brain parenchyma more than fracture so I will go with CT rather than x-ray

In this skull x-ray we can see:
Linear fracture which tapered at the end and at the beginning but clear in between
Usually linear fracture not crossing the sutures line

Linear fracture usually common in pediatric



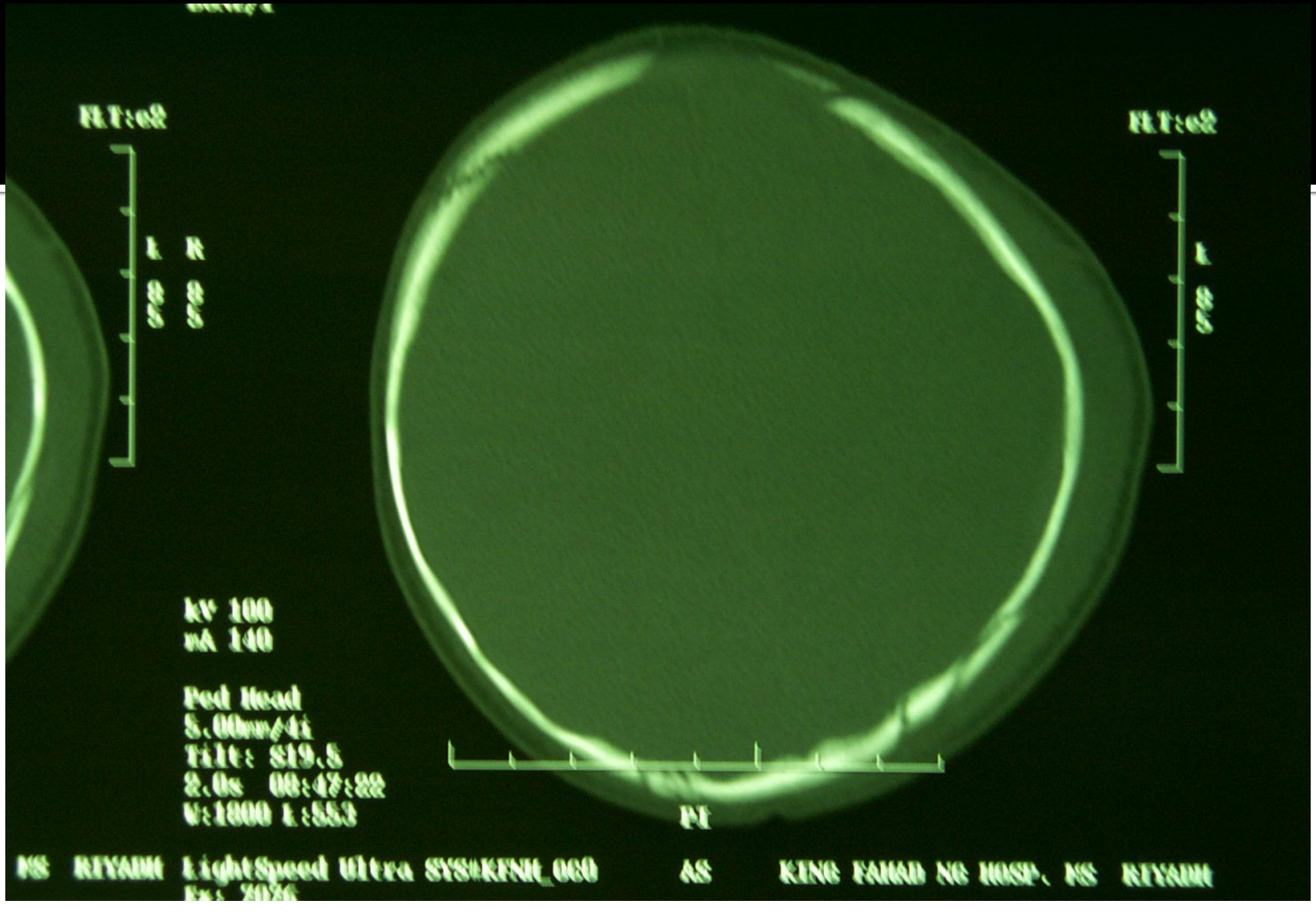
Skull X- ray indications

- Possible penetration
- Previous craniotomy with indwelling shunt
- Suspected child abuse

Possible depressed fracture
Compound fracture
Child less than 2 years of age with “boggy” scalp heamatoma

These additional point were found in doctor’s slides

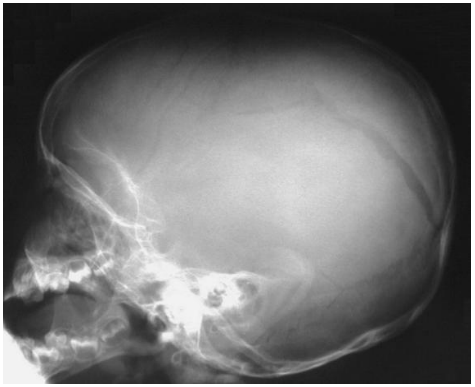
This is a bone window CT scan shows multiple bone fracture



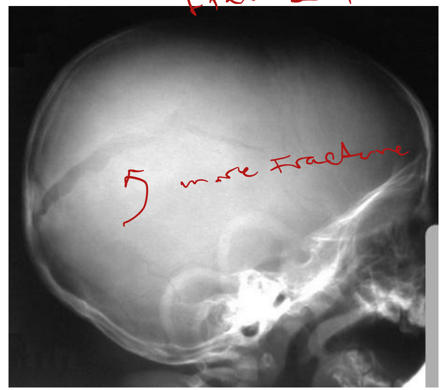
This is a brain window CT scan shows epidural hematoma and midline shift

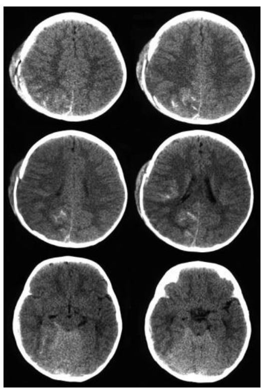
This is the same child after 1 month
We can appreciate
- growing or evolving skull fractures
- leptomeningeal cyst

Leptomeningeal cysts, also known as growing skull fractures, are an enlarging skull fracture that occurs near post-traumatic encephalomalacia. The term cyst is actually a misnomer, as it is not a cyst, but an extension of the encephalomalacia. Hence, it is usually seen a few months post-trauma. That's why it is important to follow up with both paediatrician and neurosurgeon.

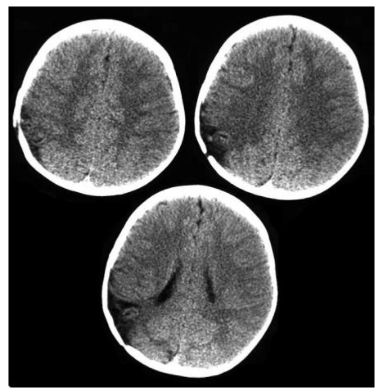


after 1m





X-rays for follow Up



lepto-Meningocele.

Seizure with Fever

What should You do?

- A 2 yrs old girl
- Had a fever of 39.8°C
- Post ictal after a Tonic Clonic Seizure

- Would you do Lumbar Puncture?
  - How about blood work?
  - How about a CT?

Indicates Infection

CBC (Band cells) precursors of Neutrophil

Indicated that bonemarrow is functioning!

Not really Indicated

Unlike adults it is difficult to do direct fundoscopy in such age

In this point we should do LP but before that we have to take detailed Hx and PE , some important point in examination are:

- signs of meningitis like neck stiffness , kernite sign or brudzinski signs but usually difficult to see in such age. It is important to in which age you can see the signs of meningism at age in which anterior fontanelles closed which is at 18 months so after this age the child can manifest with these signs.
- In the CBC the most important thing which can help us in such a case is band cells the precursor of neutrophils which indicates that the bone-marrow is functioning more than usual so the body under stress such as infection.

AAP Guidelines for seizures associated with fever

- LP: strongly considered in an infant less than 12 months of age; careful assessment is mandatory in an infant 12-18 months of age; and LP is not necessary if history and physical exam are not suspicious for meningitis in an infant older than 18 months
- LP is recommended in children with first complex febrile seizure or with persistent lethargy or prior treatment with antibiotics

Closure of Anterior fontenell,
because there we can detect Meningismus

AAP Guidelines for seizures associated with fever

- Routine Serum Electrolytes, Ca, Phos., Mg, CBC or glucose are of limited value in the absence of suspicious history(V/D) or abnormal physical exam in infants older than 6 months.

Respiratory Distress

- CT/MRI are not helpful. It might be considered in prolonged focal seizure with no clear etiology
- EEG is of limited value in the evaluation of febrile seizures.

Respiratory Distress

- Respiratory distress refers to difficulty breathing and taking in enough oxygen.
- Causes may include choking, asthma, an infection, or pneumonia.
- The signs of respiratory distress are:
  - Coughing
  - Wheezing
  - labored breathing (especially flaring of the nose and use of chest and neck muscles to aid breathing)
  - Grunting
  - turning blue.

Respiratory Emergencies

The most common

- Asthma
- Croup
- Pneumonia

Asthma

What Do You Usually Do?

- 4 yrs old girl
- With moderate-severe asthma attack

- What would you do in ER?

Management

- History
  - Age of start
  - Treatment given
  - Compliance
  - Aggravating and reliving factors
  - Steroid usage
  - Admission to ICU

Management

- Physical Examination:
  - Vital signs
    - RR and Saturation
  - Chest Exam
  - Neurological Exam
  - Classification of asthma It is important, according to the classification we determine the management plan
    - Mild
    - Moderate
    - severe

Management

- Start with ABCD
  - Give oxygen to keep Saturation > 92%
  - Start Bronchodilators
    - Sulbitamol (Ventolin)
  - Start Steroids
    - Oral Vs IV
  - Monitor Vital signs and physical exam

Continuous Albuterol

- Use is becoming more in ER
- Safe as nebulizations
- Faster improvement
- Side effects

Craig VL, et.al. Efficacy and safety of continuous Albuterol Nebulization in children with severe status asthmaticus. Pediatr Emerg Care 1996;12:1-5.

Katz RW, et al. Safety of continuous nebulized albuterol for bronchospasm in infants and children. Pediatrics 1993;92:666-669.

CORTICOSTEROIDS

- Summary
  - If the asthmatic child is incompletely responsive to bronchodilator therapy, early initiation of a short course of high-dose oral corticosteroids seems prudent, particularly if there is a history of repeated emergency care requirements or hospitalizations
    - prednisone or prednisolone, 1-2 mg/kg/day (maximum 60 mg/day divided BID for 3-7 days
    - tapering not necessary
    - avoid if active varicella or herpes infections are present
    - pituitary-adrenal suppression must be considered if high-dose steroids are administered for longer than 10 days or if 4 or more "short courses "are given per year

Would you do a Chest X-ray

Yes we do it in such a case:

- For complications of asthma
- For persistent cases

Otherwise we don't need it to establish the diagnose

LABORATORY STUDIES

- Chest Radiographs
  - ***Not* recommended for routine ED assessment of the child with an asthmatic exacerbation (1997 NIH Guidelines)**
    - seldom adds additional useful information which would alter clinical management
    - reserve for cases with suspected complicating cardiopulmonary processes (such as pneumothorax or pneumomediatstinum) and for the severe, unresponsive exacerbation requiring PICU admission
    - in an otherwise healthy child with an asthmatic exacerbation, a focal density on a CXR almost always represents segmental atelectasis rather than bacterial pneumonia

CROUP

Croup

- 4 yrs old Mona is coming with
- Inspiratory stridor,typical cough,sat 91%

- How many would give her mist?
- How many think it really works?

Management

- History barking cough Is characteristic
  - Onset
  - Treatment given
  - Fever association
  - Aggravating and reliving factors
  - Child condition
  - Recurrence
  - Admission to ICU

Management

- Physical Examination:
  - Vital signs
    - RR and Saturation
  - Chest Exam
  - Neurological Exam
  - Classification of Croup
    - Mild
    - Moderate
    - severe

Management

- Start with ABCD
  - Make the child comfortable
  - Give oxygen to keep Saturation > 92% if needed
  - Start steroids
    - PO
    - Nebulizer
    - IM
  - Monitor Vital signs and repeat physical exam

Barking Cough.

Pneumonia

- 8 years old Nora
  - Hx fever for 6 days
  - Cough for 3 days more at night
  - SOB
  - Given amoxil for 3 days

Not Improved → Viral / Bacteria resistant

  - What is next?

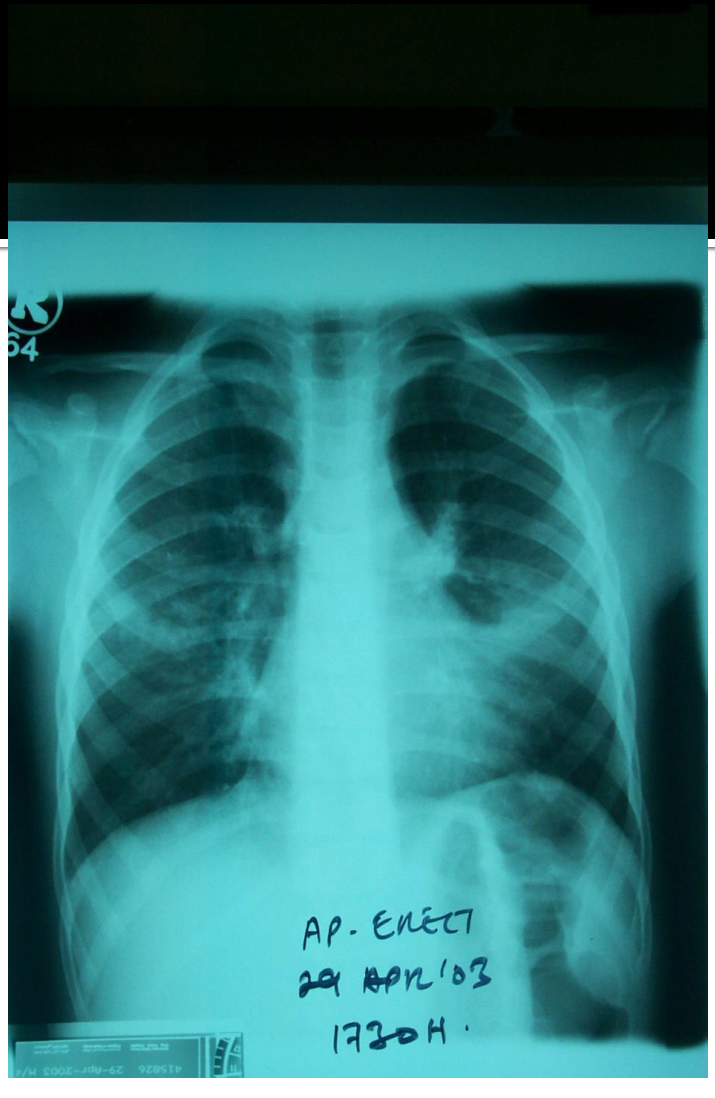
Pnumonia

- History
  - Very important to remember:
    - Prolonged fever
    - Associated symptoms
    - Contact with ill persons
    - previous or chronic illnesses
    - Previous treatments

On Examination

- Generally looking well
- In mild respiratory distress
- ENT exam normal
- Chest Clear

- Who is with CXR? Why we do CXR while the chest is clear upon examination,
- Who is with CBC? CBC will not help us alot


AP. ERECT
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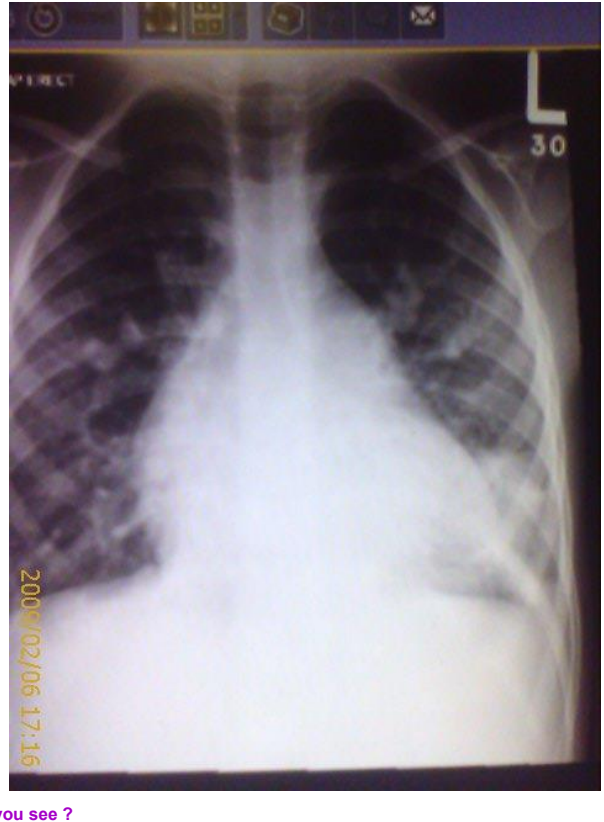
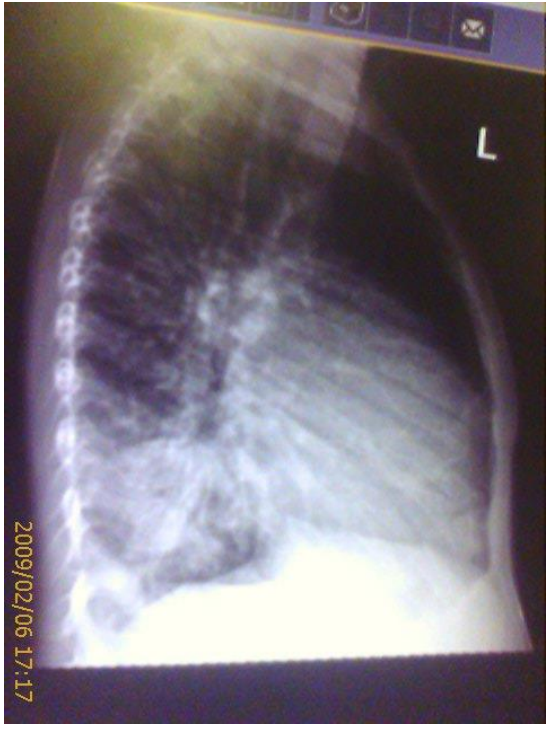
What is your diagnosis?

Mycoplasma pneumonia

It is an infection one in children present like pneumonia but not respond to amoxicillin very well, and erythromycin or azithromycin are good options for them

Ask for A test ?





What do you see ?
Round pneumonia of the lung

Streptococcus pnemo cause (round pneumonia, Bacteremia and mengitis or brain involvement.

I salute him

What are the abnormalities in x-ray ?

- deviation of tracheae
- Huge consolidation on the right side

Ears – Otitis Media

- History
  - Check
- Physical Exam
  - standard

Ears – Otitis Media

- 1 year old coming to your office
  - Fever for 2 days
  - Runny nose
  - History of family with viral illness

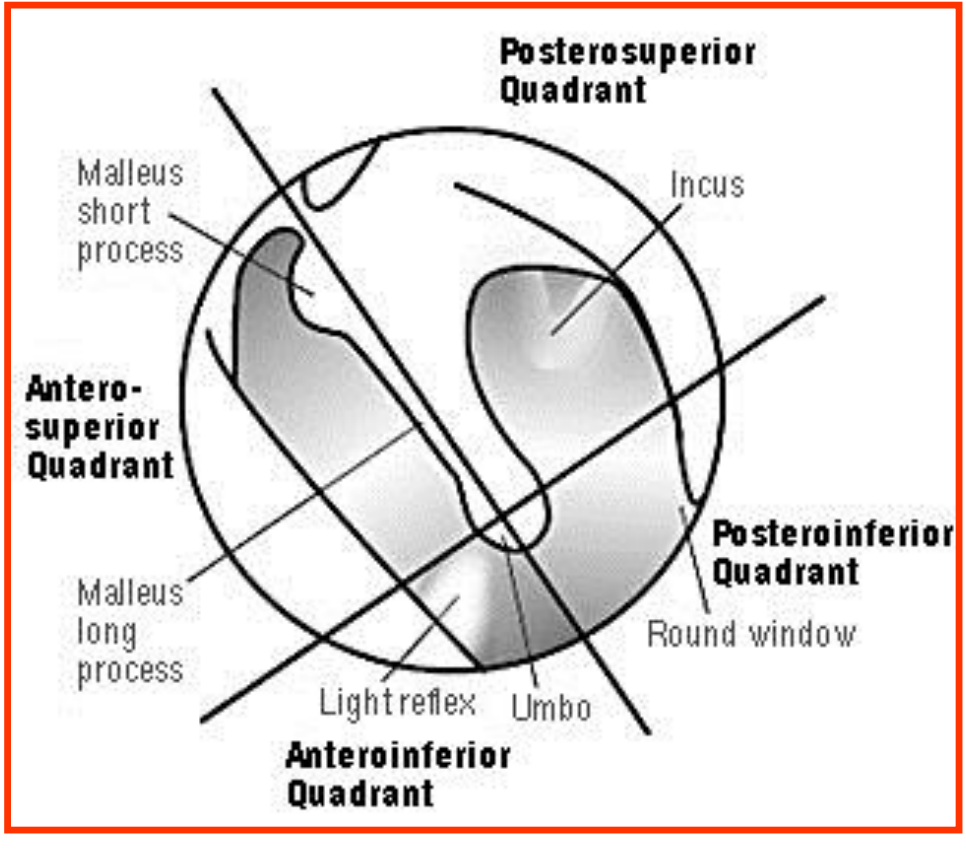
  - What would you examine?

Otitis Media

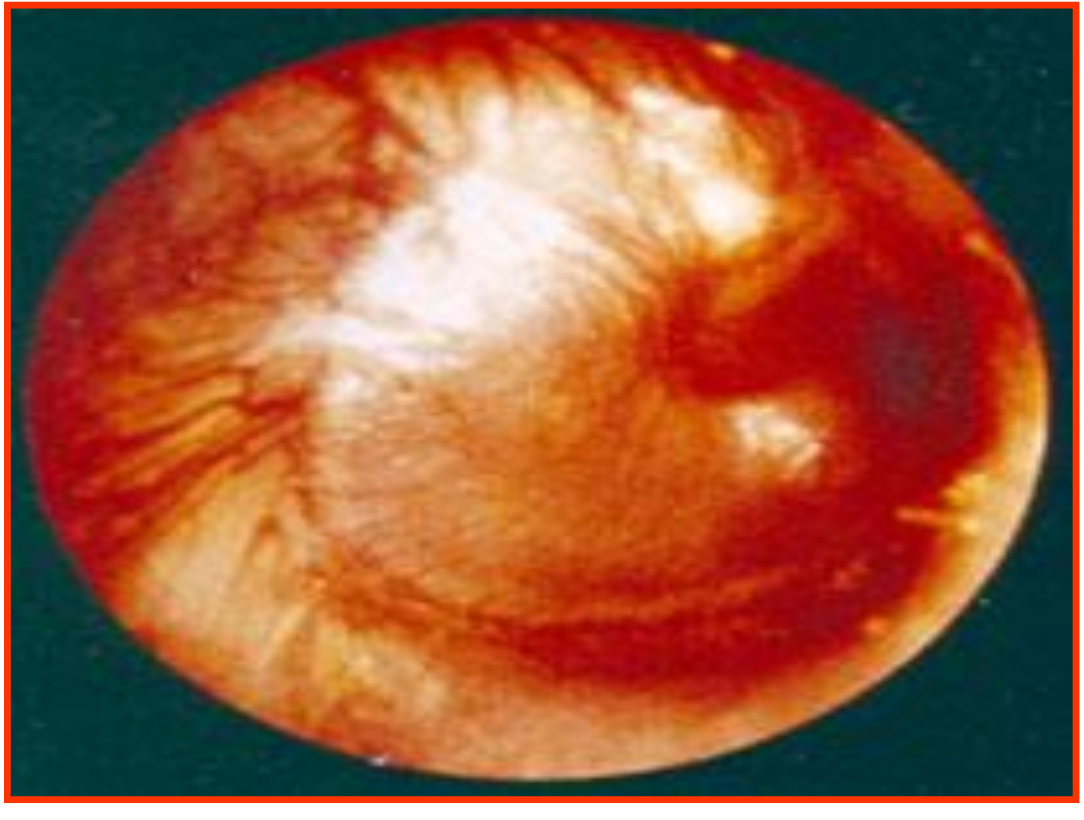
We don't need to treat this patient, because we see

- incus
- Light reflex
- Hand of malleus

Otitis Media



Otitis Media



We need to treat this patient, because we can't see

- incus
- Light reflex
- Hand of malleus

Management

Age	Certain of AOM	Uncertain of AOM
<6 month	Antibiotics	Antibiotics
6 – 23 month	Antibiotics	Antibiotics if severe Observe if non severe
>24 month	Antibiotics if severe Observe if non severe	Observe

Otitis Media

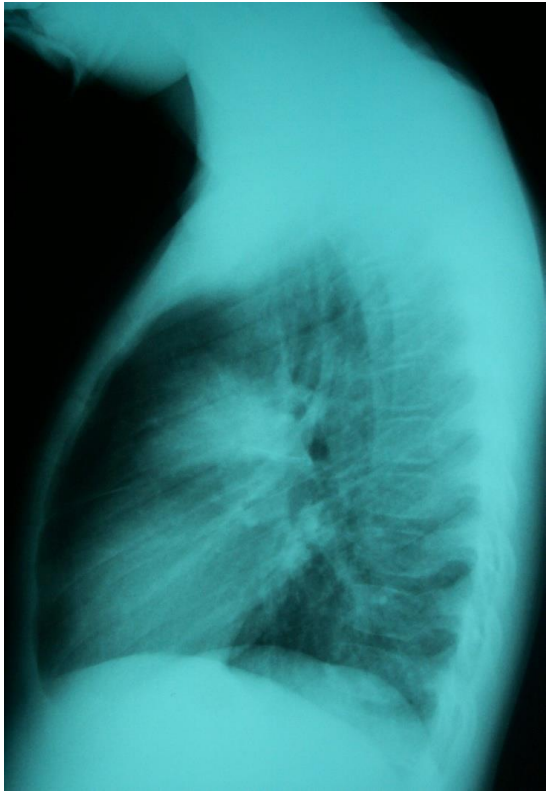
http://www.aap.org/otitismedia/www/vc/ear/index.cfm

AAP & AAFP 2004, www.aap.org

NYS DOH 2002, www.abxuse.health.state.ny.us

Organophosphate

Organophosphate poising was common among children in the past, because in the culture they thought it can be used to treat lice in kids and about 600 children were died because of that !
They present with a picture of pneumonia and symptoms of activation of cholinergic system such as salvation



Rashes

- Certain typical presentations
  - Measles
  - Mumps
  - Rubella
  - Chicken pox
  - Roseola infantum
  - Herpes
  - Eczema

Rashes

- History
  - Start of the fever
  - Start of the rash
  - Distribution of the rash
  - Other body systems involved
  - Associated symptoms
- Physical exam
  - Description
  - Distribution
  - Systemic examination

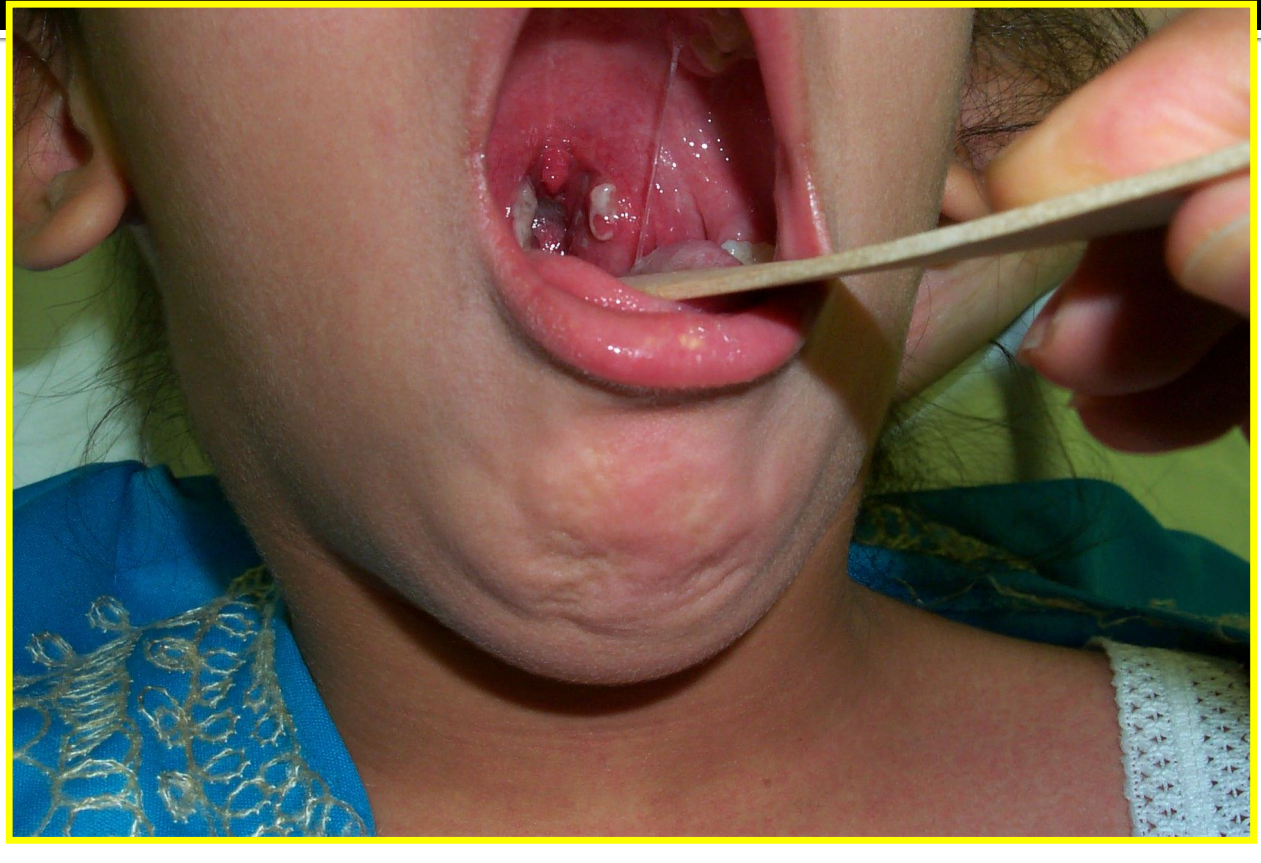
Rash

- 6 years old salma coming with history:
  - fever for 4 days.
  - Non itchy generalized Rash 2 days.

  - What is your next step?

What is next?

- Would you like to examine any thing else?



We can appreciate:
- strawberry tongue
- White batches on tonsils

It is scarlet fever and treated by penicillin

What is your diagnosis?

Scarlet fever

- Etiology
  - group A beta hemolytic streptococcus
- Clinical manifestations
  - Fever
  - sandpaper
  - erythematous rash
  - strawberry tongue
  - lymphadenopathy
  - desquamation as rash fades

Scarlet fever

- Differential diagnosis:
  - Drug rash
  - Infectious mononucleosis
    - rash is similar, especially in children taking amoxicillin with this infection
  - Kawasaki disease
    - usually has conjunctivitis which is absent in scarlet fever, arthralgia,arthritis
  - Toxic shock syndrome
    - similar rash, but presents in teenage girls (scarlet fever rare in this age group)

Cradle cape

Diaper Rash

Milia

Bug bites

Jaundice

Allergic Reactions

- History
  - Ingestant Vs inhalational Vs Contact
  - Symptoms at presentation

We should look for serious symptoms such as

  - SOB, DOB, DOS,
  - Previous exposure and reaction
  - Itchy or non itchy
- Physical Exam:
  - ABCDE
  - Confirm signs – e.g.. Strider, wheezing

Case 8

- 3 year old female presenting with
  - Cough , SOB
  - Noisy Breathing
  - Generalized itch
  - Generalized rash of sudden onset
- What Do you want to do ?

Emergent or Non Emergent

- Airway compromise
  - Upper – stridor
  - Lower - bronchospasm
- Cardiovascular collapse
  - Hypotension
  - Syncope
  - Tachycardia
  - Arrhythmia

What is Next?

- ABC – priority
- Upper airway obstruction
  - Oxygen
  - Racemic epinephrine
  - IV epinephrine
  - ETT
- Bronchospasm
  - Ventolin
  - Epinephrine .01 mg/kg (1:1000) SC/IM

Continue

- Diphenhydramine IV 1-2mg/kg
- Cimetidine / Ranitidine
- Steroids

Infectious cases

- 8 years old Abdullah coming with a swelling in the right eye.
  - Fever for 3 days
  - Unable to see with this eye past 1 day
  - Previously healthy.

It is a common presentation among pediatrics
You have to know the difference between orbital and peri orbital which is eye movement restriction in case of orbital cellulitis which is one of ophthalmological emergency which need admission and CT and drainage any abscess in the eye.

Cellulitis

- Etiology:
  - 1.) Periorbital
    - Staphylococcus, possible H. influenzae B bacteremia
  - 2.) Orbital
    - S. aureus,
      - related to trauma,
      - sinus infection

Cellulitis

	Periorbital	Orbital
Fever	Yes	Yes
Lid edema	May be severe	Severe
Proptosis	No (mild)	Yes
Chemosis	No (mild)	Yes
Pain @ eye movement	No	Yes
↓ Eye movement	No	Yes
↓ Vision	No	Maybe
Leukocytosis	Yes	Yes

Cellulitis

- Differential diagnosis:
  - 1.) Trauma — history helps
  - 2.) Allergic reaction (bug bites)
    - these are usually not tender, fever unlikely, often see evidence of insect bite
  - 3.) Tumor — unlikely to develop so quickly

Meningococcal Meningitis

- Overcrowding provides ideal conditions for transmission of meningococcal.
- you need to have a high index of suspicion near to seasons
- Some of the organisms causing the disease are notorious to kill
- Vaccine is available for high risk group

Meningococcal Meningitis Diagnostic Findings

- In younger children
  - Initial presentation is non specific include:
    - Fever
    - Hypothermia
    - Dehydration
    - Bulging fontanel
    - Lethargy
    - Irritability
    - Anorexia
    - Vomiting
    - Seizures
    - Respiratory distress
    - Cyanosis
- In older children
  - In addition to ones mentioned
    - Nuchal rigidity
    - kernig's sign
    - Brudzinski's sign
    - Headaches

Meningococcal Meningitis
Ancillary data

- Lumbar puncture
  - CSF is the basis for evaluation
  - Analysis of fluid:
    - Cell count
    - Glucose
    - Protein
    - Gram stain
    - Bacterial culture
    - CSF/Blood glucose
    - Latex agglutination
- CBC & differential
- Electrolytes
  - Glucose
- Chest X-Ray
- CT scan
  - Focal neurologic signs
  - Seizures
  - Evidence of mass effects.

Meningococcal Meningitis Management

- **Initial Management**
  - Stabilize the patient
  - Adequate airway & ventilation
  - IV access
  - Vital signs
  - Evaluation for:
    - Hypoxia
    - Dehydration
    - Increased ICP
    - Acidosis & DIC
    - Electrolyte abnormalities
- **Antibiotics**
  - Ceftriaxone
  - Vancomycin
- **Cerebral edema**
  - Pco2 35
  - Manitol 0.5 g /kg
- **Seizures**
  - Diazepam
  - Lorazepam
  - Phenobarbital
  - Phenytoin`

What Is A Poison?

A poison is anything which can cause damage to the body.

Some examples are:
- Acetaminophen
- Aspirin
- Carbon Monoxide
- Cough & cold preparations
- Acids,lye
- Antifreeze
- Gasoline
- Insecticides
- Iron preparations
- Paint
- Rat poisons
- Rubbing alcohol

Routes of Poisonings

Poisoning Locations

- Home 87%
- "Unknown" 6%
- Workplace 3%
- Other Residence 2%
- School 1%
- Restaurant 1%

POISONING

A
ACCIDENTAL

B
SUICIDAL
INTENTIONAL
ABUSE/MISUSE

C
HOMOCIDAL
MUNCHHAUSEN
BY PROXY

ACCIDENTAL POISONING

ONE OF THE MOST COMMON
MEDICAL EMERGENCIES IN CHILDREN

PHARMACEUTICALS

- IRON SUPPLEMENTS
- ANTIDEPRESSANTS
- CARDIOVASCULAR AGENTS
- SALICYLATES

- OPIOIDES
- ANTICONVULSANTS
- THEOPHYLLIN
- ORAL HYPOGLYCEMICS

NON PHARMACEUTICALS

HYDROCARBONS
PESTICIDES
ALCOHOLS
DRAIN AND OVEN CLEANERS

PREVENTION OF POISONING

- CHILDPROOF CAPS
- DISPENSING LIMITED AMOUNT OF MEDICATION
- LOCKING MEDICINE CABINETS
- MEDICINE IS *NOT* CANDY.
- DO NOT PUT DANGEROUS AGENTS IN DRINKING GLASSES OR BEVERAGE BOTTLES.
- KEEP HOUSEHOLD CLEANERS OUT OF REACH OF CHILDREN.

TREATMENT

GET

THE

POISON

OUT

Febrile infant

- Age < 1 month
  - Full septic work up
  - Admission
  - Antibiotics
- Age 1-3 month
  - Partial septic work up
  - Low risk / High risk
  - Decide

THANK YOU