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SORE THROAT

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objectives

- Present an interesting case
- Go over the differential diagnosis of sore throat in the ED setting
- Review salient points of the history and physical as they pertain to the topic
- Go in depth on a few select diagnoses

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in room B4…

- 4 y/o previously healthy male
- Two day h/o worsening neck pain, fever, poor sleep, and decreased PO intake
- On the morning of admission his neck became more swollen and his folks noticed that he wouldn’t look up
- So they brought him to the ED

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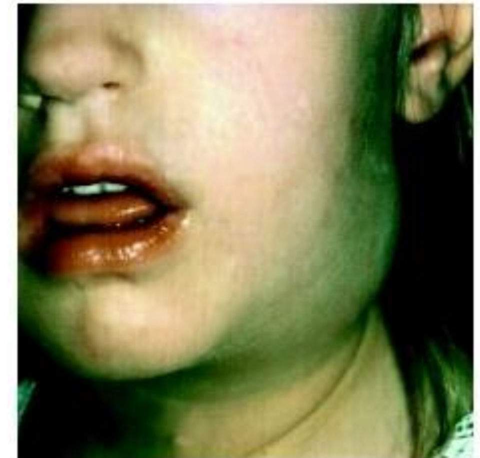
physical exam

- t38.1 hr120 rr16 bp96/68 sat99% on RA
- GEN Ill appearing preschooler who would not voluntarily look up or speak
- HEENT TM wnl, slightly dry mm, erythema but no pus or enlargement of the tonsils
- NECK swollen L side of neck, b/l cervical LAN
- CV tachycardic but well perfused
- PULM CTAB, no stridor
- ABD normal
- DERM no rashes or lesions
- Remainder of exam was benign



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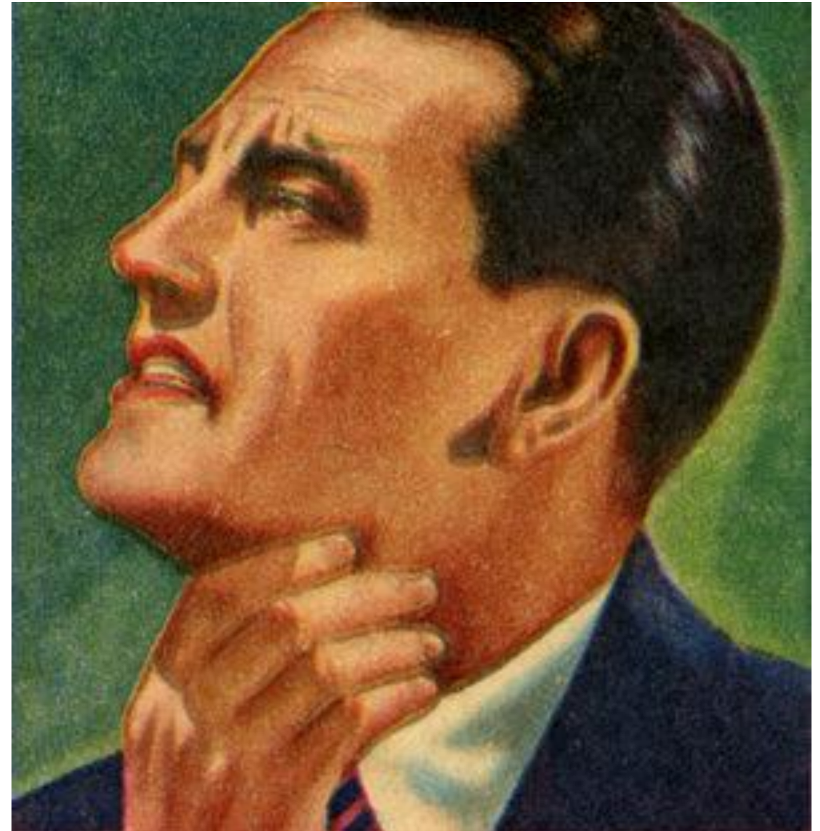
a few questions

- What else would you like to know about the history?
- What's your differential diagnosis?
- What are you going to order?
- We'll get back to the case shortly, but now…



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my throat hurts

- **Serious/Life threatening conditions**
  - Epiglotitis
  - Retropharyngeal abscess
  - Peritonsillar abscess
  - Diphtheria
  - Lemierre's syndrome

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my throat hurts

- **Common infectious diagnoses**
  - **Viral pharyngitis**
  - **Streptococcal pharyngitis**
  - **Infectious mononucleosis**
  - **Herpetic stomatitis**
  - **Hand foot and mouth**
  - **Gonorrheal pharyngitis**

50-80% Viruses
rhinovirus, coronavirus, adenovirus and friends

25% *S. pyogenes*

Others
Arcanobacterium spp.
Group C, F, G strep

Pro-Tip: Children with croup will often say that their throat hurts

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my throat hurts

- Non infectious causes
  - Irritative (post nasal drip)
  - Foreign body
  - Systemic inflammatory conditions
    - Kawasaki, Stevens-Johnson, Behcet's
  - Chemical exposure
    - Alkali, chlorine gas
  - Referred pain
    - dental abscess, cervical adenitis, AOM

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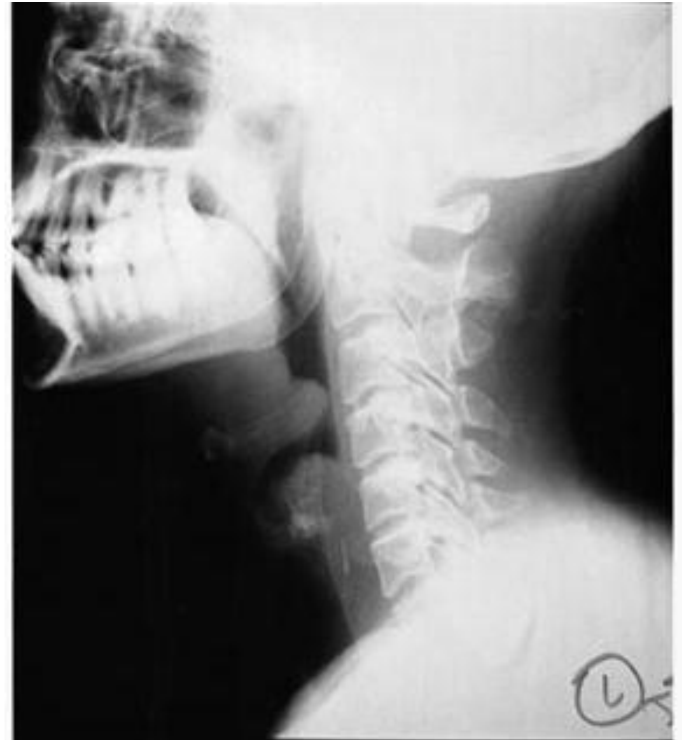
that's a lot of diagnoses

- History
  - Sore throat and respiratory distress
    - Suggests obstruction (get your Attending ASAP)
  - Fever
  - Fatigue – think mono
  - Abrupt onset = epiglottitis
  - Are they immunized?



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physical exam

- Have the kid sit on parent's lap
  - Back to their chest
  - Parent holds one arm across forehead, the other across the child's arms
- You will have to use a tongue depressor
- Consider a mask and face shield (you've been warned)

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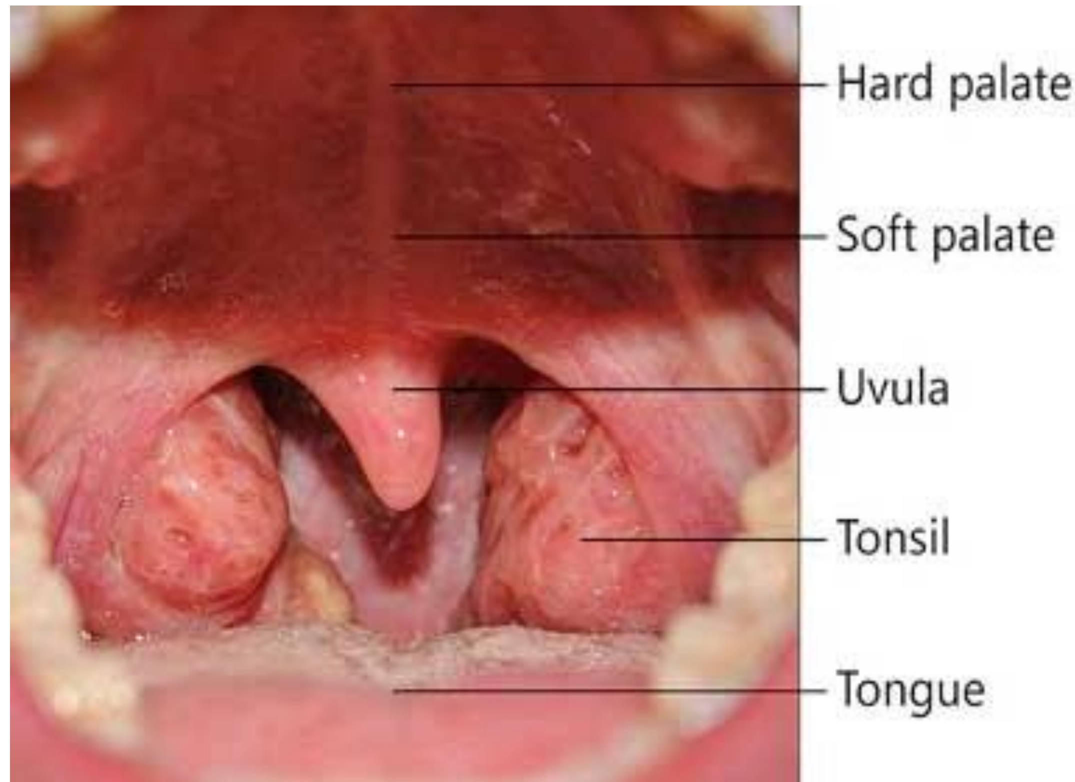
physical exam

Be comfortable with the anatomy, because you may only get a brief look



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physical exam

- Stridor, drooling, respiratory distress
  - Keep the kid CALM!
- Vesicles
  - Anterior to tonsillar pillars – herpetic, Behcet’s, Stevens-Johnson
- Generalized inflammation of oral mucosae suggests Kawasaki
- Asymmetry of the tonsils suggests peritonsillar cellulitis/abscess

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strep throat

- Group A strep (*S. pyogenes*)
  - Incidence peaks in winter to early spring
    - Fever, H/A, N/V, abd pain are common associated Sx
  - On exam – pus, tender nodes, palatal petechiae, inflamed uvula
  - Children <3 get 'streptococcosis'
    - They have fewer pharyngeal epithelial attachment sites for strep
    - protracted nasal congestion and disharge, low grade fever, tender anterior cervical LAN

strep throat

- Diagnosis
  - No specific Sx/finding is diagnostic
  - (Wald, 2008) reviewed a strep score
  - You get 1 point for each

- Age (5-15 years)
- Season (late fall to early spring)
- Acute pharyngitis on exam
- Tender/enlarged (>1cm) ant. cervical LAN
- Fever (101-103°F)
- Absence of URI Sx

likelihood
6 = 85%
5 = 50%

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strep throat

- Who should we test?
  - Children with suggestive signs and Sx
  - Children with known exposures
- How do we test?
  - Gold standard = throat culture (sens 90-95%)
  - Rapid antigen test (spec >95%, sens 65-90%)
  - Serology – ASO etc,. Only + after 2-3 weeks of infection
  - Throat swab! (any volunteers)
  - We now have Point of Care strep Ag testing in the ED
    - RAPID STREP – tc – bedside

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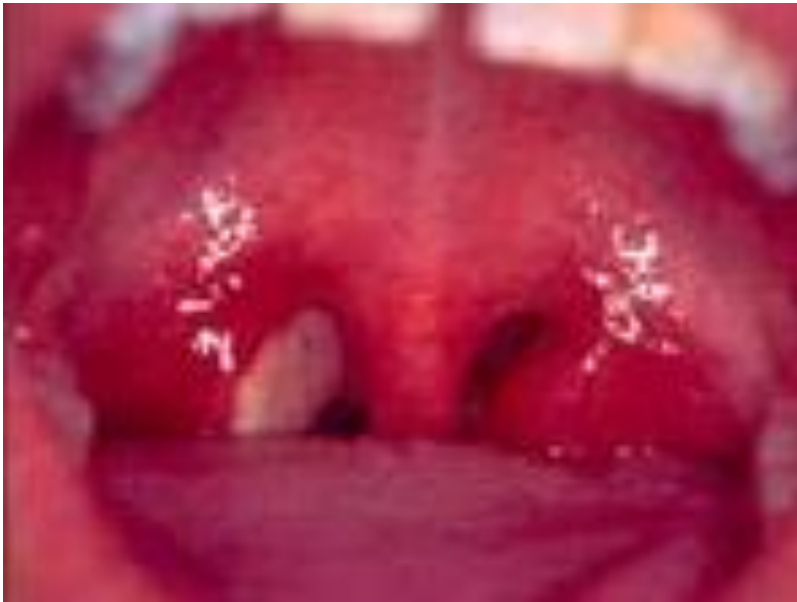
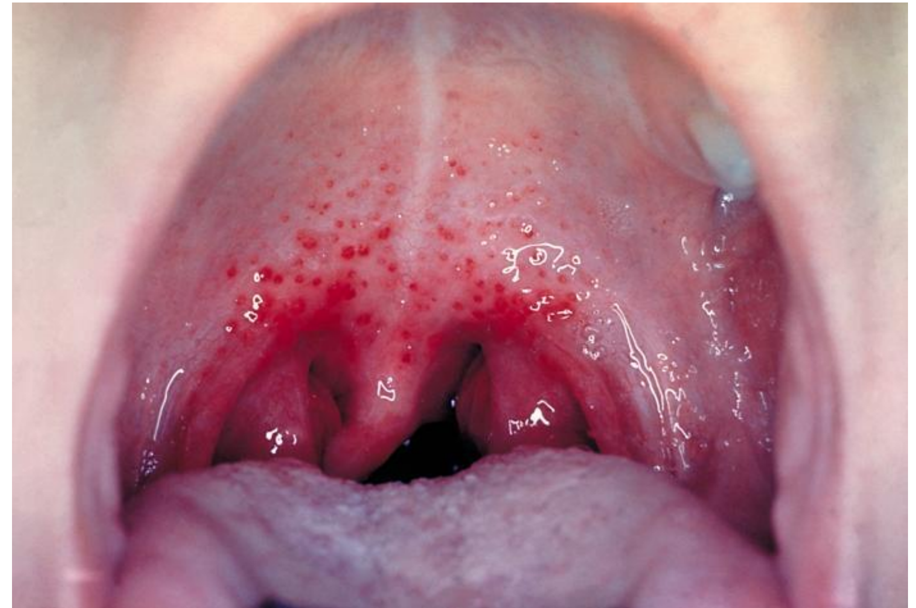
strep throat

- Treatment
  - Penicillin V 25-50 mg/kg/day div tid-qid
  - Amoxicillin 50-75 mg/kg/day div bid
  - Penicillin G IM
    - <27kg 600,000 Units / >27kg 1.2 million Units
  - PCN allergy? Erythro or clinda
- Why do we treat?
  - Tx decr risk of rheumatic fever from 2.8% to 0.2%
  - It does not prevent post strep GN

strep throat

Erythema, petechiae, and pus





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infectious mono

- EBV causes 90% of mono cases
- Testing
  - Heterophile Ab (monospot)
    - Positive 2 weeks after start of illness
    - False negative rate 25% in week 1, 5% in week 3
    - Inconsistent in children <4 years
  - EBV serology
    - IgG – persist for life
    - IgM – marker for acute illness, wane by 3 months
    - EBNA – Ab are made 6-12 weeks after initial infection

Symptom	Frequency
Malaise and fatigue	90-100%
Sweats	80-95%
Sore throat, dysphagia	80-95%

Sign	Frequency
Adenopathy	100%
Fever	80-95%
Pharyngitis	65-85%
Splenomegaly	50-60%

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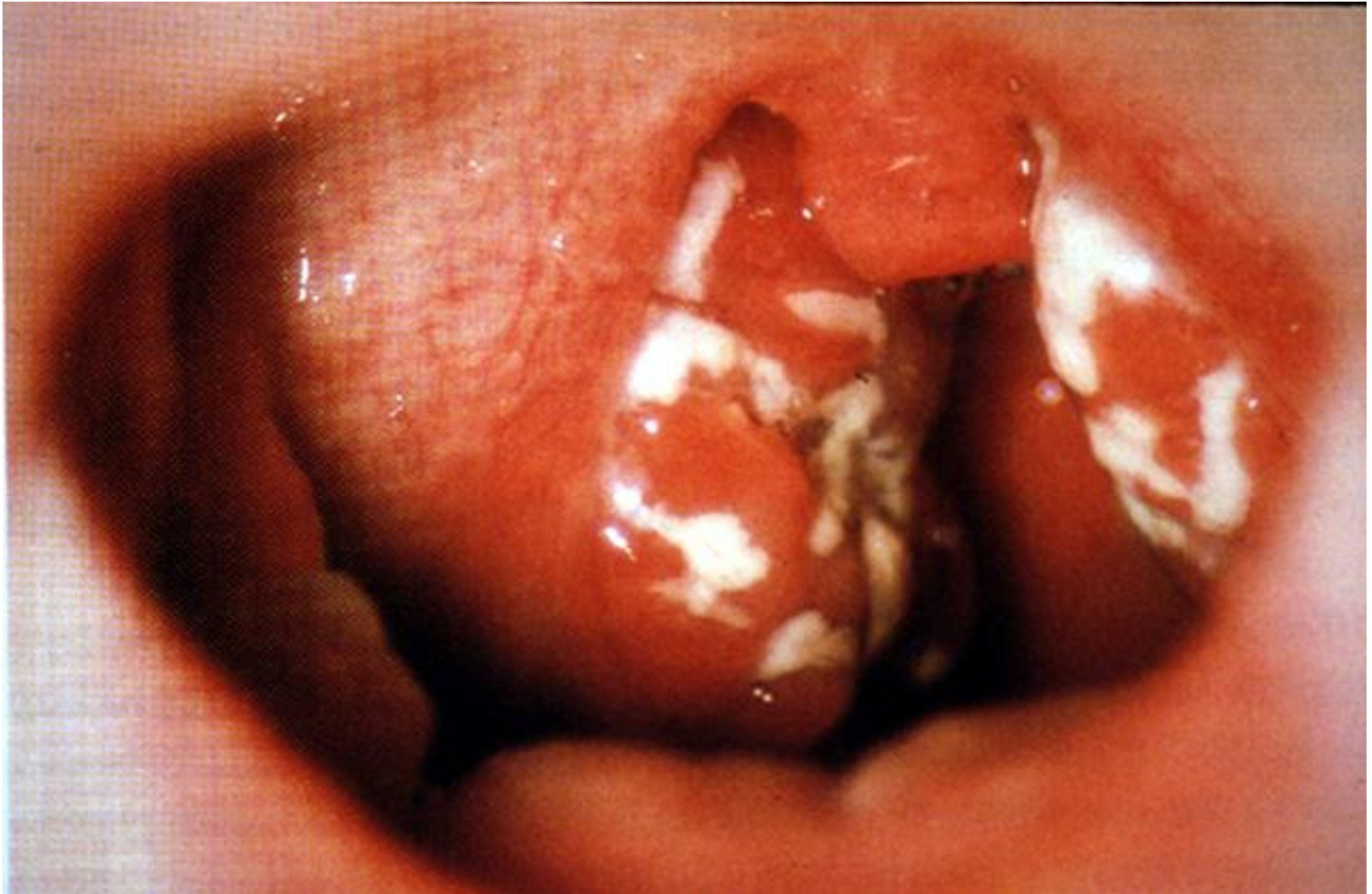
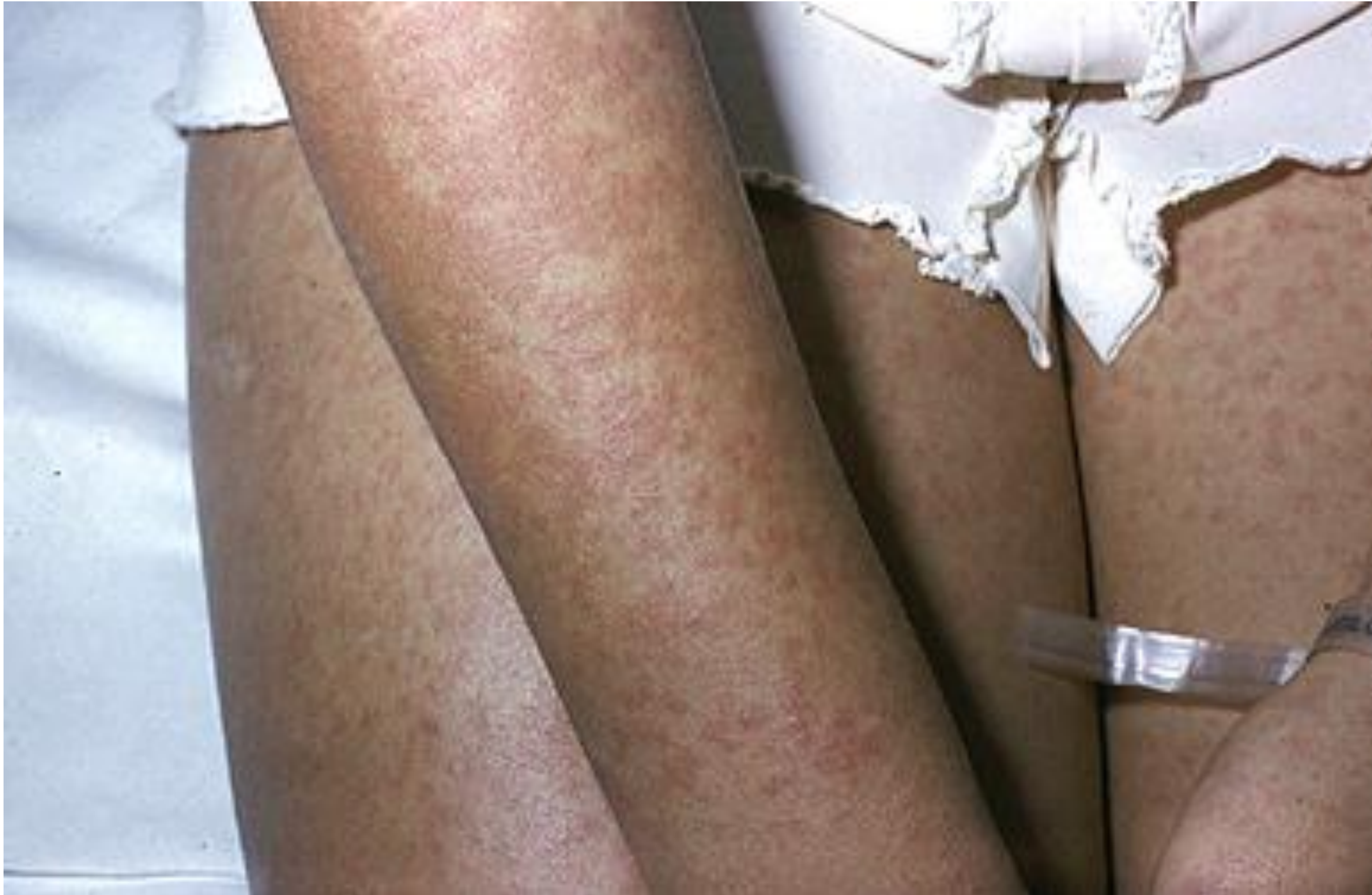
the pharynx in mono



infectious mono

- Treatment
  - Supportive
    - NSAIDs, plenty of fluids, rest
  - Antivirals
    - No beneficial role
  - Corticosteroids?
    - A Cochrane meta-analysis (2006) - reviewed 7 studies and found insufficient evidence to recommend steroids for Sx relief
    - Steroids (along with a good ENT MD) should be used for life threatening airway obstruction

mono treated with amoxicillin



infectious mono

- Should we keep patients with mono out of sports?
  - Splenomegaly usually recedes around week 3
  - Risk of splenic rupture 1-2/1000 patients with mono
    - Only reported in males
    - Usually between day 4-21 of illness
  - No good prospective data exists
    - Most recommend no contact sports until 4 weeks after onset of Sx
    - Non-contact activities (jogging) OK at 3 weeks

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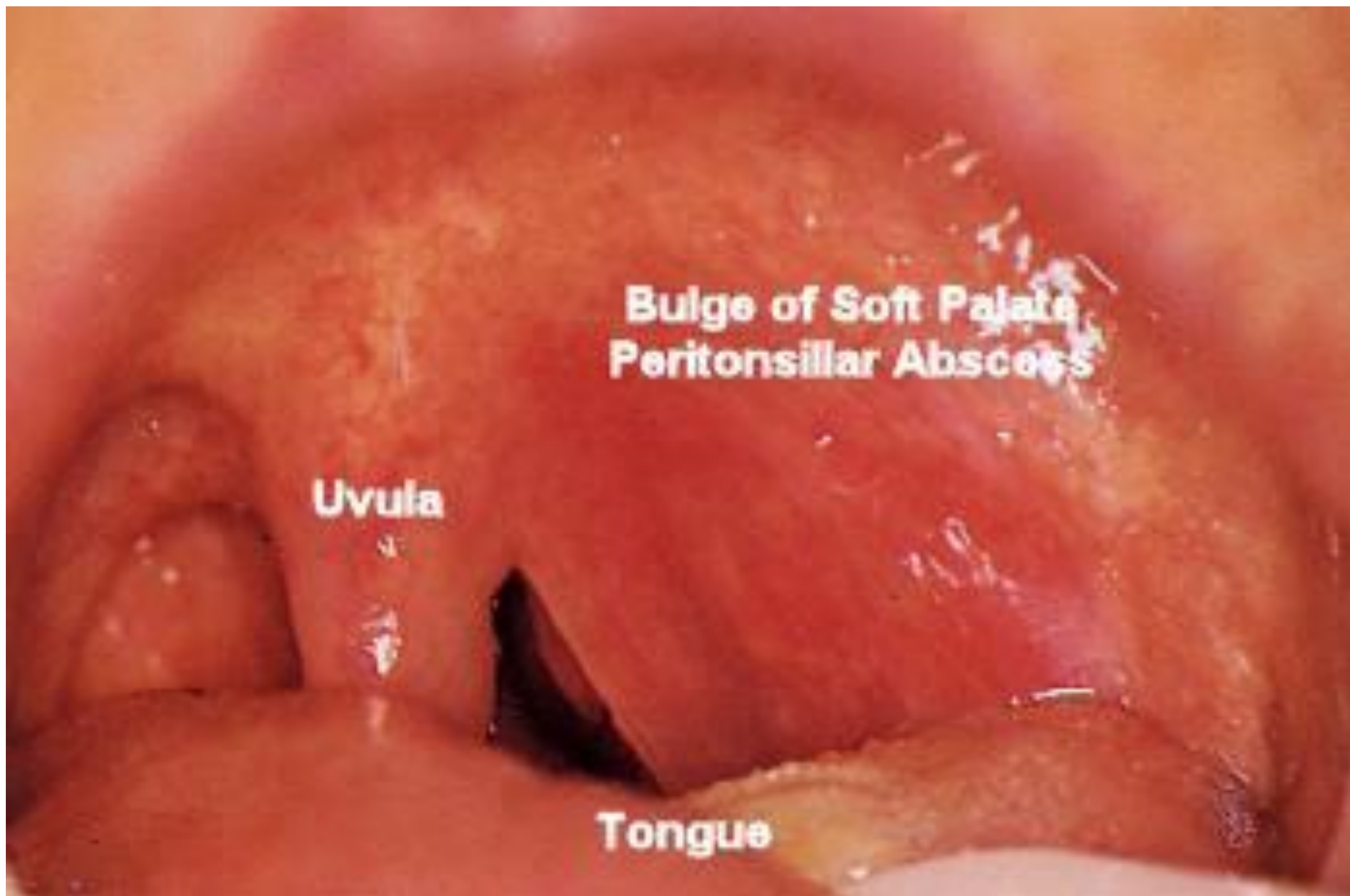
peritonsillar abscess

Tonsil protrudes across midline with uvular deviation



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back to the case

- 4 y/o M w/ fever and sore throat
  - Limited neck movement and can’t swallow
- Only one lab test’s result was abnormal. Any guess as to which one it was, and the subsequent result?

Rapid Strep Antigen	POSITIVE

- A lateral neck film was ordered
- He got a 20ml/kg NS bolus for dehydration

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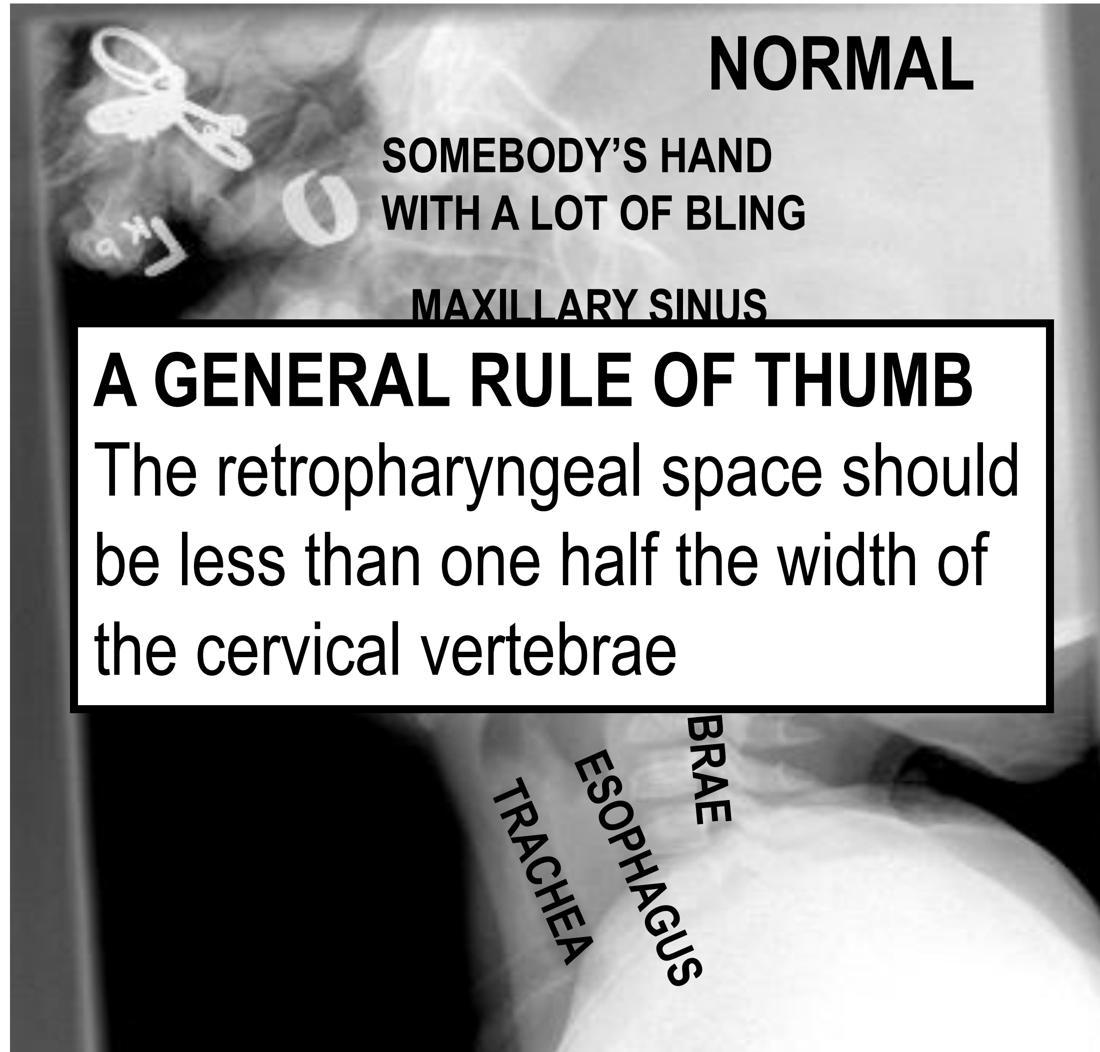
the lateral neck x-ray



A GENERAL RULE OF THUMB

The retropharyngeal space should be less than one half the width of the cervical vertebrae

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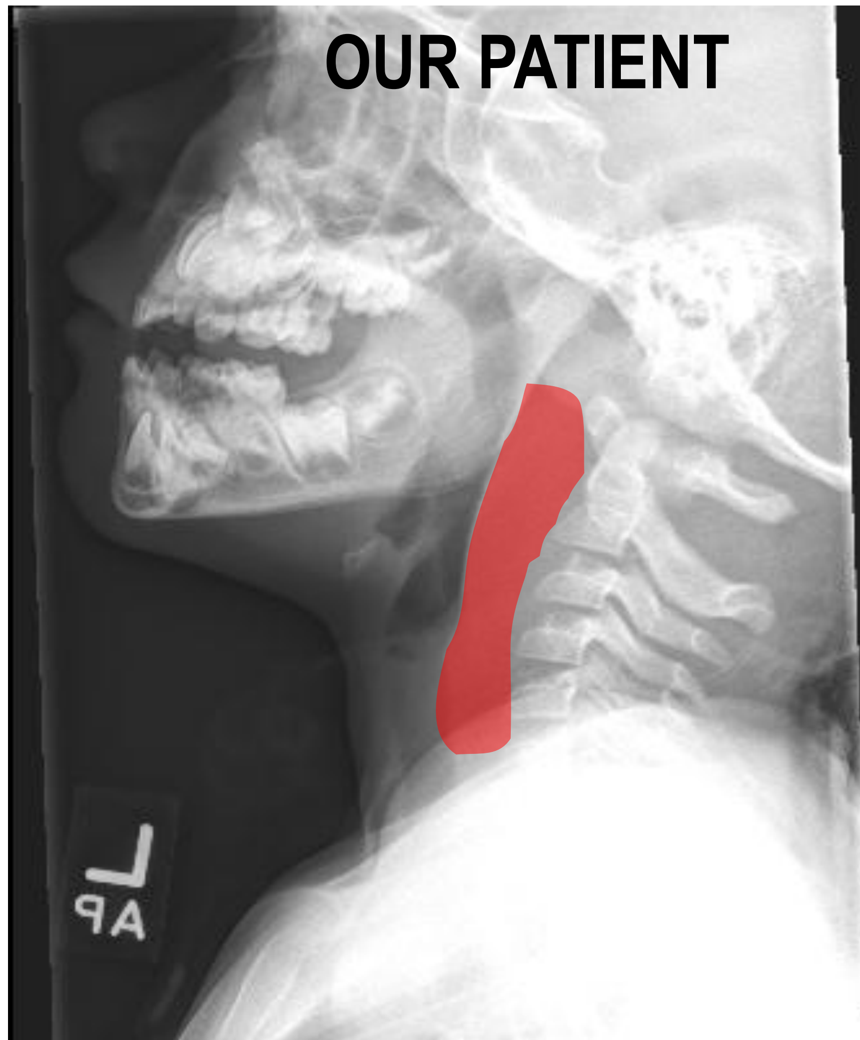
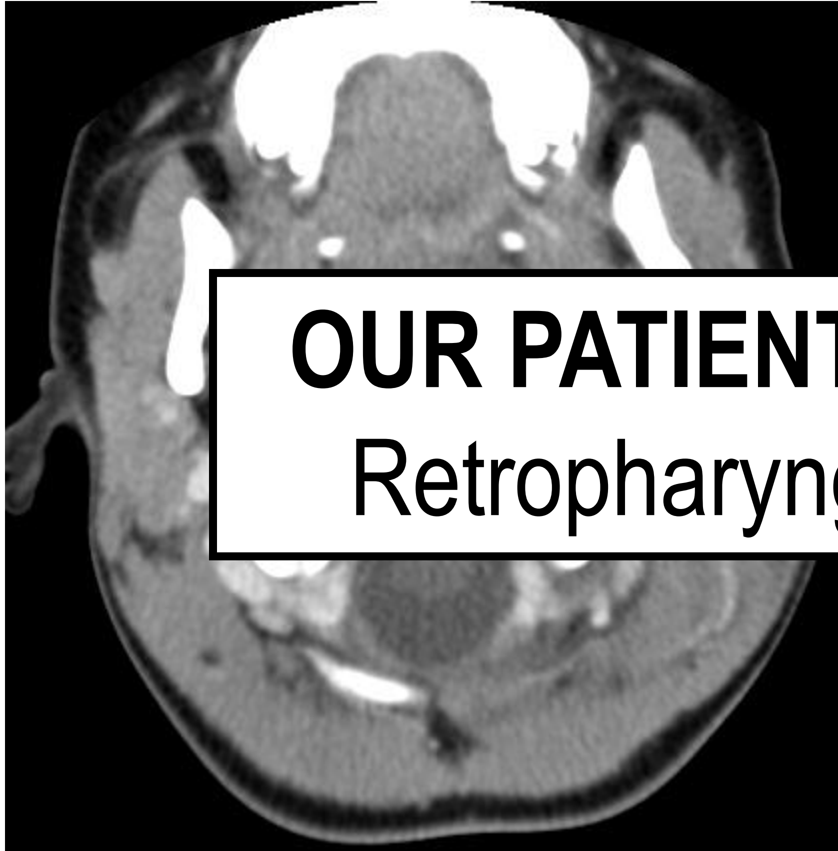
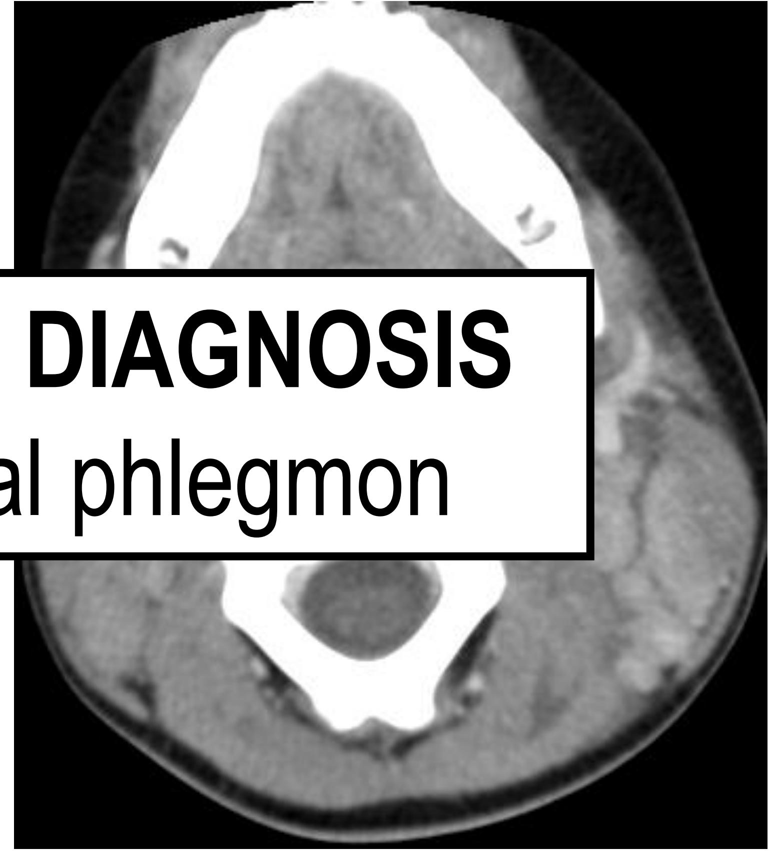
the lateral neck x-ray



- He has a widened retropharyngeal space
  - Measured at 1.7cm
- The main question is whether this is an abscess or phlegmon / cellulitis
- A CT is needed to make the determination

neck CT





OUR PATIENT'S DIAGNOSIS

Retropharyngeal phlegmon

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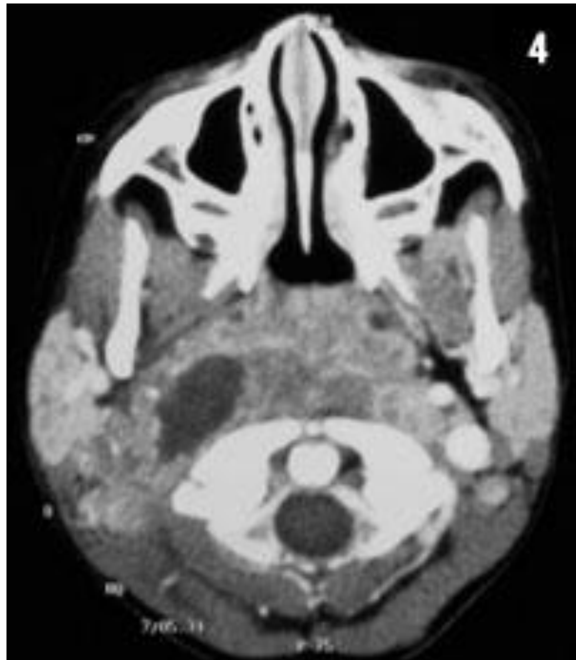
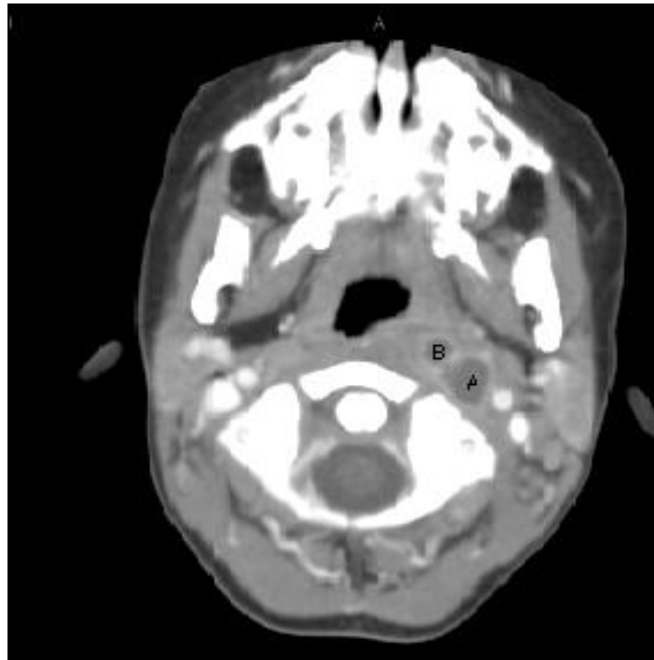
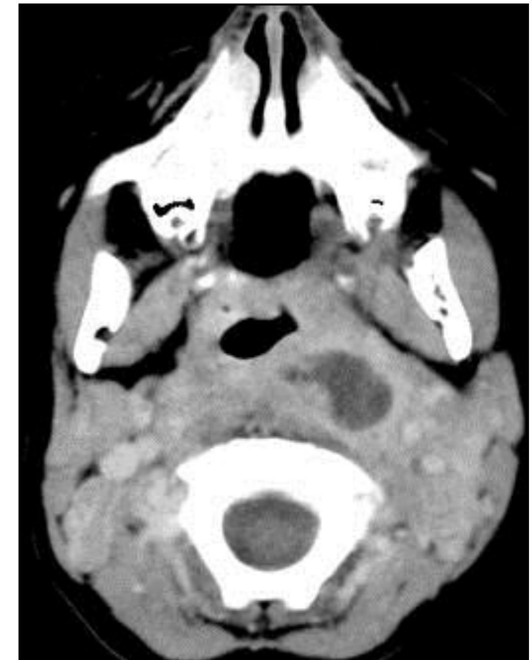
neck CT - abscesses







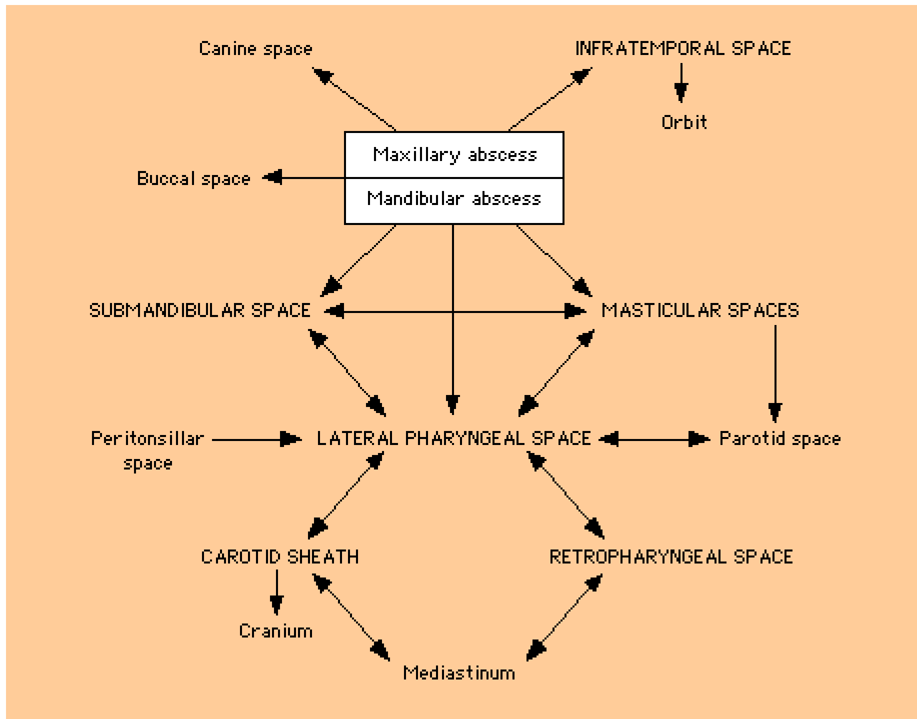
- **Notice that abscess have the typical ring enhancement, with a low density center**

the role of imaging

- **XRay** fast, easy to obtain, but cannot specifically Dx cellulitis vs abscess
- **CT** fast, readily available. Can show abscesses w/ contrast. Can serve as a guide for aspiration of pus.
- **MRI** emerging modality, great resolution of soft tissue. Likely better in stable patients with complex infections

retropharyngeal infections

- Where do these infections come from?
- How do they get there?
- Why is the B-building so easy to get lost in?



Potential pathways of extension in deep cervical fascial space infections Reproduced with permission from: Chow, AW. Life-threatening infections of the head, neck, and upper respiratory tract. In: Principles of Critical Care, 2nd ed, Hall, JB, Schmidt, GA, Wood, LH (Eds), McGraw-Hill, New York 1998. p.891. Copyright © 1998 McGraw-Hill.

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retropharyngeal infections

TABLE 1. Presenting Signs and Symptoms of DNI in 80 Children Treated at Children's Hospital of Pittsburgh From November 1992 to March 2001

Signs and Symptoms	Number of Children (%)
Fever	46 (58)
Limitation of neck motion	35 (44)
Sore throat	30 (38)
Neck Pain	27 (34)
Neck swelling	15 (19)
Decreased appetite	14 (18)
Drooling	10 (13)
Odynophagia	7 (9)
Trismus	6 (8)
Otalgia	5 (6)
Irritability	3 (4)
Difficulty breathing	3 (4)

Accuracy of computerized tomography in deep neck infections in the pediatric population Am J Otolaryngol. 2003 May-Jun;24(3):143-8

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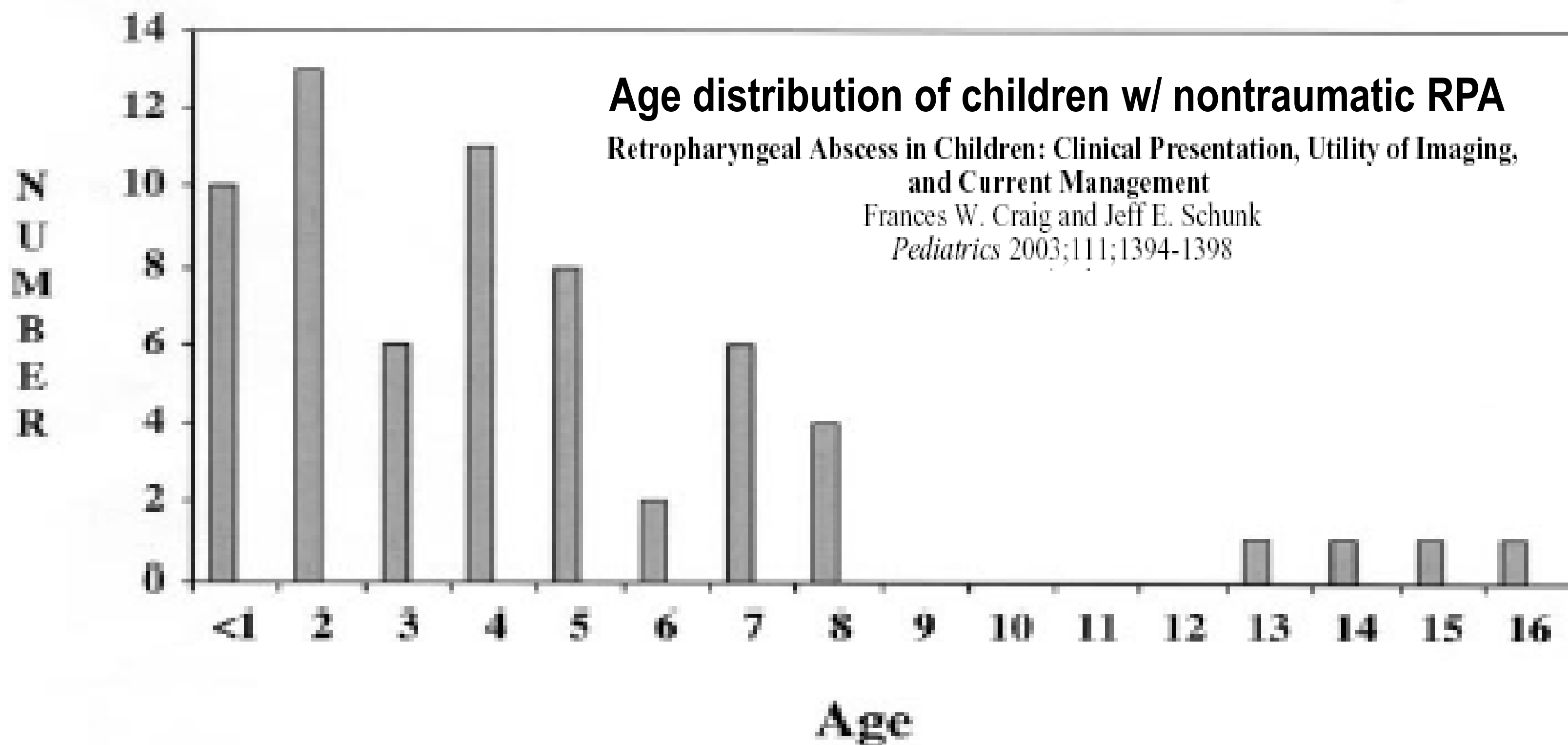
retropharyngeal infections



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retropharyngeal infections

- What bacteria cause them?
  - Pharynx - GAS, S. pneumo, H. flu
  - Oral anaerobes - Bacteroides, Peptostreptococcus, Prevotella
  - Fusobacterium = Lemierre’s
  - Staph if Ludwig’s angina (submandibular)
- What do we treat them with – and for how long?
  - Unasyn, Clinda, PCN + Flagyl, consider Vanc if MRSA concern
  - Treat for 2 weeks, can switch to PO if improved after 48 to 72 hours

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back to the case

- ENT was consulted, and recommended IV Unasyn and admission to Gen Peds
- After 24 hours on IV antibiotics he was smiling and able to move his head in all directions
- He was discharged home on PO Augmentin after 48 hours in house

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the big 5

- Take home points about sore throat
  - Sore throat and respiratory distress suggests obstruction
  - Do a rapid strep only on children with suggestive signs and Sx and known exposures
  - Steroids aren’t routinely useful for mono
  - If your patient can’t or won’t look up - think RPA
  - Proper positioning is key to a good exam