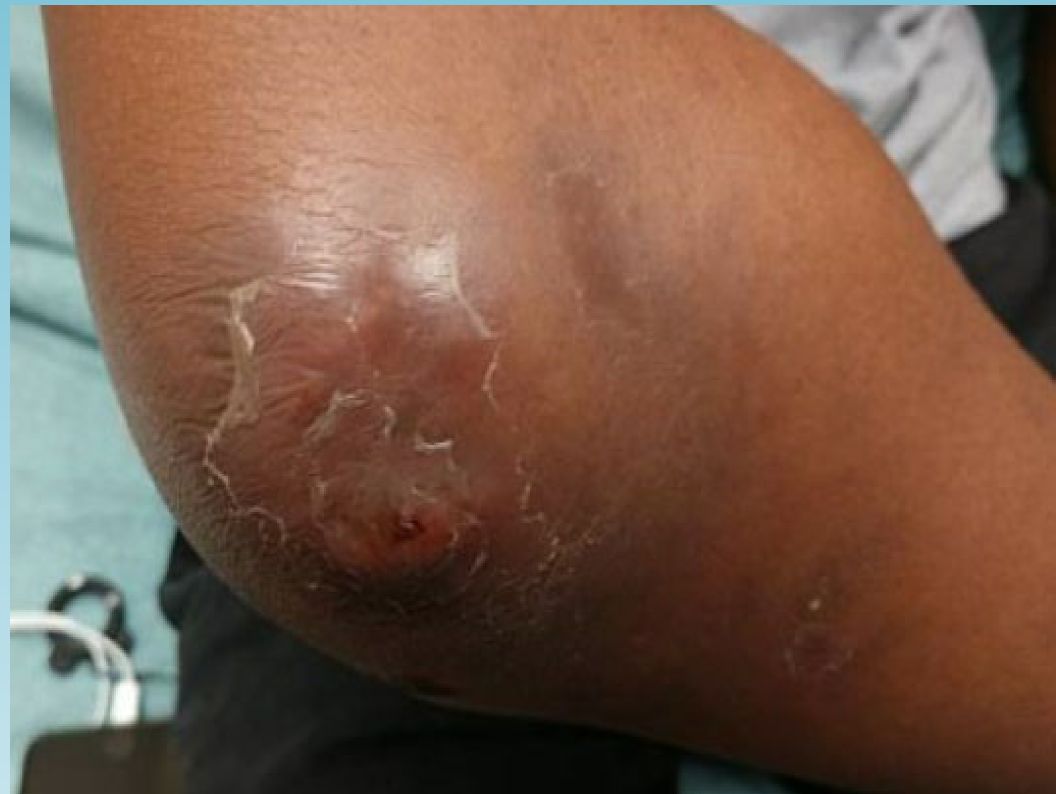
TB in Children and Pregnant Patients: For Clinicians, by Clinicians

PART 5: CLINICAL PRESENTATION, EVALUATION, AND TREATMENT OF TB DISEASE IN CHILDREN, ADOLESCENTS, AND PREGNANT PATIENTS

- These are cases seen in the outpatient setting, selected from 2021

- Diagnoses highlight additional variations in TB disease

Disclosure: I have no conflicts of interest and no financial relationships with any commercial companies pertaining to this educational activity.



16 y/o

Right Elbow Pain and Swelling

x 2 months

No fever. Is starting to interfere with doing schoolwork and playing recreational soccer.

Parents and siblings healthy. No known TB exposure. Immigrated 3 years ago.

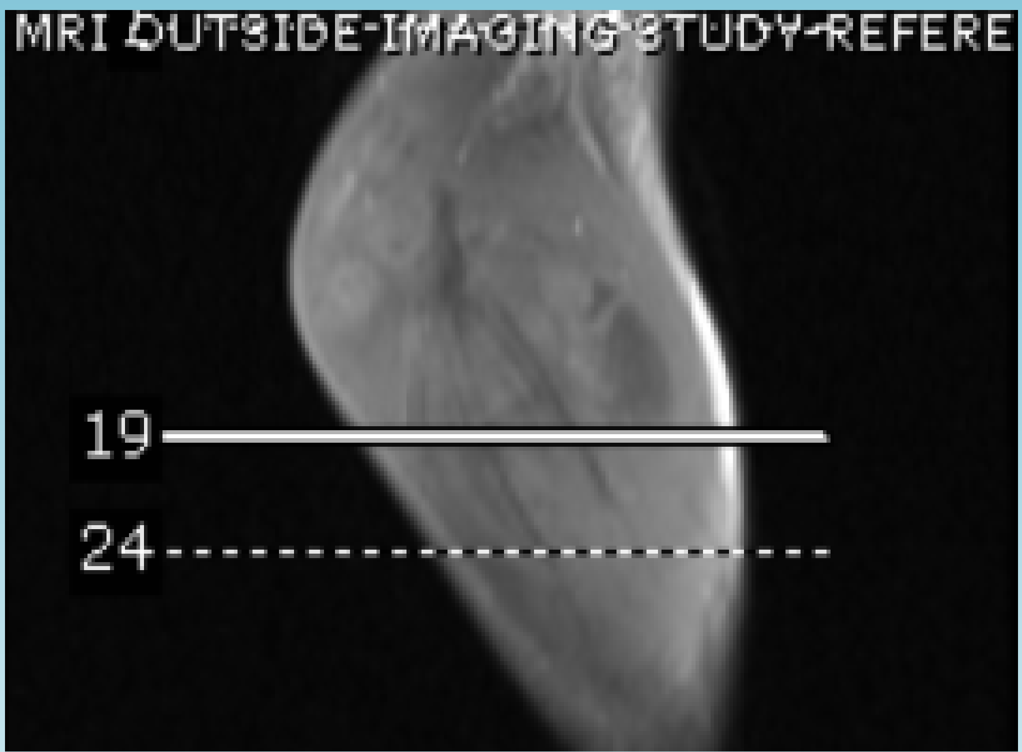
Xray:

--moderate soft tissue swelling over the joint, suggesting effusion

--periosteal reaction along the posterior-medial aspect of the distal humeral diaphysis suspicious for a mass

U/S:

-- indistinct hypoechoic mass-like lesion, 2.5 x 4 x 4.5 cm deep to the soft tissues abutting the cortex


MRI OUTSIDE IMAGING STUDY REFERE
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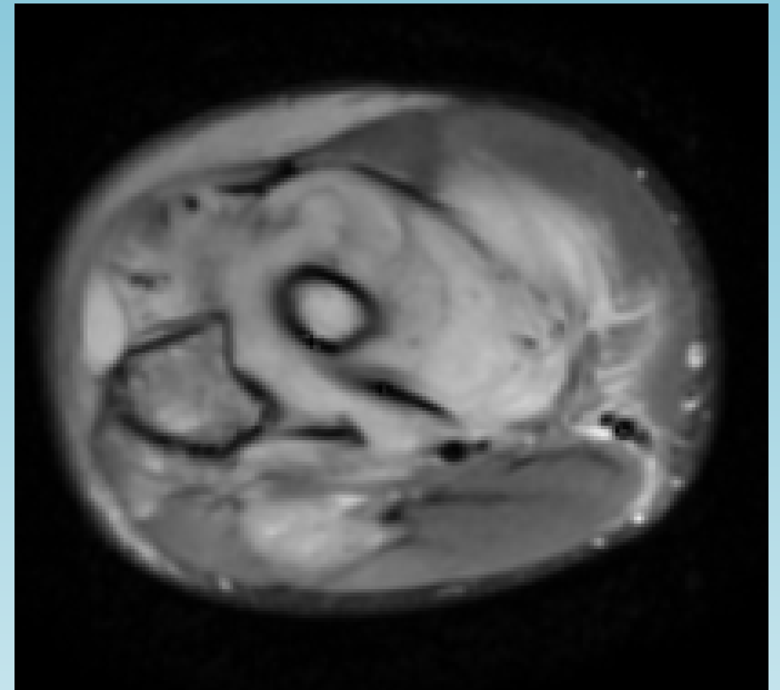


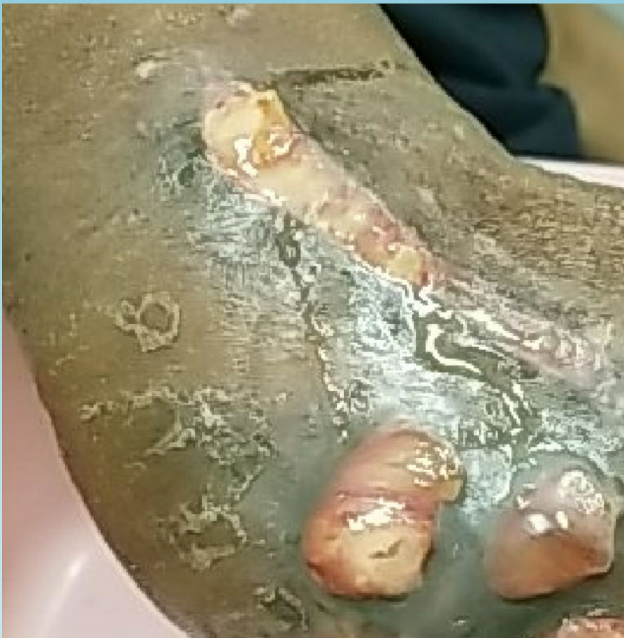
1+WBCs on gram stain

AFB smear negative

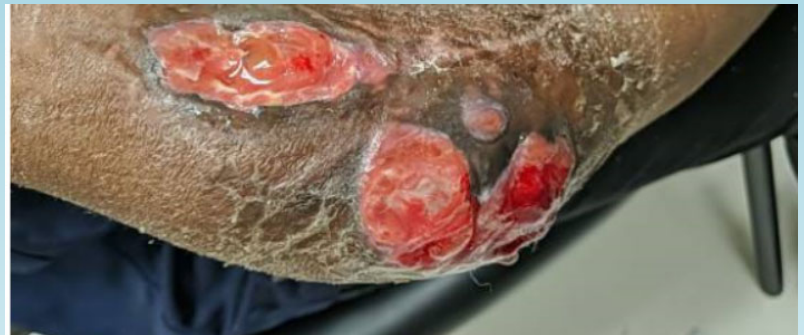
Next step?

Sent home on Clindamycin and Ciprofloxacin

3 weeks later



1 month later:



--U/S shows numerous intramuscular fluid collections around the elbow joint, largest 3 x 4 x 5.9 cm
--CXR: calcified nodule in right apex
--AFB culture: pan-susceptible MTB

MTB Osteomyelitis and Septic Arthritis

- Distal humerus, Proximal radius, Proximal ulna
- 1 year of TB therapy, 2 months of physical therapy
- Full recovery

- Arthralgia, Myalgia, Swelling, Deformity are important symptoms that may signal MSK-TB

9 year old

Fever x 5 months

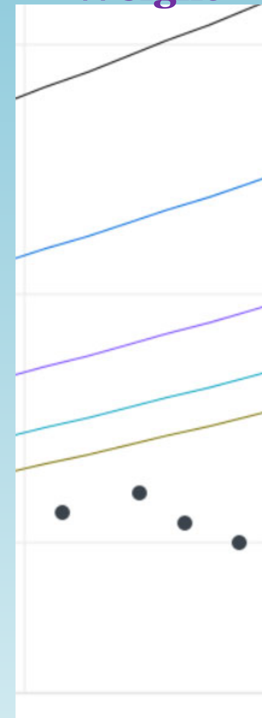
‘Comes and Goes’

- Mother reports thermometer readings of 90 degrees F. She asks if it can’t measure well because of all of the child’s sweating?
  - Seen in different clinics each month with 3 diagnoses of GAS pharyngitis
- Mother reports only other symptom of concern is 1 month of hair loss.
- No known TB exposure; immigrated 15 months ago. Mother and 2 siblings healthy.
- All “A”, exemplary student
- Eats double portions

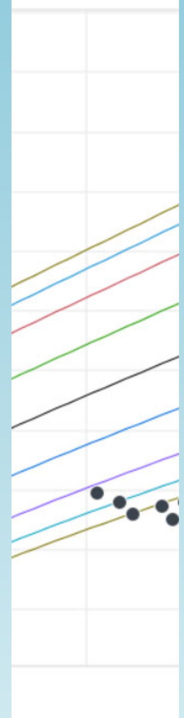
On Exam

- Appears younger than her stated age (average size of 6 y/o)
- Emaciated with temporal wasting
- Pale
- Diffuse crackles and decreased breath sounds in varying pattern over all of the lung fields. Non-labored breathing.
- Clubbing (fingers>toes)

Weight

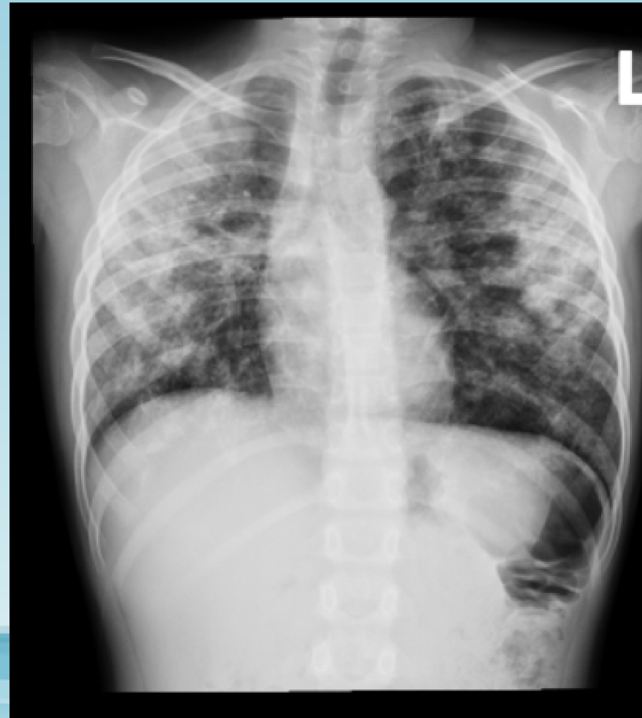


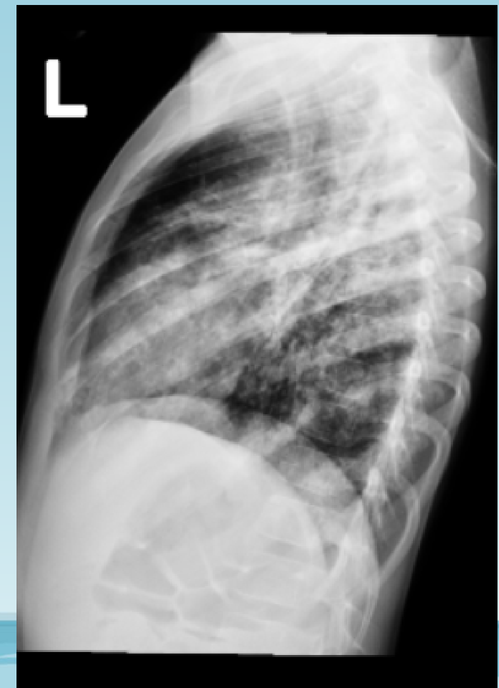
Height



Labs and Imaging

- Hemoglobin 9.2 mg/dL, microcytic and hypochromic
- Thrombocytosis (597,000)
- Hypoalbuminemia (mild)
- CRP >90
- QFT ‘low-positive’

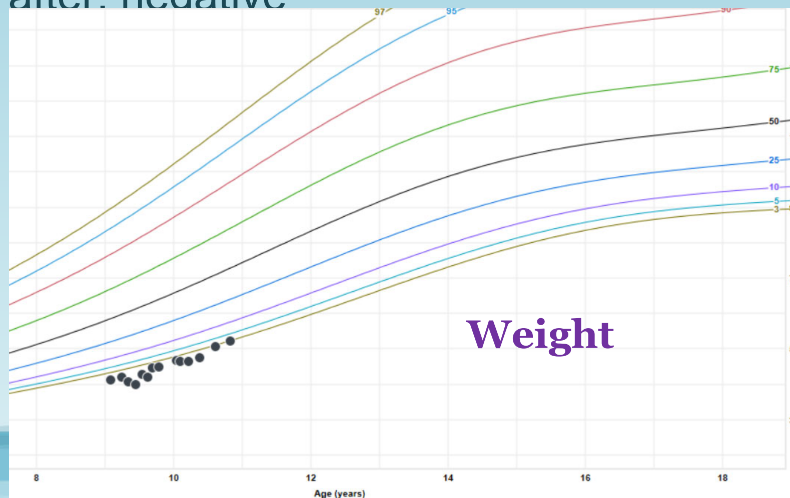


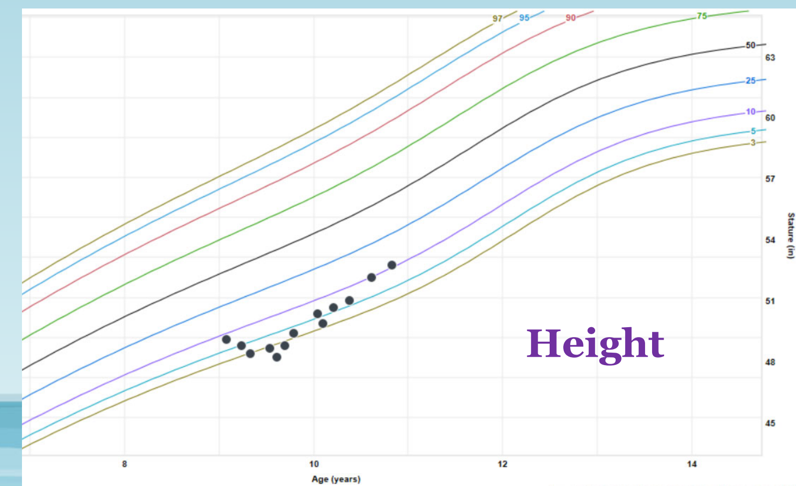


Microbiology

- AFB smear #1: >10/HPF
- NAAT+
- AFB smear #2: 1-10
- AFB smear #3: negative
- AFB smear #4 and after: negative

- AFB culture: pan-susceptible MTB
- 9 months of therapy due to extent of disease
- Full physical, hematologic, and radiographic recovery





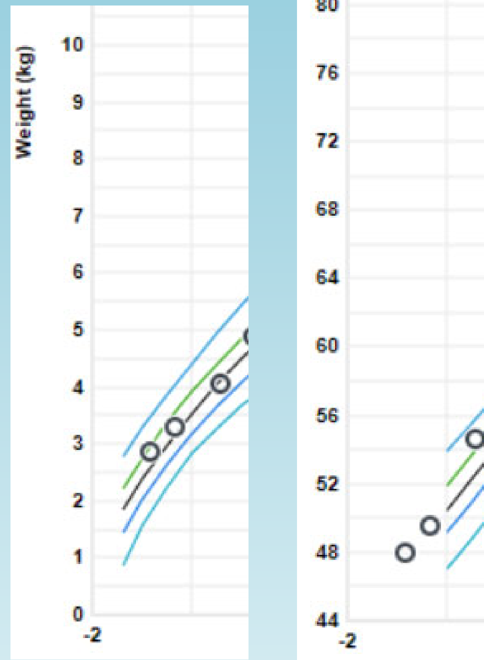
6 week old infant

Concern for TB exposure

- Born preterm at 30+6/7 wks, twin birth (Twin B)
- Conception via IVF (and donor eggs); mother with ?h/o low ovarian production (swimming, marathon)
- Mother came to visit her parents and sister (international flight) 9 days prior to preterm labor
- Mother had fever after delivery, found to have pyelonephritis. Mother later had abdominal wound dehiscence with purulent drainage that was treated.
- In NICU x 31 days in order to develop mature feeding skills
- Has been home 1 week and seen by pediatrician; is growing well
- Meanwhile, Twin A developed respiratory failure at 2 weeks of age and was treated for Enterobacter tracheitis; briefly improved before deteriorated over next 4 weeks and died (3 days after Twin B had been discharged home)
- Parents consented to limited autopsy (chest and abdomen), which showed miliary-pattern pulmonary lesions, not pathognomonic for MTB. No abdominal lesions. ?immunodeficiency

Next steps?

- Mother has h/o +PPD (19 years ago) before college enrollment.
- She had rhinorrhea and cough 8 days after delivery; CXR normal. No symptoms now.
- Father with DM and medically managed heart failure, no TB symptoms.
- Sibling and grandparents healthy.



- Physical Exam normal
- CXR and labs (CBC, albumin) normal
- PPD 13 mm
- **Started on Rifampin for TB infection**
- **Who is the source case?**

2 weeks later..

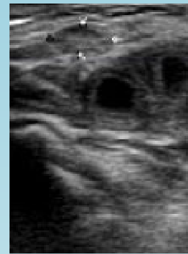
- Growing well by exclusive breastfeeding. Normal exam.

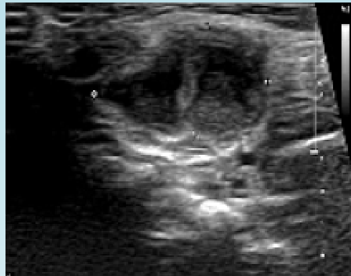
- Mother: IGRA+. Father, brother and maternal grandparents IGRA negative.

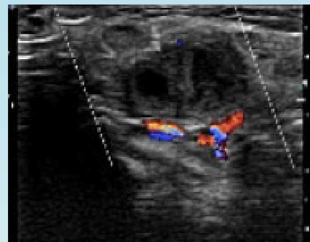
Mother asks about effects on baby or the Rifampin due to her taking Sertraline, Acetaminophen, and Butalbital. Have been prescribed for her depressed mood, fatigue and weakness, along with a headache (frontal, right retro-orbital) and back pain.

1 week later..

- Father of patient notices a swelling at the infant's right neck.
- Non-tender, no erythema.







- Ultrasound of neck mass:

Complex SQ mass, 2.7 x 2.2 cm. Composed of cystic compartments with debris and septations. Mild increased color flow in the surrounding soft tissue. Differential includes necrotic lymph node or abscess.

Nearby lymph nodes (1 x 0.7 cm)

MTB cervical adenitis

- What is needed now?
- RIPE
- Repeat CXR: normal (treatment duration changes if have evidence of dissemination)
- Hemoglobin 8.9, Platelets 594
- And…

Need to Look for CNS TB

CSF:

6 WBC (2% PMN, 77% lymph,

21% mono)

Protein 80

- MRI brain: normal
- Gastric aspirate smears and cultures negative.
- Medication adjustments: Ethionamide to replace Ethambutol, +Prednisone; treatment duration changed to 12 months

The Other Patient… Mother, who is 8 weeks post-partum

- Headache and back pain remain after 16 days, worsening
- Weakness and paraesthesias of lower extremities
- Bladder incontinence x 1 day and unable to ambulate
- Fever

- UA, CXR, CT head normal

Next step?

Lumbar Puncture

CSF:

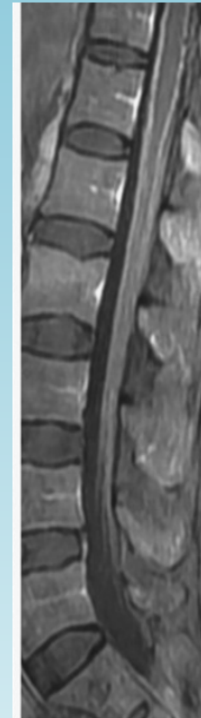
395 WBC (90% lymph)

Protein 1058

Glucose 24

MRI Brain and Spine

- MRI brain: right lacunar infarct
- MRI spine: diffuse enhancement of the dura and leptomeninges of the cervical spine, suggesting meningitis.
- CT neck angio: normal vasculature. Nodular airspace disease is noted in the left lung apex.



Outcome

- AFB sputum smears negative
- AFB culture grew pan-susceptible MTB
- Mother underwent intensive rehabilitation.
- Ambulating with walker → Cane after 3 months