

Case presentations from the desert

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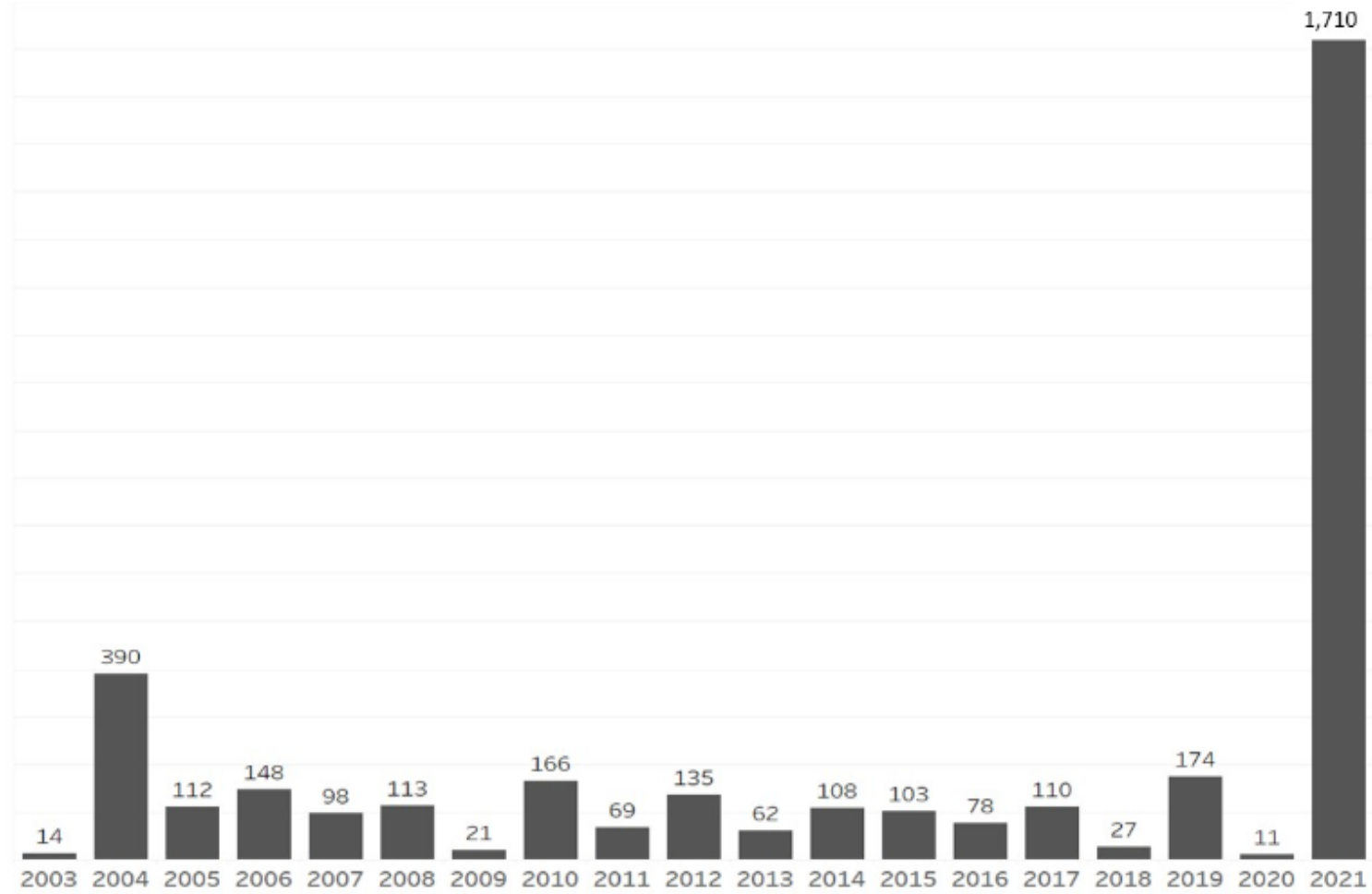
Highlights of Arizona Infections:

Valley Fever – coccidioidomycosis: fungal infection in the lower desert

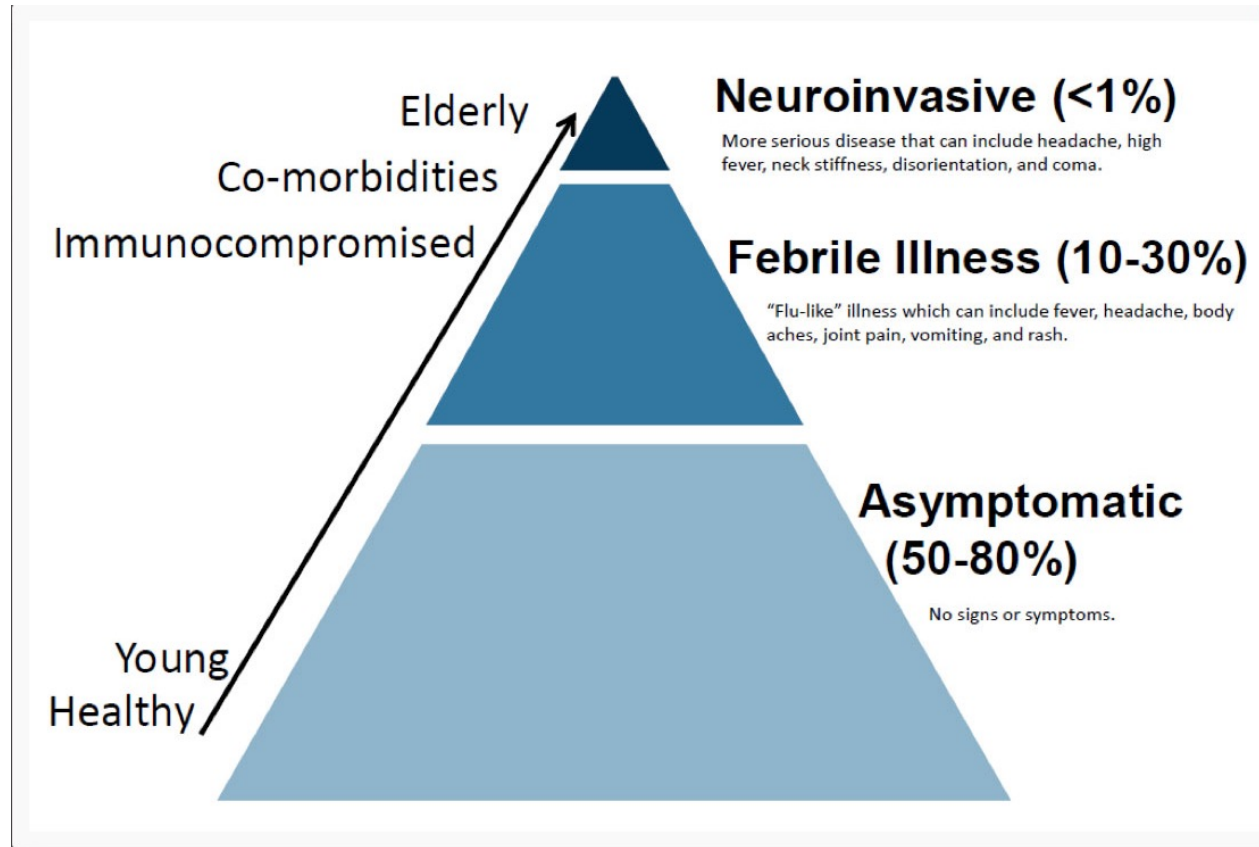
Vector borne infections:

- Culex sp mosquitoes carry **West Nile virus** and **St Louis encephalitis** (peak years for WN -2004, 2021)
- Aedes mosquitoes carry **dengue**.
 - 2022 - 2 suspected cases of locally acquired dengue Maricopa County
 - outbreak Sonora Mexico and Yuma County – 2014
- Kissing bugs (southern AZ) – Chagas disease very rare

Maricopa and Pima county have the highest number of West Nile



West Nile infections in AZ



Diagnosis and treatment

West Nile IgM, IgG CSF, serum.

Serum PCR

Supportive treatment

3 Vaccines for horses but not for humans!

Ticks in Arizona

Tick species - found in new locations

**Ixodes scapularis* (deer tick) – vector of Lyme disease, found only in high elevations Hualapai Mt – Mohave County (NW AZ), up to 2022 no locally acquired cases Lyme

**Dermacentor variabilis* (brown dog tick) : most common tick in AZ, can spread Rocky Mountain spotted fever

- RMSF – outbreak 2011 in the White Mountains, since then - sporadic cases

*Other ticks: Southern AZ mountains - *Rickettsia parkeri*

*Tick borne relapsing fever: White Mountains -*Borrelia hermsii*

Other zoonosis

- Hantavirus (6 cases in AZ in 2023)
- plague
- tularemia
- rabies – found in many wild animals in AZ

Pulmonary infection: Case 1

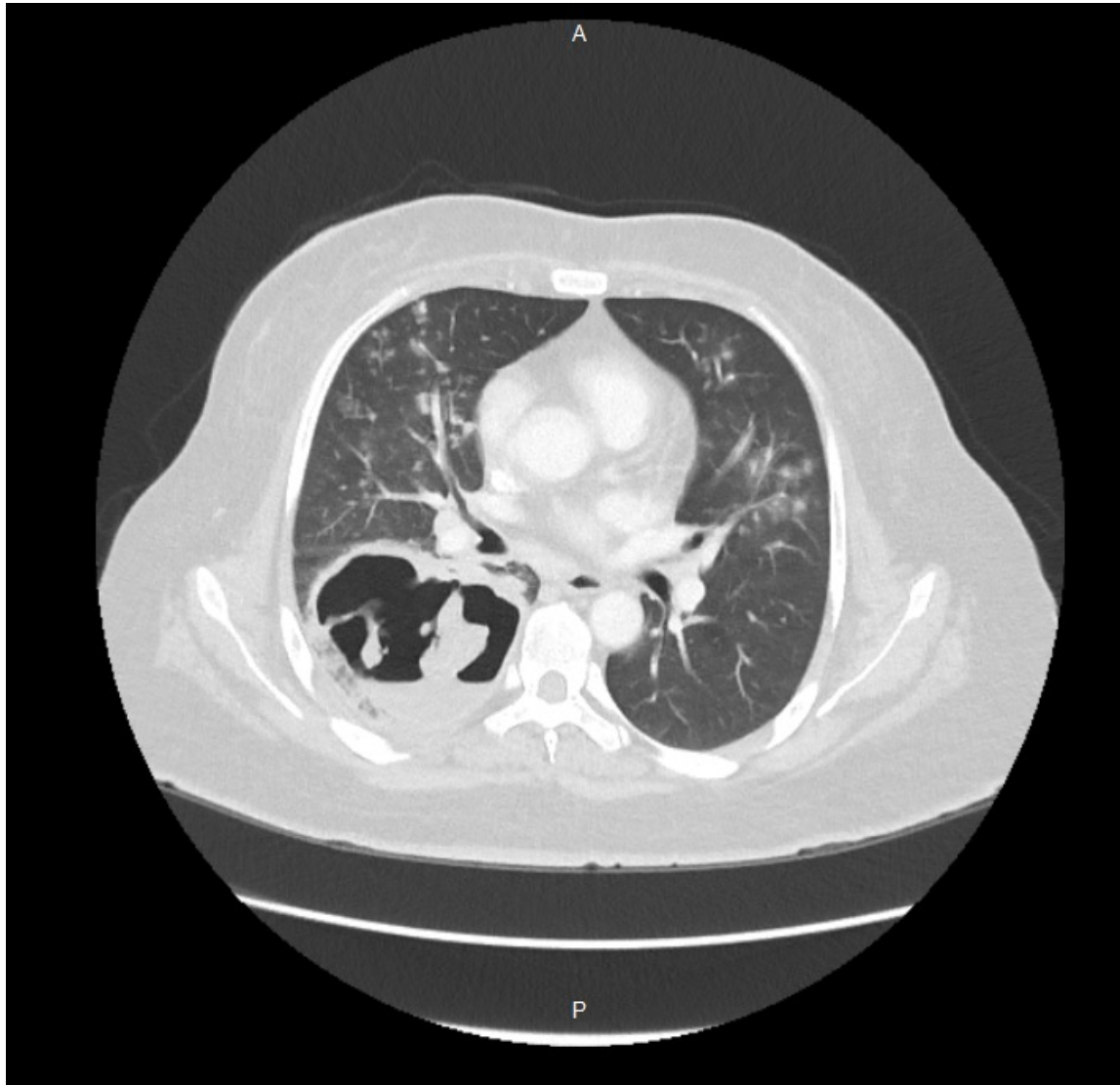
43 yo woman with h/o uncontrolled DM2 admitted for SOB, fever, productive cough x 1 week

Clinically: hypoxic requiring O2, febrile, ill looking

Abnormal labs: leukocytosis WBC 23, hyperglycemia glu>500 and A1c of 10.

CXR read as left lung extensive pneumonia with lung abscess

CT chest with large cavity with fluid level, consolidation around



Differential diagnosis

Bacterial pulmonary abscess

TB

Coccidioidomycosis

Malignancy

Autoimmune:ANCA+ granulomatosis

Work up done

Sputum cultures: +*Acinetobacter baumannii*

AFB smears x 3 negative

Cocci serology +IgG, CF 1:64

Autoimmune work up negative

Diagnosis and treatment

Lung abscess - bacterial superinfection of pulmonary cavity

Cavity secondary to pulmonary coccidioidomycosis – chronic infection

Treated with 3 weeks antibiotics and long term fluconazole 400 mg daily

Length of fluconazole ?

2 years later

Feels well, has dry cough

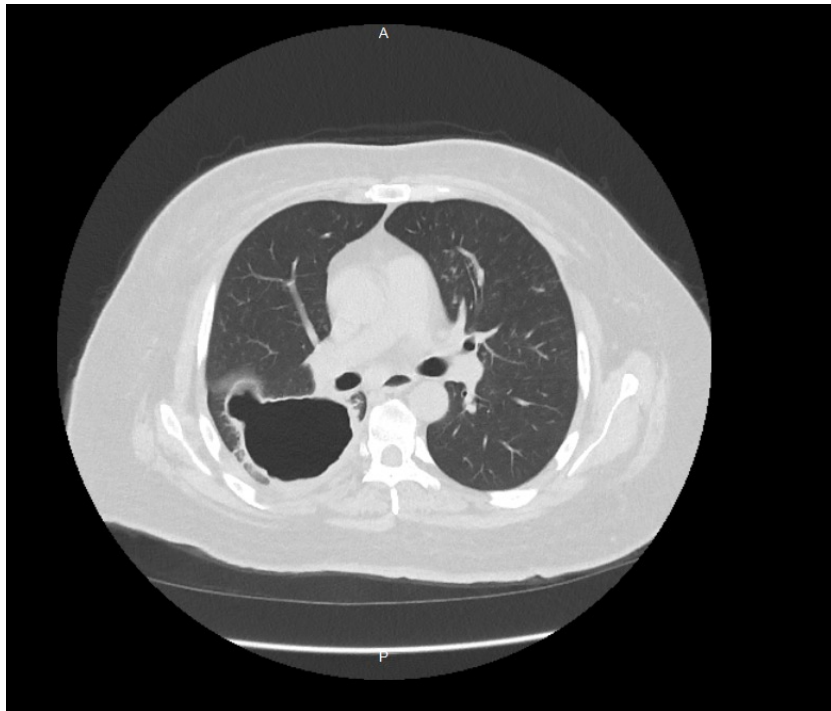
A1c varies 9-12

Large cavity remaining – last CT showed worsening cavity

Remains on fluconazole 400 mg daily

Cocci CF decreased 1:16

High risk for hemoptysis or rupture cavity in the pleural space



REASONS FOR WORSENING CAVITY:

- Noncompliance with fluconazole vs failure of fluconazole
- Uncontrolled DM2 – known cause for severe pulmonary complications
- Side effects like hair loss / dry skin/ dry lips can be troublesome especially for women

Case 2

31 yo Native American man with no PMHx presented to ER with complaint of malaise, chills, generalized weakness, and HA x 3 days.

Lives in Phoenix but frequently travels to White River.

Denies any tick bites.

PE:

- Febrile, tachycardic
- No rash, no jaundice
- ENT exam reveals the image shown
- Lungs clear to auscultation
- No hepatosplenomegaly



Diagnostic studies

Laboratory studies

- WBC 2.1 [4-10]
- Hb normal
- PLT 30 [130-450]

- Sodium 128 [135-145]
- ALT 160 [10-60]
- Cr 1.9 [0.6-1.5]

Case Summary

- 31-year old Native American, travels to reservation, no tick exposure
 - Malaise, chills, weakness, headache
 - Low grade fever
 - No rash or jaundice or scleral icterus
 - Petechiae on hard palate
 - Leukopenia, thrombocytopenia, transaminitis, acute kidney injury
-

Differential diagnosis:

Viral infection:

- HIV
- Parvovirus B19
- EBV

RMSF - *Rickettsia rickettsii*

Case 2: Rocky Mountain Spotted Fever

Clinical

Fevers, myalgias, HA. GI symptoms.
Rash 3-5 days (80%), palms & soles.
Hyponatremia, ↓ PLT, ↑ ALT/AST.
Fulminant course - death at 5 days.

Diagnosis

Clinical (epidemiologic risk)
History of tick bite infrequent.
Serologic testing is retrospective.

Treatment

- Doxycycline (even in children).
- Early treatment critical! Do not delay for laboratory testing dx confirmation

Case 3

A 50-year-old man presents to the emergency department in Phoenix complaining of fever, myalgias, shortness of breath and cough. Was ill for 5-6 days.

He lives on the Reservation in Northern Arizona.

In ER, patient was febrile, tachycardic, but stable BP and oxygen levels.

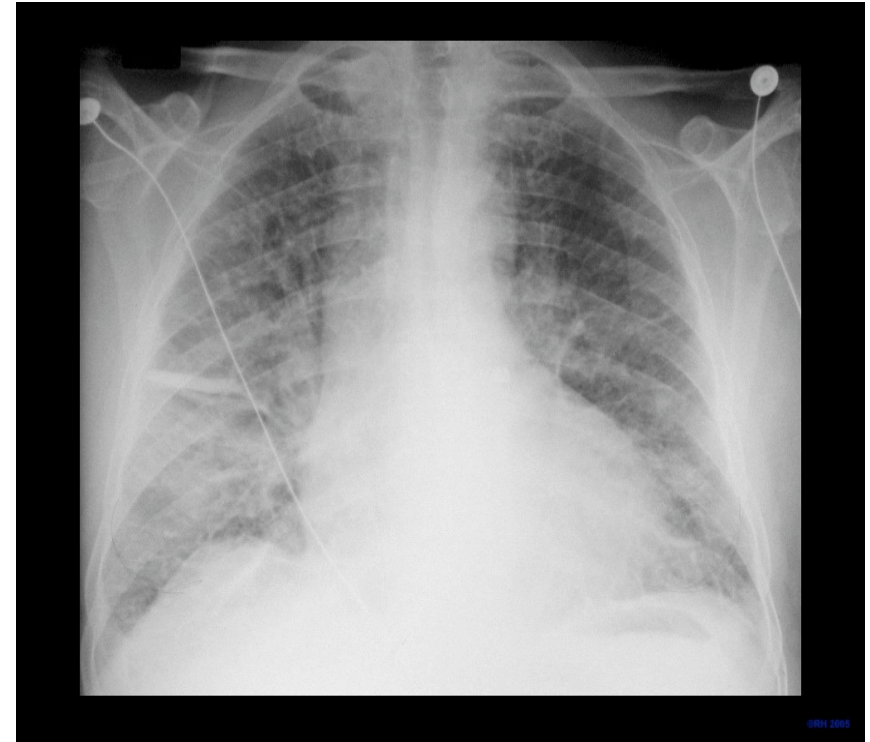
Suddenly his pulse ox is down to 88% on room air, oxygen started

Diagnostic tests

Laboratory Studies

- WBC 12.5 [4-10]
- Hb/HCT 17.5/54.8 [13.5-17]/[40-53]
- PLT 97 [130-450]

- Cr 2.1 [0.6-1.2]



Case summary

50M with fever, myalgias, SOB, cough

Progressive hypoxia in ER

CXR: pulmonary edema

Only later, he reports that 2 weeks ago he cleaned out a shed and there were “mouse droppings”

Laboratory Studies:

elevated Hb/Ht, low PLT, elevated creatinine,

Differential diagnosis

Viral pneumonia: Severe COVID-19 or influenza

Hantavirus pulmonary syndrome

Coccidioidomycosis

CHF

Hantavirus pulmonary syndrome (HPS)

- Begins with febrile prodrome followed by severe increase in vascular permeability and shock
- Can be fatal
- Detected in South West US, particularly in the Four Corners, but outbreaks in other areas – (2012 outbreak in Yosemite NP)
- Reservoir is rodents/ deer mouse
- HPS should be suspected when an otherwise healthy adult develops unexplained pulmonary edema or respiratory distress syndrome without another diagnosis being present
- Treatment supportive,
- For severely ill patients, ECMO preferred over other ventilation methods

Case 4

40 yoM with PMH of DM2 and h/o alcohol abuse came to primary care clinic and then sent to ER.

CC: increasing weakness, weight loss, night sweats, dry cough, multiple joint aches, neck and back pain, memory loss, swollen lymph nodes

On exam:

- looks ill, tachycardic, on RA, low grade temp.
- few small skin lesions – dry ulcerations on the face, arms
- Axillary and inguinal LAD
- neck supple but tenderness C spine,
- tenderness T spine
- multiple joint swelling and decreased ROM: Right shoulder, right elbow, right wrist, Right knee
- Memory loss noted on exam, no other focal deficits

Work up done:

Labs:

- WBC 15.5, Hb 8.8, PLT 787, CRP 133, creatinine 0.95, Na 126, normal LFTs, glucose 119
- Blood cultures negative
- HIV negative,
- HLAB27 positive
- CSF: glucose 25, protein 82, WBC 36, 76% PMN and 14% lymphs, CSF culture negative

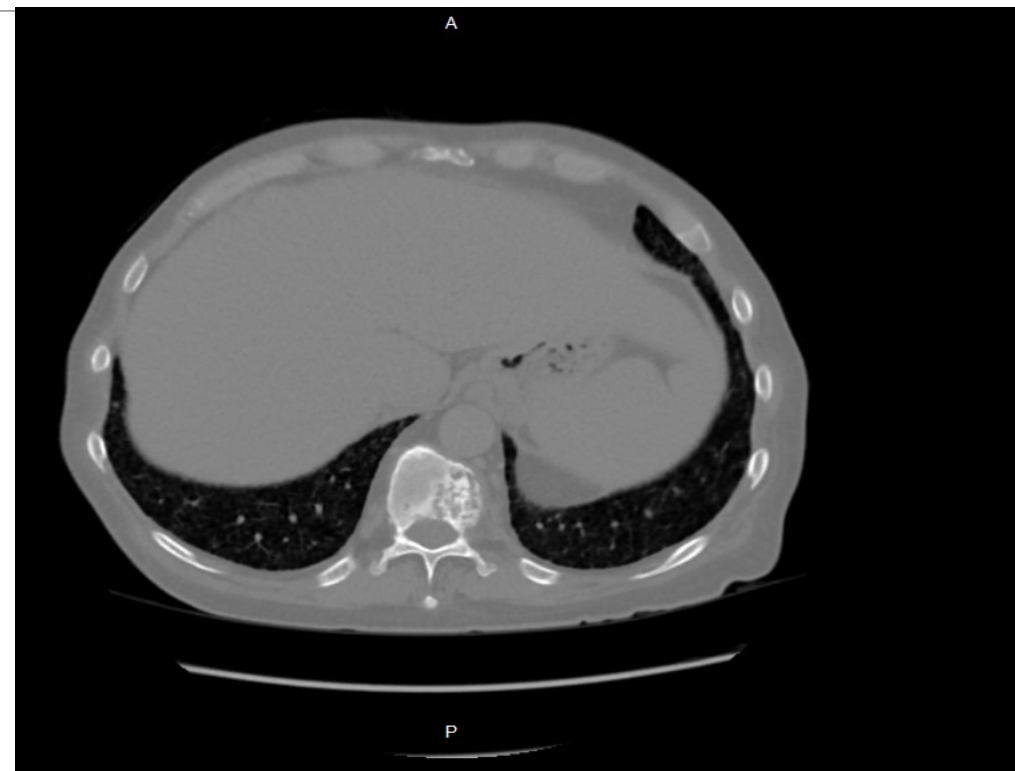
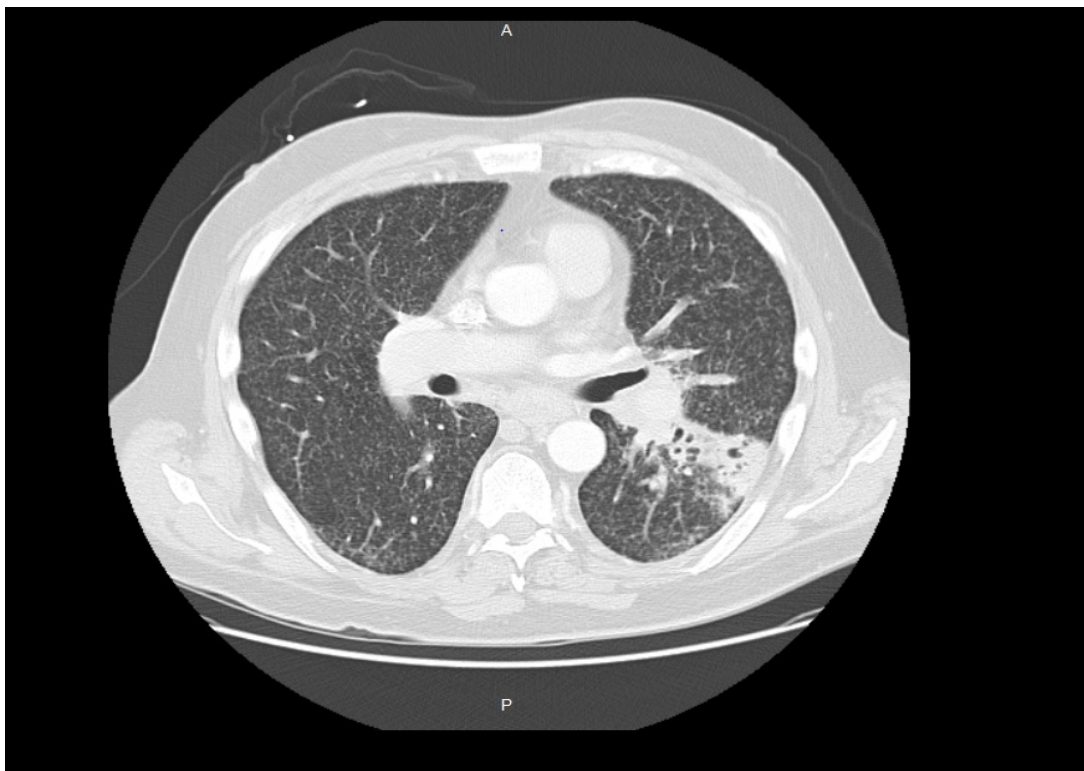
Imaging:

Xrays chest, multiple joints

CT head/ chest/ abdomen/ pelvis

Outside MRI head, neck, right knee

Case 4



Work up

- B/l pulmonary infiltrates reticulonodular, left lung small cavitary infiltrate, left adrenal mass,
- Multiple small lytic lesions cervical spine, thoracic spine (T11 – complex bony lesion), erosion right clavicle and acromion,
- MRI brain unremarkable
- Right knee mass
- per radiology suspicion for malignancy like lymphoma or multiple myeloma

- Biopsies arranged at outside Interventional radiology

More work up

- Biopsies: left adrenal gland, T11 vertebra: +cocci;
 - right knee mass biopsy nondiagnostic
 - Serum Cocci IgG+ and cocci CF >1:128
 - CSF cocci CF 1:32
 - Quantiferon TB negative
 - AFB sputum negative
-

Organs involved: lungs, adrenal, musculoskeletal including spine and multiple joints, CNS, high suspicion for cutaneous cocci, lymph nodes, eyes

Disease course - patient's memory loss improved on treatment, new complaints of left eye vision loss – diagnosed with left eye endophthalmitis (extremely rare in cocci), back pain and multiple joint swelling improved over next 2 months

Treatment

- IV Ambisome x 4 weeks, fluconazole 800 mg daily

Disseminated coccidioidomycosis

Usually starts as pulmonary then can affect any organ if disseminated

Needs lifelong antifungal treatment

This case: Fluconazole 800 mg daily x 1 year, clinically improved, inflammatory markers and cocci CF decreased, side effects with high dose fluconazole, dose decreased 400 mg daily after 1 year

Lapses in therapy, compliance issues, suspicion for alcohol – recurrence symptoms: on off HA, R knee swelling, low back pain

Patient has been managed as outpatient last 2 years

Case 5 - Doing more with less in a high risk patient admitted to PIMC during COVID19 pandemic

85 yo man with h/o DM2, HTN, CKD3, s/p renal transplant - not followed up by transplant team for couple years

1st admission: CC of dysuria

Meds: mycophenolate, low dose prednisone, losartan, insulin

SHx: multiple members of the family passed away from COVID19, one son helping

Initial admission: "urosepsis"

Blood and urine cultures come back +MRSA

ID consultation, but there was no nephrology / transplant available

Physical exam: 2/6 systolic murmur, No CHF findings, no peripheral emboli

Echo: 0.8 cm vegetation - confirming diagnosis of MRSA Aortic valve endocarditis

Briefly started on vancomycin, creatinine increased, switched to high dose daptomycin 8 mg/kg

Blood cultures cleared on daptomycin - discharged with 6 weeks daptomycin given through outpatient home health services and weekly labs: CBC CMP CK inflammatory markers

2nd admission

CC: sent in for admission because complains of worsening fatigue and SOB x 3 days, prior labs by Home health unremarkable

Received already approx. 4 weeks of daptomycin

Differential diagnosis: worsening valvular disease secondary to endocarditis, CHF, failure to antibiotics vs daptomycin side effects

Clinical findings and work up done

Patient was hypoxic, requiring O2, looking fatigued

elevated WBC 17.1 and eosinophilia 11%

increased creatinine from baseline 1.7 to 2.4

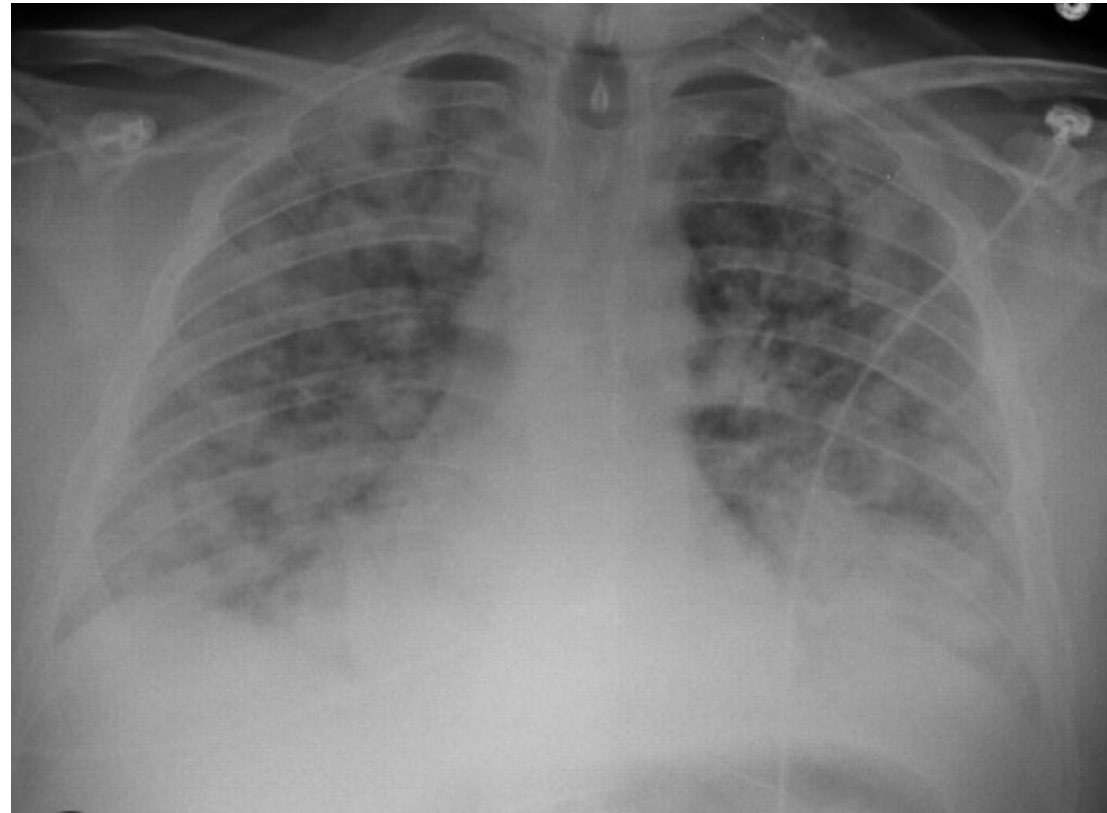
CK only mildly elevated 198

CXR with interstitial infiltrates

Blood cultures negative

Echo: no change in vegetation, moderate aortic regurgitation, preserved EF 65%

CXR: interstitial infiltrates



Case 5 - follow up

Patient diagnosed with daptomycin induced interstitial pneumonitis and acute interstitial nephritis

Improved with high dose steroids

Received few days linezolid while AKI, then switched to vancomycin with close monitoring of creatinine and vancomycin levels – remained hospitalized til he finished vancomycin

Noncompliance with cardiology or nephrology follow up, but patient was doing well with stable labs at 6 months follow up with PCP

For questions, email Voichita.ianas@ihs.gov