Clinical Problem Solving: A Case from the Hospital

Maryland ACP Annual Chapter Meeting, 2019

Daniel J. Brotman, MD, FACP, MHM
Director, Hospitalist Program,
Johns Hopkins Hospital
Professor of Medicine

Disclosures:

- None relevant to this presentation
- Acknowledgement to clinicians involved:
  - Vasanth Sathiyakumar
  - Jessie Tao
  - Allison Tsao
  - Isabella Martin
  - Annie Antar

A 43 year-old woman presents to the Hopkins ED in August with a flu-like syndrome

43 year old woman with flu-like syndrome

- Generally healthy previously despite polysubstance abuse (nasal heroin, crack cocaine, tobacco); no IV drugs or EtOH abuse
- In usual state of health until 2 weeks prior to presentation, then developed:
  - Profound fatigue with hypersomnolence
  - Increasingly bedbound
  - Achy

A 43 year old woman with a flu-like syndrome

- In the week prior to presentation:
  - Myalgias (ascending – started in calves, progressed to thighs); arthralgias in knees and hips, but no swollen joints. Legs felt like "spaghetti". Could barely stand up.
- 3 days prior to presentation: Nausea / Vomiting / Diarrhea (non-bloody)
- Progressive blood-tinged cough
- Fever to 101F, pleuritic chest pain

A 43 year old woman with a flu-like syndrome

- Other medical history: stab wound to right posterior chest, hysterectomy
- Meds: Methadone 75mg daily; Naproxen PRN
- Substance abuse history
  - Had been clean from heroin x 18 years until 6wks prior: Last use of intranasal heroin 2 days prior to presentation
  - Ongoing crack cocaine use (long-standing)
  - Smokes 1/3 PPD (long-term); occasional bronchitis
  - HIV negative 4 mo prior

A 43 year old woman with a flu-like syndrome

- Family History: Noncontributory
- Social History: Cleans houses for work; lives with wife
- No cruising to Alaska (No travel outside of Baltimore)

Review of Systems, etc

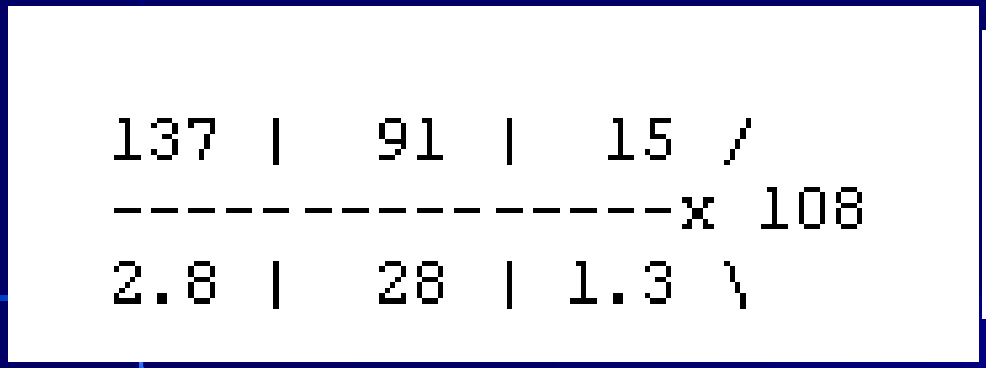
- No rhinorrea, excessive lacrimation, no changes in her vision or eye pain; no changes in her hearing, no sinus pain/congestion, no swelling in her neck, no sore throat/difficulty swallowing. No dysuria, hematuria
- No neck stiffness, no photophobia.
- No recent sick contacts; has not been around any prisons or homeless shelters. Lives with wife; works cleaning houses; no Alaska cruises (never has left Baltimore, ever)

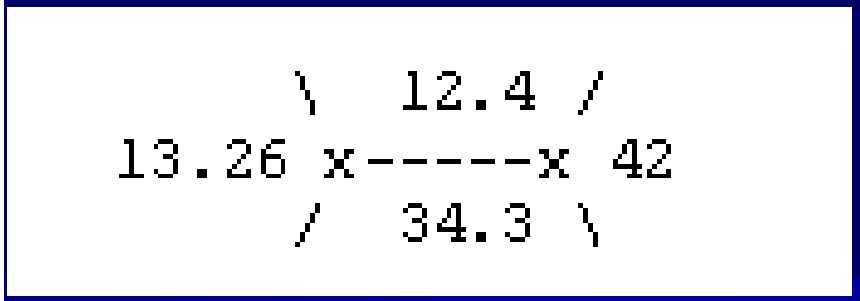
Initial exam:

- Fatigued appearing; oriented x 3 but nodding off
- Temp: 99.7F; HR 90; RR 18; BP 112/66; sats 93% RA.
- HEENT: PERRLA, EOMI, conjunctival injection bilaterally. Icteric sclerae.
- NECK: Supple, no lymphadenopathy.
- Heart: soft flow murmur; no JVD.

Initial exam, cont:

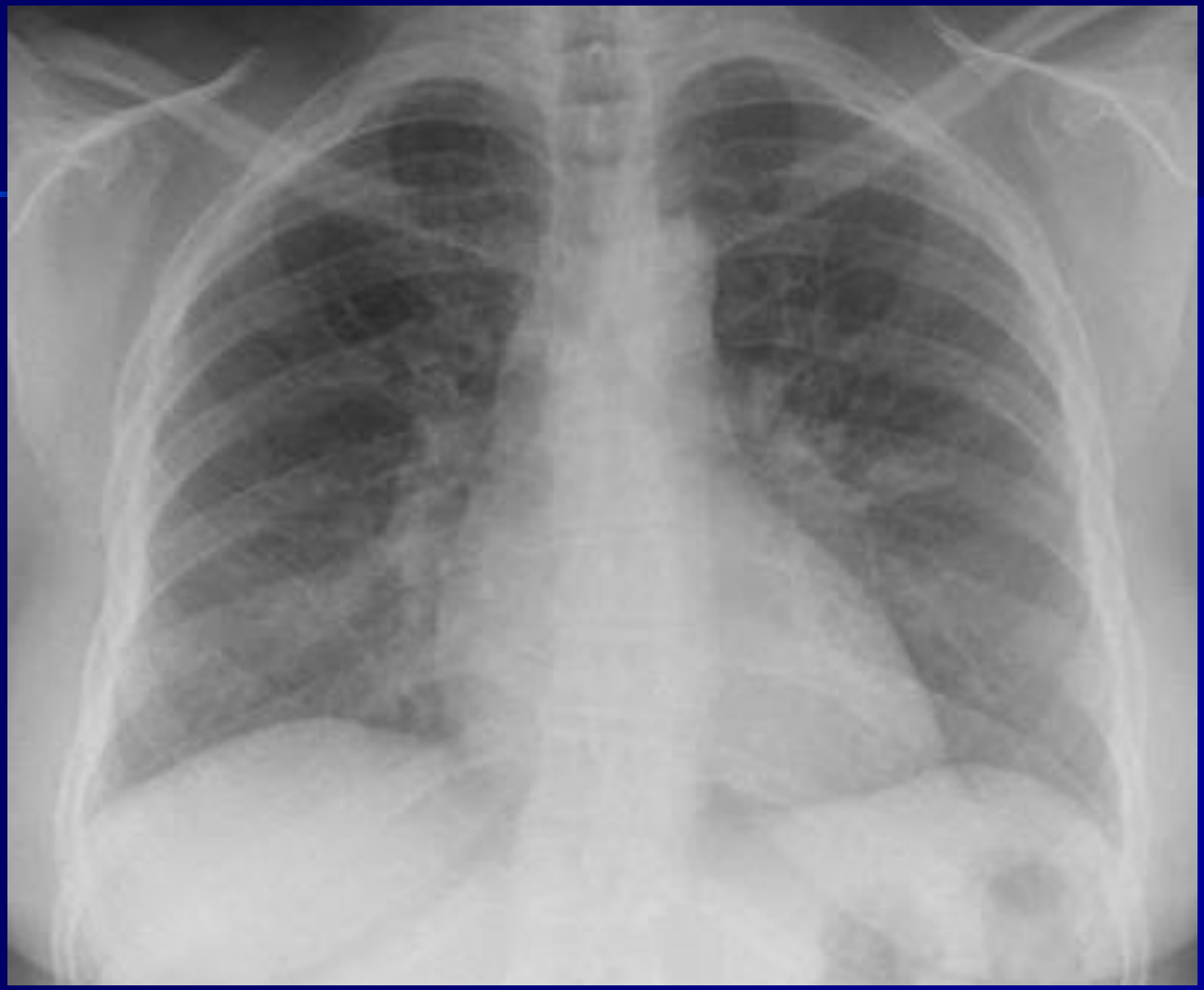
- CHEST: patchy crackles, worse on L; splinting.
- ABD: Diffusely tender; no peritoneal signs.
- EXT: Warm and well perfused without edema. Diffuse calf pain to light palpation, worsened on dorsiflexion bilaterally. No joint swelling.
- NEURO: No focal deficits but severely limited by pain when trying to move upper and lower extremities. Reflexes intact. Sensation intact.
- Skin: no rashes apparent

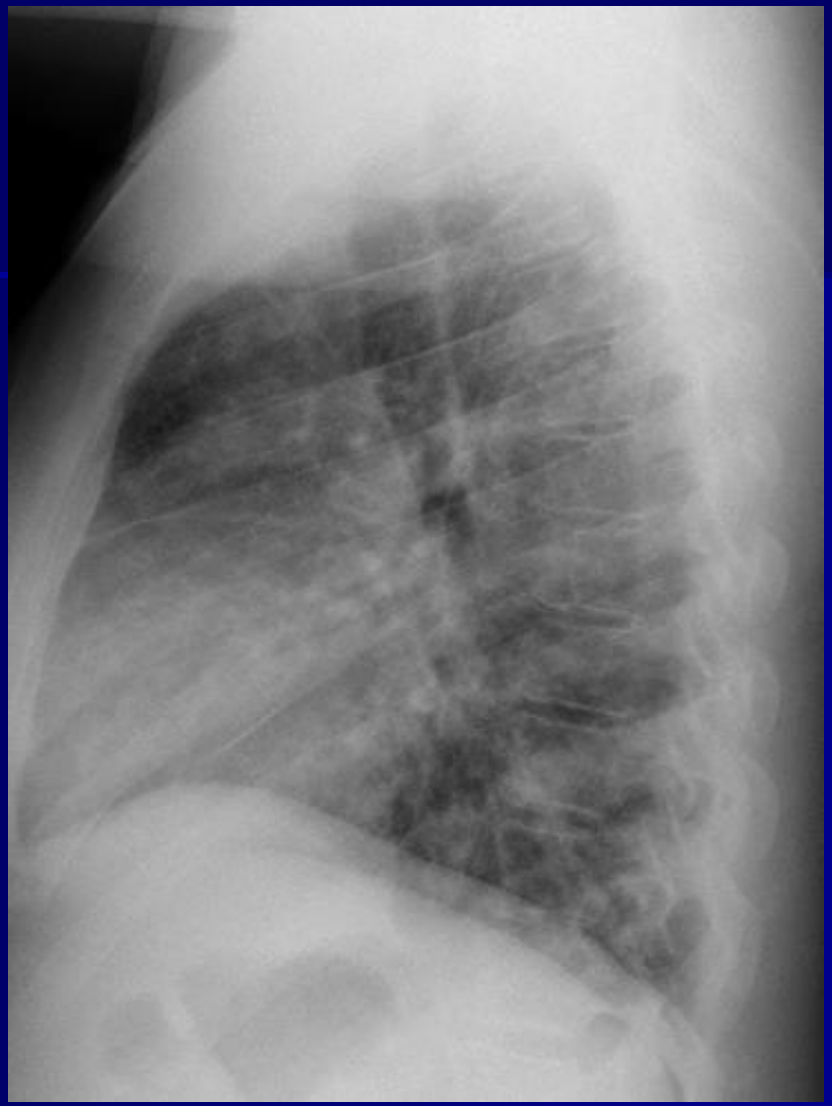




Calcium	↓	8.0
Total Protein		6.5
Albumin	↓	3.1
Total Bilirubin.	↑	4.8
Alkaline Phosphatase.	↑	156
Aspartate Amino Transferase	↑	79
Alanine Amino Transferase	↑	48

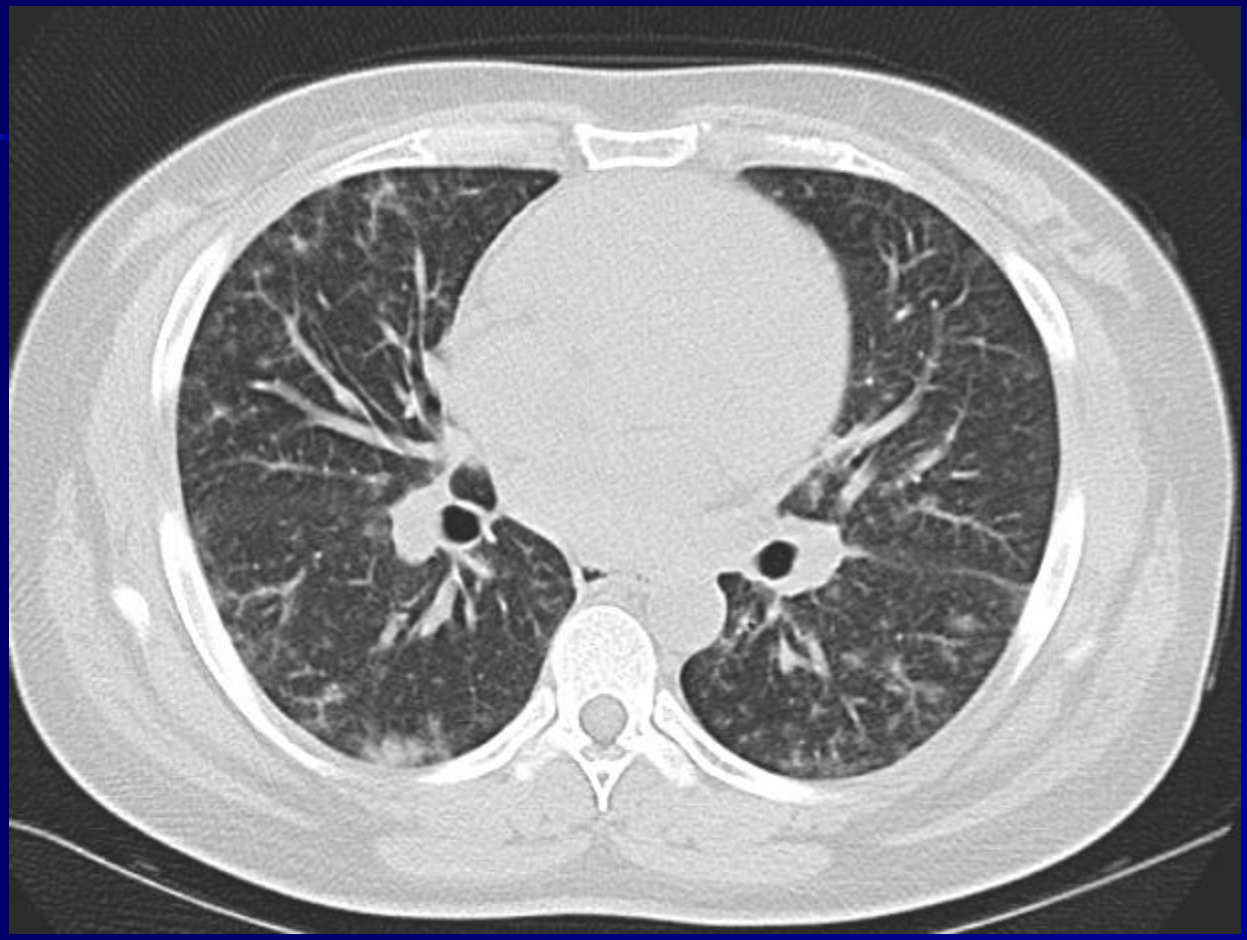
CK: 1136
ESR: 104
CRP: 4.7

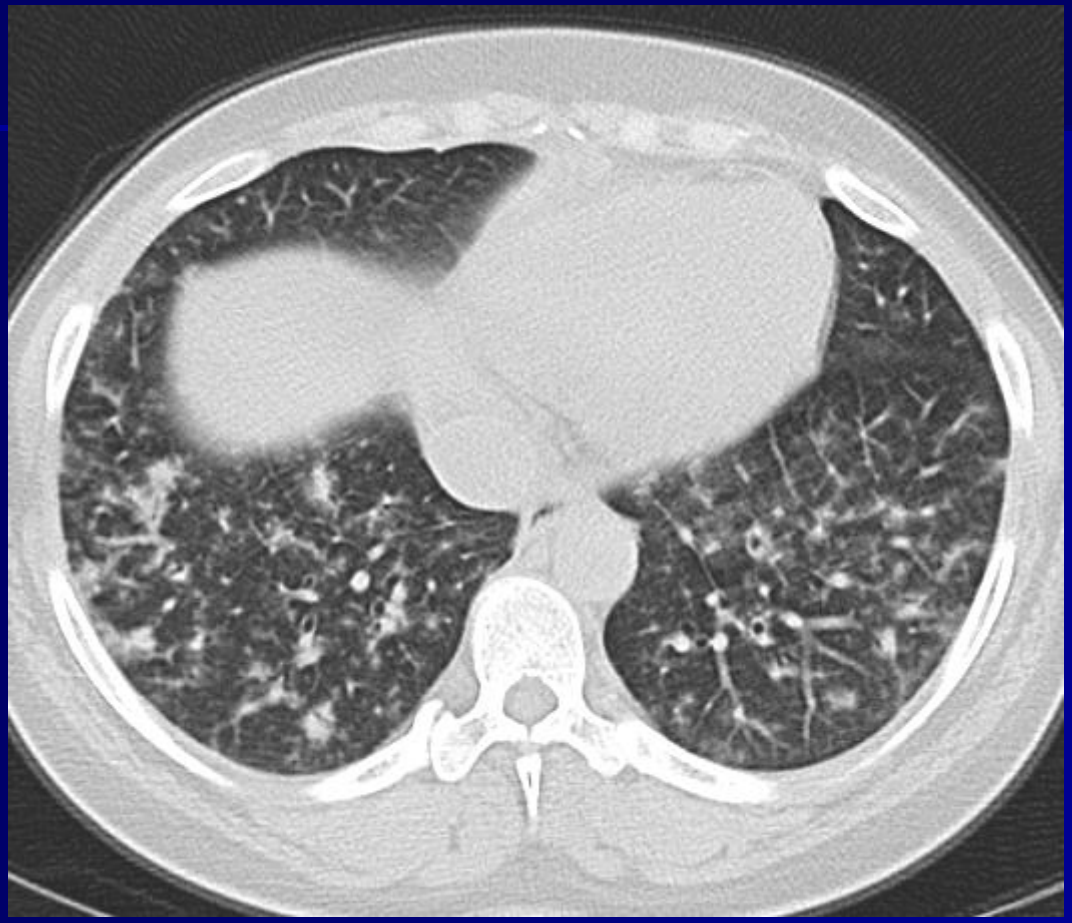




What now?

- Empiric antibiotics? If so, what?
- What additional lab tests?
- What additional imaging tests?
- Invasive diagnostics?





Bronch

- Alveolar macrophages
- No TB, fungus, bacteria, viruses

RUQ and renal US

- Normal

The diagnosis

- Maryland State Lab: Leptospirosis hemagglutinin assay with titer 1:3200 The CDC performed confirmatory MAT (microscopic agglutination testing) which is the gold standard for leptospirosis testing. The patient's serum reacted with highest titers against *Leptospira interrogans*, serogroup Icterohaemorrhagiae, a species found in urban rats.

Leptospirosis

- Spirochetes of the genus *Leptospira*.
- Isolated from mammals on every continent except Antarctica.
- Millions of human cases of leptospirosis globally per year accounting for over 50,000 deaths.
- Transmission through indirect contact with rodent or other infected animal urine –via broken skin or mucous membrane contact.

Prevalence in urban rats in some areas > 50%

- Once infected, animals shed intermittently lifelong.
- In one study, 16% of urban US residents visiting an STD clinic had positive Leptospiral IgG titers
- Cat ownership protective

Spectrum

- Most cases asymptomatic
- Flu-like illness (often self-limited)
- More serious hepatic / renal involvement "Weil's Disease"
  - Cholestatic jaundice
  - Acutue renal failure
  - Thrombocytopenia
  - Hemorrhagic pneumonitis

adolf weil

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Motocross Action Magazine | GODSPEED!

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May 19, 2011 - **Adolf Weil** was a 14-time German National second in the 250 World Championship in 1973 (and third i

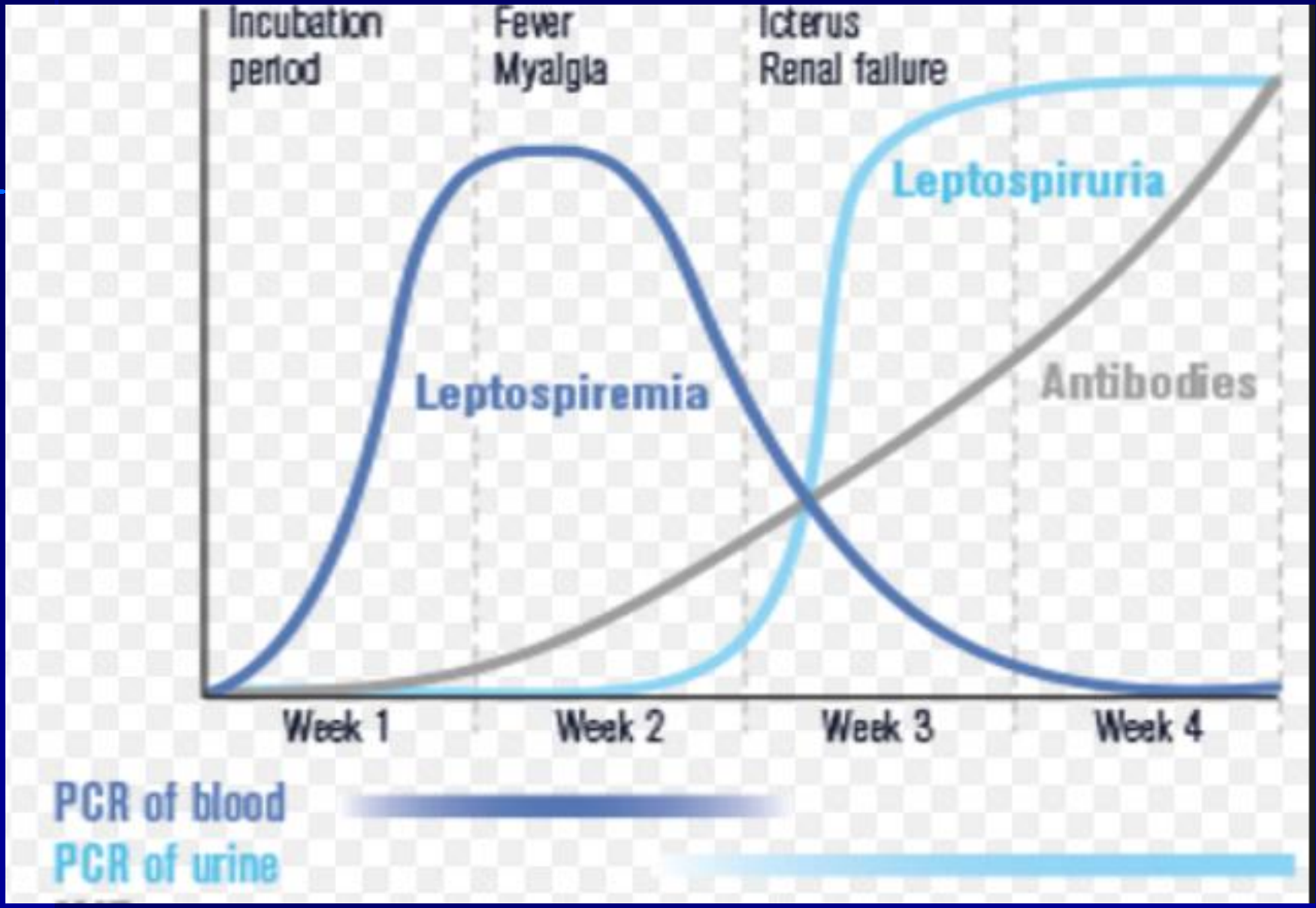
Adolf Weil

Motorcyclist

Adolf Weil was a German professional motocross racer. He competed in the FIM 250cc and 500cc Motocross

Course of illness

- Incubation: usually 1-2 weeks (2-26d)
- Septicemic phase lasts a few days (spirochetes in blood and CSF, sometimes detectable)
  - Myalgias, fever, headache
  - Conjunctival injection ("suffusion")
- Immune phase (antibodies positive)
  - Cholestatic liver injury with nausea/vomiting
  - Renal failure (non-oliguric with hypokalemia)
  - Aseptic meningitis
  - Thrombocytopenia
  - Still shedding organism in urine


Incubation period
Fever
Myalgia
Icterus
Renal failure
Leptospiruria
Leptospiremia
Antibodies
Week 1
Week 2
Week 3
Week 4
PCR of blood
PCR of urine

Conjunctival Suffusion (bloodshot but no purulence)– About half of patients; almost pathognomonic (also in Hantavirus)

Our patient

- Initially had gotten ceftriaxone and azithromycin based on pneumonia
- Switched to ceftriaxone and doxycycline (prior to results coming back)
- Extensive serological evaluation
- Full recovery

Take home…

- Underdiagnosed infection, but usually self limited and many empiric antibiotics (including PCN, ceftriaxone, azithromycin, doxycycline) will treat it
- Severe and sometimes fatal disease

QUESTIONS?