Clinical Problem Solving: A Case from the Hospital

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Disclosures:

- None relevant to this presentation

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  - Vasanth Sathiyakumar
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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
<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>8.0</td>
<td>8.5 ± 1.5</td>
</tr>
<tr>
<td>Total Protein</td>
<td>6.5</td>
<td>6.0 ± 1.0</td>
</tr>
<tr>
<td>Albumin</td>
<td>3.1</td>
<td>3.5 ± 0.5</td>
</tr>
<tr>
<td>Total Bilirubin.</td>
<td>4.8</td>
<td>1.2 ± 0.3</td>
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<tr>
<td>Alkaline Phosphatase.</td>
<td>156</td>
<td>100 ± 20</td>
</tr>
<tr>
<td>Aspartate Amino Transferase</td>
<td>79</td>
<td>20 ± 10</td>
</tr>
<tr>
<td>Alanine Amino Transferase</td>
<td>48</td>
<td>10 ± 3</td>
</tr>
</tbody>
</table>
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
  - Acute renal failure
  - Thrombocytopenia
  - Hemorrhagic pneumonitis
Adolf Weil (motorcyclist) - Wikipedia, the free encyclopedia
Adolf Weil (December 25, 1938 – May 12, 2011) was a German professional motocross racer. He competed in the FIM 250cc and 500cc Motocross Grand Prix...

Adolf Weil (physician) - Wikipedia, the free encyclopedia
Adolf Weil (February 7, 1848, Heidelberg – July 23, 1916, Heidelberg) was a German physician after whom Weil's disease is named. Weil studied...

Motocross Action Magazine | GODSPEED!
motocrossactionmag.com/home-page/godspeed-adolf-weil
May 19, 2011 - Adolf Weil was a 14-time German National motocross champion, second in the 250 World Championship in 1973 (and third in 1974)....
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
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?