Case Presentation – US Citizen in the Caribbean

But when distractions are present, things can go wrong even in paradise …..
Patient Background

- 79 yo male
- Social history
  - Vietnam era Veteran (overseas time unknown)
  - Widower – lives alone
  - Work history: fisherman
  - Alcohol & Tobacco Hx: long standing intermittent
  - TB exposure history: unknown
Patient Background

• Medical history
  – History of Peptic Ulcer Disease (PUD)
  – Benign Prostatic Hypertrophy (BPH)
  – HIV negative
• Medications
  – Pantoprozole (40mg daily)
  – Tamsulosin (.4mg daily)
• PPD status - unknown

Patient Background (cont)

• Presented to local hospital ER on 6/9/14
  – Abdominal pain for two days
  – Nausea / vomiting
  – Diaphoresis and dyspnea
• CT scan of abdomen shows free air
• Admit for emergent laparotomy – presumed perforated viscus
Hospital Course

- Patient is hypotensive in OR (50mm Hg systolic)
- Laparotomy reveals perforated gastric ulcer
  - Ulcer repaired
  - Biopsies taken
  - Patient left intubated and sent to ICU post-op

However... Radiologist calls ICU team about an additional finding on ER CXR.......

ER (pre-op) CXR (6/9/14)

Reading – “Findings compatible with ruptured viscus. Cavitary right upper lobe lesions with patchy infiltrates within the right upper lobe.”
Polling Question #1 and Commentary : Dr. Ashkin

What would you do next?

A) Order a chest CT  
B) Order a pulmonary consult, bronchoscopy and isolation  
C) Order A & B  
D) Order lunch, it’s been a long day!

Hospital Course (6/10/2014)

• Chest CT scan ordered ASAP.....
Chest CT Scan (6/10/14)

Reading – “Suspicious for cavitating bronchogenic carcinoma at the right upper lung zone. Bilateral lung nodules are suspicious for being metastases to lungs.”

Polling Question #2 and Commentary: Dr. Ashkin

This patient’s TB diagnosis was initially confounded by a concern for possible malignant metastases in the lungs. The different radiographic findings of TB and lung cancer are:

A) Indistinguishable in many cases
B) Difficult to separate on plain CXR, but discernable by CT
C) Often apparent only through examination of serial studies
Radiographic Diagnostic Clues

- **Focal or multifocal cystic lesions** (walls typically ≤4 mm)
  - Blebs, bullae, pneumatoceles, congenital lesions, trauma
  - Coccidioidomycosis, *Pneumocystis* (PJP), hydatid disease.

- **Focal or multifocal cavitary lesions** (walls typically >4 mm)
  - Bronchogenic carcinomas and lymphomas
  - Infections or abscesses
  - Wegener granulomatosis and rheumatoid nodules

- **Diffuse involvement with cystic or cavitary lesions**
  - Pulmonary lymphangioleiomyomatosis
  - Honeycomb lung due to advanced fibrosis, diffuse bronchiectasis

Radiographic Diagnostic Clues (2)

- Solid vs. cavitary/cystic lesion(s)
  - Wall thickness (TB can have thick or thin walls)
  - Surrounding infiltrate or mass
  - Inner wall contour, nature of contents, and location
- Lesions evolving vs. unchanged over time
- Correlate radiographic findings with clinical context, host immunity, tempo of disease
- Correlate with epi, exposures, medical risk factors

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Radiographic Diagnostic Clues (3)

- CT more sensitive for early or subtle processes, small cavities
  - CXR may appear normal in TB, esp. with HIV
- CT resolution usually not required for TB diagnosis or management
- Radiography alone can’t distinguish active pulmonary TB from inactive disease

◊ Microbiological and pathological studies must distinguish TB from other etiologies

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BACK TO OUR PATIENT.....

Hospital Course (6/10/2014)

- Pulmonology consult obtained
- Bronchoscopy done via ETT immediately post-op
- Respiratory isolation initiated
- TB medications ordered, but not initiated until 6/15/14 due to GI surgery and NPO status
Polling Question #3 and Commentary: Dr. Ashkin

The inability to take oral TB medications can occur for a variety of reasons in hospitalized patients. In this case, the best option would be:

A) Maintain strict isolation precautions and hold off on treatment until oral medications can be tolerated
B) Initiate traditional INH/Rif/EMB/PZA by a parenteral route
C) Initiate alternative parenteral treatment using quinolones, aminoglycosides, and/or linezolid

Hospital Course (6/17/2014)

- BAL pathology results received from local lab
  - Cytopathology negative for malignancy
  - AFB+ for abundant acid-fast bacilli
- Sent to national reference lab in the U.S. for PCR confirmation of MTB
Hospital Course (6/19/2014)

- Gastric biopsy pathology results received:
  - “Moderate to poorly differentiated adenocarcinoma”
- Referral plan made to Puerto Rico regional VA Hospital for oncology care

Hospital Course (6/26/14)

- National reference lab in the U.S. reports that 6/10 BAL sample is **PCR negative** for MTB
Polling Question #4 and Commentary: Dr. Ashkin

The patient has improved and is anxious to be discharged to address his cancer care. Given the negative NAAT, how would you address his care?

A) D/C home without TB medications, AFB+ smears likely from a contaminant
B) D/C home with therapy for non-tuberculous mycobacteria
C) D/C home on oral TB drugs until culture results are reported
D) Obtain additional TB testing before making any D/C or medication decisions
Hospital Course (6/27/14)

• TB medications discontinued
• Isolation discontinued
• Discharged to home

However......

Hospital Course (6/27/14)

• Reappears in ER within hours of discharge
  – Dizzy
  – Rapid atrial fibrillation
  – Hypoxic
• New CXR and CT scan ordered
• Readmitted, but no TB meds or isolation ordered
Chest X-Ray (6/27/14)

Reading – “Right upper lobe nodular density.”

Chest CT Scan (6/27/14)

Reading – “Bilateral pulmonary emboli. Cavitated RUL mass suspicious for being a metastatic carcinoma or TB cavity.”
Hospital Course (6/27 – 7/1)

• Five days of inpatient care for:
  – Pulmonary emboli (Heparin drip)
  – NSTEMI (RCA and circumflex occluded on cardiac catheterization)
  – Pneumonitis (Levofloxacin)
  – Atrial fibrillation

• Until, a phone call was received on July 1st.....
The discrepancy between the reference laboratory's initial "PCR Negative" result on the smear and the later "DNA Probe Positive" result on the culture is:

A) A relatively common situation that TB clinicians should anticipate
B) A rare event that may occur in even the best labs
C) Completely unexplainable

Hospital Course (7/1 - discharge)

- Four drug TB therapy restarted
- Inpatient care for:
  - Pulmonary emboli (Heparin drip)
  - NSTEMI (RCA and circumflex occluded on cardiac catheterization)
  - Pneumonitis (Levofloxacin)
  - Atrial fibrillation
  - TB
Chest X-Ray (7/30/14)

Hospital Course (7/1 – 8/18)

- Four drug TB therapy continued
- AFB smears all negative at regional state lab (7/7, 7/9, 7/11, 7/14, 7/15)
- Cancer care referral to VA system
- Discharged to home on 8/18 with TB medications and local TB program follow-up
The patient first presented with an acute abdomen. Surgical findings noted “large amounts of fibrinous exudate throughout the peritoneal cavity.” Although a gastric biopsy confirmed adenocarcinoma, no abdominal specimens were ever submitted for AFB smears or cultures. The possibility of an unappreciated extra pulmonary TB site in the abdomen:

A) Is irrelevant to his eventual TB treatment  
B) Warrants an extended empirical TB treatment regimen  
C) Should still be explored through additional testing even after pulmonary treatment was initiated

Regarding the contact investigation for this patient, what would you recommend?

A) With no cough, contact investigation of community contacts not required  
B) Include only ER and OR staff from first hospitalization--ICU rooms have adequate respiratory controls  
C) Include contacts from community and first hospitalization--patient given levofloxacin on second admission  
D) Contact investigation should jointly involve community public health staff and hospital infection control staff
Hospital Contact Investigation

- Initial exposures (June 9-10)
  - ER and Radiology staff
  - OR and recovery staff
  - Other staff (ICU, radiology, etc.)
  - Other patients
- Later exposures (June 27 – July 1)
  - ER staff
  - Inpatient / CCU staff
  - Other patients
- Community and Home Investigation
  - Pending

Final Points to Consider

- Dr. Ashkin
- Dr. Haley
QUESTIONS?