Role of Surgery in the Management of TB

Lee Reichman, MD & Paul Bolanowski, MD
• Patient is a 19 year old Bolivian female who immigrated to the US in February 2002

• On 3/20/02, she presenting to a hospital with complaints of 3 weeks of productive cough, fever, night sweats and loss of appetite
Patient Background

- TST 10 mm
- CXR: Large cavitary air space abnormality of the right upper lobe and diffuse bilateral micronodular infiltrates
On 3/21/02 she was started on RIPE

In April 2002 her isolate was found to be resistant to RIF, INH, EMB, and SM

A regimen consisting of RIF, INH, EMB was continued pending second line DST results

In May 2002 DST results showed resistance to RIF, INH, EMB, SM and sensitive to PZA, KN, CM, ETA
Treatment

- Treatment was started on 5-15-02 with the following:
  - CM 750 mg IM 5x/wk
  - ETA 500 mg PO daily
  - CS 750 mg PO daily
  - LFX 500 mg PO daily
  - PZA 1.5 mg PO daily
  - CFZ 200 mg PO daily
  - Vit B^6^ 300 mg PO daily
Clinical Course

• In September 2002, EMB was started as a replacement for CFZ when patient developed a rash

• By November 2002 she was found to be pregnant

• Discussion with patient regarding her current treatment for MDRTB and the possibility of it contributing to fetal abnormalities

• Termination of pregnancy was performed and hastened by spontaneous vaginal bleeding
• CM was discontinued after 6 months

• EMB, PZA, LFX, CS, ETA

• In March 2003 ETA was discontinued due to nausea and abdominal discomfort

• In April 2003 CS is discontinued because patient reports increased forgetfulness

• In June 2003 the patient is once again pregnant
On June 25, 2003 patient wants to keep pregnancy; all medications were stopped.

On July 15, 2003, treatment was re-started with PZA and EMB.

In September 2003, patient had spontaneous abortion; LFX is re-started.

In January 2004, 18 months after culture conversion, her treatment is discontinued because she left for Bolivia.
### Timeline/Drug-O-Gram

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- **RIF**
- **INH**
- **EMB**
- **PZA**
- **CM**
- **ETA**
- **CS**
- **LFX**
- **CFZ**

- Facial Rash
- Pt pregnant
• In August 2004 she returns to the clinic and reports she had normal delivery in July

• She remains asymptomatic
Clinical Course Cont’d

• On 10-29-04 patient reported an episode of hemoptysis (1/2 cup)

• CXR done at that time was unchanged but concern is raised regarding possible relapse

• AFB smear x3 was negative

• Thoracic surgery consultation obtained after 2 more episodes of hemoptysis on 11-23-04
Surgery

• Pulmonary arteriogram and embolization of 2 bronchial arteries supplying the right upper lobe was performed

• Empiric therapy with EMB, PZA, LFX started

• Right upper lobectomy was performed

• Surgical pathology reveals an aspergilloma

• Empiric MDR therapy discontinued

• Remains stable as of last follow up on 11-16-06
Surgical Approaches for Treating Massive Hymoptysis
Massive or Concurrent Hemoptysis

• Etiology
  • Bronchial collateral circulation
    – Rasmussin aneurysm
    – Aspergilloma
    – Bronchiecstasis

• Treatment
  • Embolization
  • Surgery
Massive Hemoptysis

• Definition
  – Based on amount and duration
    • Massive - 600 ml within 16 hrs
    • 200ml, >300ml, >500ml, >600ml / 24-48hrs
  – Based on threat to life
    • Acute airway obstruction
    • Shock
    • Persistent hemoptysis despite good medical management
Massive Hemoptysis

- Position patient
- Chest x-ray
- Bronchoscopy
  - Localize site
  - Intubation
- Bronchial arteriography
- Surgery
  - Resection
  - Videoendoscopic thoracoscopy
Bronchial Arteriography

• **Advantages**
  – Localize site
  – Control bleeding by embolization
  – Prevent contamination of normal lung
  – Buy time to improve pulmonary function
  – Less blood loss during surgery

• **Disadvantages**
  – Spinal cord paralysis
  – Temporary
    • Acute control - 75% effective
    • Re-bleed rate - 43%
Embolization
Surgical management of massive hemoptysis
  • 600ml in < 16hrs 18% mortality

Conservative management of massive hemoptysis
  • 600ml or more in 16hrs – 75% mortality
  • 600ml or more in 48hrs – 54% mortality

Embolization + surgery
  • Acute control in 75%
  • Mortality 7-9%
Role of Surgery in MDR-TB

• Adjunctive strategy to medical management of MDRTB

• Collaborative management: joint decision-making and planning

• Best practices in surgery show
  • Early surgical intervention is preferable (re: timing)
  • Operative risks are low & acceptable
  • Adequate pre-operative surgical preparation to limit complication is key
  • Lesser surgical resections are acceptable to preserve pulmonary function

• Long term post-op follow up treatment with DOT & appropriate 2nd-line drugs should be diligently applied