M. bovis: A Clinical Perspective

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“Human Tuberculosis due to *Mycobacterium bovis* in the United States, 1995-2005”

Clinical Infectious Disease

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Hlavsa MC, Moonan PK, Cowan LS, Navin TR, Kammerer JS, Morlock GP, Crawford JT and Lobue PA.
2008 *M. bovis* article…

- 1.4% (165 cases) of human TB cases in USA 1995-2005
- National TB Genotyping Service permits systematic identification
Human Tuberculosis Caused by *Mycobacterium bovis* — New York City, 2001–2004

In March 2004, a U.S.-born boy aged 15 months in New York City (NYC) died of peritoneal tuberculosis (TB) caused by *Mycobacterium bovis* infection. *M. bovis*, a bacterial species of the *M. tuberculosis* complex, is a pathogen that primarily infects cattle. However, humans also can become infected, most
FIGURE. Number of reported *Mycobacterium bovis* cases, by month and largest genotype cluster† — New York City, 2001–2004§
34 Mexican male
Bilateral neck swelling
8 weeks fever, weight loss
Occasional dry cough
Meds: none

Physical exam
Temp 101
Bilateral indurated cervical nodes
Lungs clear
WBC 7.2
Hgb 14
Platelets 161,000
January 2005

- PPD 15 mm
- CXR clear
- Cervical node biopsy “caseating granulomas”
- AFB in tissue sections
- HIV antibody ++
- CD4 186
- HIV RNA 440,000
Medications January 2005

- TB Meds
  - INH
  - Rifampin
  - Pyrazinamide
  - Ethambutol
  - Vitamin B6

- HIV Meds
  - Combivir
  - Sustiva
  - TMP/SMX
February 2005

- Massive enlargement of neck nodes
- Fluctuant 10 cm L neck abscess
- Spontaneous drainage R neck abscess
- CXR remains clear
- Extensive rash on forearms
Immune Reconstitution Syndrome (IRIS)

Appearance of a new infection, or worsening of an infection, following initiation of anti-retroviral therapy. Usually in initial 3 months of HIV therapy.
April 2005

- MDCH reports organism R to pyrazinamide (PZA)
- *Mycobacterium bovis*

- PZA treatment shortens duration from 9 months to 6 months
Clinical Differences between *M. bovis* and *M. tuberculosis*
Drug resistance. Does it matter?

The chart shows the percentage of drug resistance for PZA, INH, RIF, and death among M. bovis and M. Tb. PZA has the highest percentage of resistance, while RIF and Death have the lowest. INH has a moderate level of resistance.
**M. Bovis Transmission**

- Unpasteurized dairy products
- Readily available in Baja and San Diego County
- Mexican dairy herds have *M. bovis*
- Potential for airborne transmission of pulmonary *M. bovis*
Pasteurization of Dairy Products

- 1938: 25% of infection outbreaks in USA were Milk-borne
- *Brucella spp.*
- *M. bovis*
- *Salmonella spp*
- Q fever
- Streptococci; Staphylococci
- Diphtheria
Mycobacterium bovis in the 3rd World

- What is role of *M. bovis*?
- What is extent of pasteurization?
- What dairy herd controls for *M. bovis* exist?
- HIV is unmasking *M. bovis*
Nobel Peace Prize Plaza, Cape Town

Lutuli 1960  Tutu 1984  DeKlerk & Mandela 1993
GLOBAL MARCH FOR TB
JOIN THE GLOBAL MARCH ON TB & HIV
CALLING FOR
EDUCATION, PREVENTION, TREATMENT AND CURE
8 NOV AT 4 PM
ST. GEORGES CATHEDRAL
Mexico: 30% of milk is not pasteurized

Bovine TB control does not compensate ranchers

Most labs do not identify *M. bovis*

Survey of tertiary hospital (HIV care) found 19% of active TB cases due to *M. bovis*
References: