THE UNIVERSITY OF TEXAS HEALTH CENTER AT TYLER
HEARTLAND NATIONAL TB CENTER
A PARTNERSHIP OF UT HEALTH CENTER AND TCID
• Expertise • Excellence • Innovation

TBeat

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In This Issue...

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www.HeartlandNTBC.org

Medical Consultation at Heartland

Tuberculosis, whether it is active disease or latent infection, requires a delicate balancing act of diagnosis, treatment and case management. Even the most experienced TB professional will occasionally encounter a situation that is so unique or unusual that they are unsure of the direction to take. Heartland National TB Center has as one of its goals to "... share expertise in the treatment and prevention of tuberculosis by ... delivering expert medical consultation and providing technical assistance ..." This medical and nursing consultation is available at NO cost to physicians, nurses and other healthcare professionals in the thirteen states that comprise the Heartland Region.

The most common reasons for consultation (in no particular order) are:

- Diagnostic evaluation of TB suspects
- Treatment recommendations for LTBI and TB disease
- Resistance to one or more first-line TB drugs
- Failure to convert AFB smears/cultures after 2-3 months of treatment
- Treatment failure
- Relapse of TB disease
- Adverse drug effects such as GI upset, rash, hepatitis
- Pediatric TB
- TB in the setting of HIV infection
- Coexisting conditions such as renal insufficiency, hepatic disease, pregnancy
- Non-adherence to treatment
- Evaluation and treatment of contacts to an infectious TB case
- Nurse case management

There are several ways to access the consultation services at Heartland; the most common is by telephone either directly or through your home state's TB Control Program. (If you are not aware of your state's TB program, please see the contact information on Page 4.)

Continued on page 2

The VISION of the Heartland is to provide *excellence*, *expertise*, and *innovation* in training, medical consultation, and product development to reduce the impact of tuberculosis in our region.

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Continued from page 1

Heartland provides a consultation line that is staffed Monday-Friday, 8:00 AM to 5:00 PM (CST). After business hours, voice mail is available and will be returned in one business day.

Toll Free: 1-800-TEX–LUNG (1-800-839-5864)

You may also contact Heartland via email:

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Each request for consultation will follow a basic protocol. Inquiries seeking consultation or technical assistance will first be routed through the Nurse Consultant to evaluate the appropriateness of the request (and offer referrals to other resources if indicated). The Nurse Consultant will then determine what case information is required – this will vary based on the complexity of each case but may include:

- Requester contact information – Name, discipline, organization, phone number, fax number, email address, mailing address, name of treating physician & his/her contact information
- Reason for consult request
- History of present illness
- Prior LTBI / TB history
- Chest X-ray / CT / other diagnostic imaging
- AFB smear & culture results, antibiotic sensitivities, pathology results
- Treatment history; adherence, intolerance, adverse drug reactions
- Summary of contact investigation if pertinent to consult

Heartland will respond to voice mail requests within one business day and a written consultation report/summary will be sent within 3-5 business days following receipt of required information. Response to your inquiry is determined by the nature of the request and your stated preference. Recommendations may take the form of a written consult, an email reply or telephone consultation. A copy of the written consult or email will be shared with

Continued on page 3

HNTC Staff Continued

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Continued from page 2

the staff of your state's TB Control Program so that they are aware of the recommendations made and can better participate in the care of the patient. In addition, Heartland maintains a database of all consultation requests for CDC reporting purposes (January, July); the database also serves as a needs assessment tool for future educational activities. Semi-annual summary reports of consultation activity are also made available to the TB Control Program in each state.

Introducing
Heartland Mini-Fellowships

Heartland National TB Center (HNTC) is housed at the Texas Center for Infectious Disease (TCID) in San Antonio. This facility has a long history as a tuberculosis hospital – at one time it was one of the largest in the nation with 908 beds devoted to inpatient TB medical care. Today the facility has 72 beds and is organized to provide patient care, scientific investigation and therapeutic and educational services supporting public health needs. Heartland's location and relationship with TCID allows it to offer unique learning experiences to our regional medical professionals. One such opportunity is a mini-fellowship targeted to physicians and advanced practice clinicians in the HNTC region and tailored to accommodate specific learning needs and time constraints of the individual candidates. This new educational experience is modeled on Dr. Robert Longfield's infectious disease and pulmonary clinical fellowships at TCID where the fellow participates in the consultative care of tuberculosis patients in all stages of disease. Additional opportunities exist for formal instruction and practical experience in:

- Hospital epidemiology and infection control
- Clinical microbiology
- Evaluation and management of TB infection in patients with major impairment of host defenses including patients with malignancies, transplantations, HIV/AIDS co-infections or immunocompromised by other diseases or medical therapies
- Evaluation and management of TB patients with disease manifestations such as pleuro-pulmonary, pericardial, central nervous system, gastrointestinal, intro-abdominal, lymphatic, skin, soft tissue, bone and joint infections
- Experience interacting with local and state public health authorities

Dr. Longfield is the designated coordinator for the mini-fellowships, but additional Heartland faculty will include Dr. Adriana Vasquez, Dr. Robert Blumer, Dr. Barbara Seaworth and Dr. David Griffith. Fellows need not be licensed by the State of Texas or receive a State Permit to

Continued on page 5

State TB Control Information: Heartland Region

Arizona Arizona Department of Health Services; Office of Infectious Disease Services, TB Control
602-364-4750 www.azdhs.gov/phs/oids/tuberculosis/index.htm
Dr. Karen Lewis, Medical Director of Epidemiology & Disease Control

Illinois Illinois Department of Public Health; Office of Infectious Disease Service, TB Control
217-785-5371 www.idph.state.il.us/
Mike Arbise, TB Controller/Program Manager

Iowa Iowa Department of Public Health; TB Control Program
515-281-7504 www.idph.state.ia.us
Allan Lynch, TB Controller/Program Manager

Kansas Kansas Department of Health & Environment; TB Control Program
785-296-5589, 877-427-7317 (emergency) www.kdhe.state.ks.us/tb/index.html
Phil Griffin, TB Controller/Program Director

Minnesota Minnesota Department of Health; Immunization, TB & International Health Section
TB Prevention & Control Program
651-201-5414 www.health.state.mn.us/tb
Deb Sodt, TB Controller/Program Manager

Missouri Missouri Department of Health & Senior Services; Disease Investigation Unit
573-751-6122 www.dhss.mo.gov/
Harvey Marx, TB Controller/Disease Investigation Chief

Nebraska Department of Health & Human Services; Communicable Disease, TB Control Program
402-471-2306 www.hhs.state.ne.us
Pat Infield, TB Controller/Program Manager

New Mexico Department of Health
505-827-2471 www.health.state.nm.us
Dr. Gary Simpson, TB Controller/Medical Director for Infectious Diseases

North Dakota Department of Health, Division of Disease Control
701-328-2377 www.health.state.nd.us/disease/tb
Melissa Casteel, TB Controller/HIV AIDS/ TB Program Manger

Oklahoma State Department of Health; TB Division
405-271-4060 www.health.state.ok.us/program/tb/index.html
Dr. Jon Tillinghast, TB Controller/TB Division Director

South Dakota Department of Health; TB Control Program
605-773-3737 www.state.sd.us/doh/tb
Kristin Rounds, TB Controller/Program Coordinator

Texas Department of State Health Services; Infectious Disease Control Unit
512-458-7447 www.dshs.state.tx.us/idcu/disease/tb
Dr. Susan Penfield, TB Controller/Infectious Disease Control Unit Director

Wisconsin Department of Health & Family Services; TB Program
608-266-1865 www.dhfs.wisconsin.gov/tb
Tanya Oemig, TB Controller/Program Manager

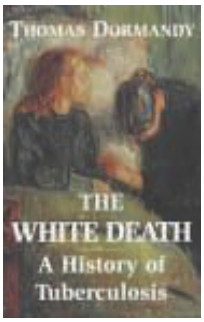
Deadline for the next issue is September 1, 2006. Please submit all items for consideration to: *mary.long@uthct.edu*

Introducing: Heartland Mini-Fellowships, *Continued from page 3*
train at TCID and Heartland; they will not receive specific credentials to assess or treat patients while at TCID.

Regional Training and Medical Consultation Centers are required to provide 6 mini-fellowships a year. Three of these were provided by Heartland in the first half of the year to fellows in Dr. Longfield's current program. Heartland is now soliciting our partner states for candidates to participate in the 3 remaining mini-fellowships. Beginning in July, each TB Controller and Medical Consultant in the 13-state Heartland region will be able to nominate candidates for the remaining mini-fellowships in 2006. This first year, there will be a preference for clinicians who are new to the medical management of TB. The selected fellows will plan, with the Heartland faculty, their curriculum and length of time at TCID gearing it to their individual needs. It can be a 1-5 day experience and a maximum of $3000 is allotted per attendee for travel, lodging and per diem expenses. Interested individuals should contact their state's TB Controller or Program Manager (see list on page 4) after July 15, 2006 to express their desire for consideration. They may also contact Heartland directly for more information but nominations for the mini-fellowships will be accepted from HNTC regional TB Controllers only.

In 2007, Heartland will also offer the clinical mini-fellowships at TCID, but they will be broadened to include a variety of topics ranging from program management to off-site clinical specialties. Additionally, HNTC will identify potential partners for expanding the clinical and programmatic fellowships to specialties such as refugee health, contact investigations and pediatric TB. Updates on the progress of these expanded mini-fellowships will be posted to the Heartland website and in future issues of the *TBeat*.

TB*it*



The White Death: A History of Tuberculosis by Thomas Dormandy, New York University Press, 2000

A review from *Library Journal*

British pathologist Dormandy weaves together cultural and medical history with the skill of a learned, witty, and humane scholar. Exhaustively researched and documented, his book describes the havoc wreaked by tuberculosis over millennia--which, horrifyingly, was sometimes inflicted by physicians themselves. Happily, the search for a cure led also to significant medical innovation, including the stethoscope, antibiotics, and X-rays. More mundane advances including park benches, bobbed hair, and an end to ornate Victorian decor, also emerged, as an appalling number of citizens of all social classes sought cures in sanatoria, where carefully calibrated exercise was a standard prescription and dust was relentlessly suppressed. Dormandy illuminates his medical history through the stories of dozens of artists and writers, from Keats and Chopin to Orwell, D.H. Lawrence, and Vivien Leigh, whose lives were tragically shortened before effective antibiotics became available in the 1940s and 1950s. Sadly, however, TB's protean bacteria quickly began to mutate into drug-resistant strains, and the search for a permanent cure or effective vaccine continues. Strongly recommended for serious readers in all libraries.

Kathleen Arsenault, Univ. of South Florida at St. Petersburg Library;

The MISSION of the Heartland National TB Center is to build capacity with our partners. We will share expertise in the treatment and prevention of tuberculosis by: developing and implementing cutting-edge trainings, delivering expert medical consultation, providing technical assistance, and designing innovative educational and consultative products.

Regional News

The US–Mexico Binational Tuberculosis (TB) Referral & Case Management Project

Background

The US-Mexico border is almost 2,000 miles long and it encompasses four US states (California, Arizona, New Mexico and Texas) and six Mexican states (Baja California, Sonora, Chihuahua, Coahuila, Nuevo Leon and Tamaulipas). It is a very fluid border with over 275 million persons crossing northward annually. As would be expected, the migration of people from economically disadvantaged and high disease burden areas has created health management problems all along the border. To address these international issues, the United States-Mexico Border Health Commission (USMBHC) was created as a binational health organization in July 2000, with the signing of an agreement by the Secretary of Health and Human Services of the United States and the Secretary of Health of Mexico. On December 21, 2004 the Commission was designated as a Public International Organization by Executive Order of the President. The mission of the USMBHC is to provide international leadership to optimize health and quality of life along the U.S.-Mexico border.

Numerous factors have influenced the prevalence of TB along the US-Mexico border but chief among them has been the lack of access to adequate health care and socio-economic conditions that contribute to disease spread. Historically, many TB patients have abandoned their TB treatment to cross the border and this can and does lead to the development of drug-resistant TB strains. Frequently, binational TB patients are men of working age and have other illnesses related to TB. Their exact migratory routes are often unknown and coupled with the emergence of drug-resistance and high prevalence of TB infection along the border the individual national TB programs have historically had difficulty managing TB disease. Consequently, under the auspices of the USMBHC, the two governments came together in 2003 to combat and control TB through the US-Mexico Binational TB Referral and Case Management Project. The major goal of this project is to provide an infrastructure of continued treatment for TB patients who travel to either side of the US-Mexico border, working very closely with the Centers for Disease Control & Prevention (CDC) and the Mexican National Center for Epidemiologic Surveillance (CENAVE).

Previous initiatives in the area of binational TB control have occurred at regional levels only; several have been successful. They are:

- Ten Against TB
- Sister City Binational TB Control Projects, e.g. JUNTOS, Los Dos Laredos
- Robert Wood Johnson Grant to San Diego County Health Department to support border TB projects
- CureTB
- Migrant Clinicians Network TB*Net* Project
- State to State Projects, e.g. Group Without Borders (Grupo Sin Fronteras; Texas-Tamaulipas)

Building on these programs, specifically CureTB, the CDC and CENAVE came together and designed the US-Mexico Binational TB Referral and Case Management Project. The goals of the Project are to ensure the continuity of care during the prolonged treatment regimens necessary to eliminate TB, to prevent the emergence of drug resistance and to improve data collection and patient tracking. The Binational Health Card was developed as a tool to ensure accurate patient information and to identify patients so they can obtain TB treatment on either side of the border. Additionally, the Health Card allows tracking of the patient, enables effective individual TB case management and supports the collection of information for the annual report prepared by the CDC and CENAVE.

Continued on page 7

Continued from page 6

The Binational Health Card contains the following information in Spanish and English:

- Unique identification number
- Treatment initiation date
- Treatment regimen
- Location where card was issued
- Date of last dosage of TB treatment
- DOT (yes/no)
- Program telephone numbers (Toll-free US & Mexico)

TB patients are eligible for admittance into the program based on the criteria below:

US patients with *active* TB (more than one month of treatment left) **AND**

- Mexican-born, *and/or* Mexico-bound

  Examples:

  - Recently arrived to the US from Mexico
  - Close or immediate family lives in Mexico
  - Lives in the US and receives medical care in Mexico
  - Migrant worker
  - Works in the US and lives in Mexico

Mexico patients

- Active TB

In 2003, several areas were identified to serve as pilot sites for the Health Cards and case management. They were:

US-Mexico border sister cities / states

- San Diego, CA – Tijuana, Baja California
- El Paso, TX and Las Cruces, NM - Ciudad Juarez, Chihuahua
- Webb and Cameron Counties, TX – Matamoros, Tamaulipas
- Nogales, AZ - Caborca, Sonora
- Anáhuac, Nuevo Leon
- Piedras Negras – Cd. Acuña, Coahuila

Immigration & Naturalization Service (INS) / Immigration and Customs Enforcement (ICE) Detention Centers

- Texas, California, Arizona, Washington

US States

- Tennessee, Washington, Illinois

Data collected from the first year of card distribution and patient movement found:

- 793 TB patients received a card in Mexico
  - 2% (n=17) moved to the US
    - Destination
      - 33% (5/15) Texas
      - 53% (8/15) California
      - 7% (1/15) Minnesota
      - 1 US destination not specified
- 488 TB patients received a card in the US
  - 30% (n=147) moved to Mexico
  - 61% (90/147) in ICE custody at move
  - Destination
    - Patients went to 19 Mexican states
    - Top 3: Baja, Chihuahua, Sonora
    - 71% (100/141) went to Mexican Pilot site states

During the pilot phase of the Project, several tangible benefits were noted. Besides the obvious continuation of care and TB treatment (successful referrals), sites away from the border now have a conduit for referrals. NEW standard procedures and protocols have been implemented at all ICE facilities to now include the Card which allows management and follow-up for all active TB cases. Additionally, a comparison of the TB patients with a Health Card and in the National TB Surveillance System (NTSS) showed that 32% (11/34) of the Health Card patients who were listed as moved or lost in NTSS could be "found" or updated based on the pilot card data.

By January 2005, almost 1500 cards have been distributed in Mexico and 500 in the US. Bi-lingual posters, brochures and a flipchart have been developed and training activities for all pilot sites have been conducted. Both the US and Mexico's public health systems have come

Continued on page 11

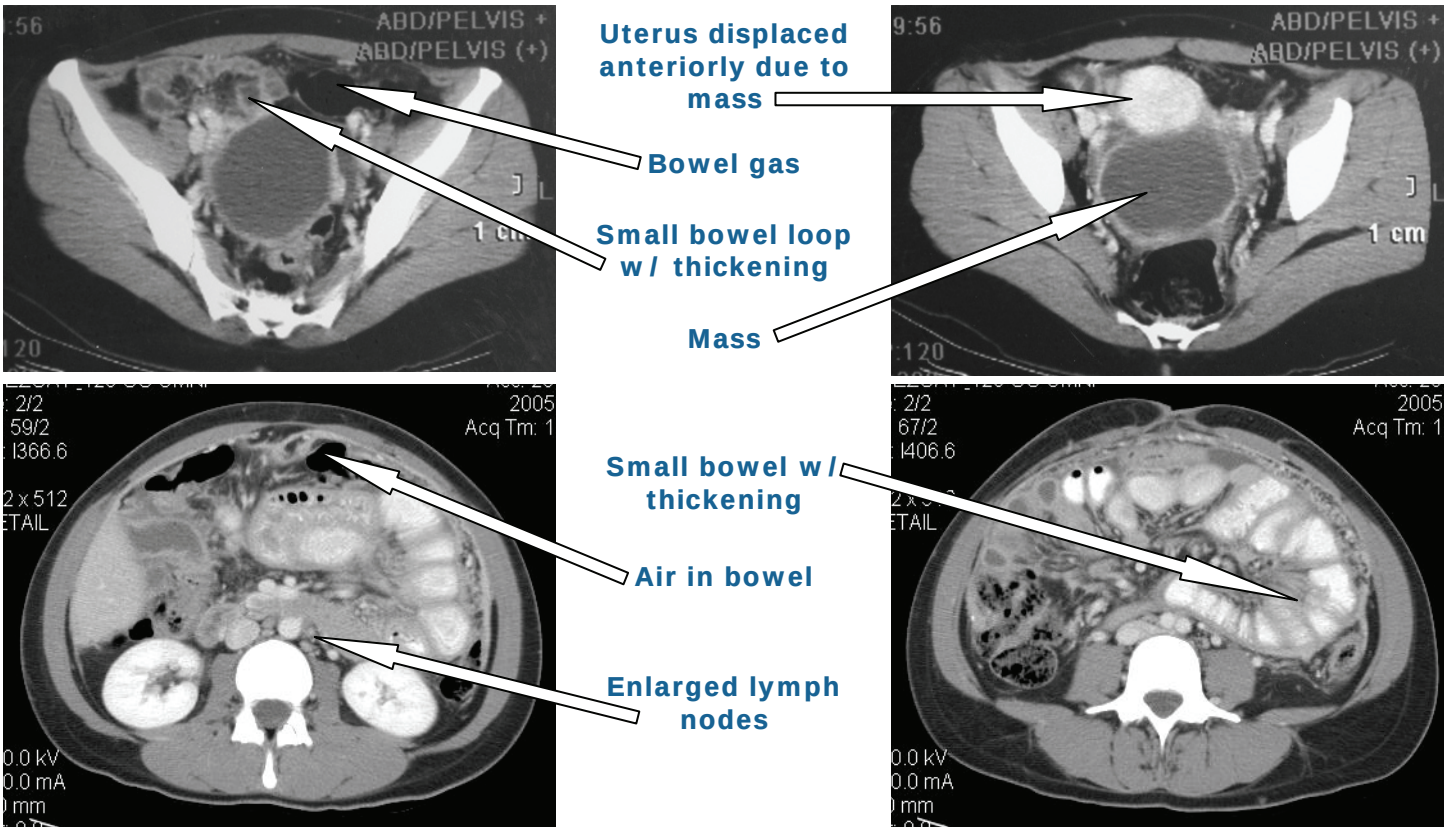
Case Presentation

Patient History

A 27-year old Hispanic female was admitted to hospital with a fever of 104°, a two week history of abdominal swelling, decreased appetite and body aches. She was anemic with a hemoglobin of 10.4; liver functions were within normal limits, an erthrocytic sedimentation rate (ESR) was 70 (normal </=20) and a CA125 (ovarian cancer marker) was 438 (Normal <21). A CT scan of the chest, abdomen and pelvis revealed large bilateral pleural effusions and multiple intra-thoracic nodes (pericardial, cardiophrenic angle, and para esophageal); the largest measuring 1.2 x 0.8cm. Ascites, omental caking, and thickening of the mesenteric vessels were present in the abdomen. Multiple nodes were also present (paraortic, aortocaval and iliac). Large bilateral ovarian masses with lobular contours were noted as well as concentric thickening of the distal sigmoid and proximal rectum. A tuberculin skin test (TST) was negative and three sputums were smear negative for AFB.

A diagnostic laparoscopy revealed approximately 1000cc of serosanguineous ascitic fluid. The abdominal and pelvic cavities were inflamed and there were areas in the pelvis consistent with phlegmon. Bowel to bowel adhesions and shortening of the mesentery were present. The

CT scans of patient's abdominal / pelvic region



ovaries were not visualized due to the adhesions and the peritoneal inflammation. Frozen section of an abdominal node revealed granulomatous inflammation.

The patient had had two abdominal surgeries during the previous year to address symptoms of abdominal pain. The initial surgery was a laparoscopic cholecystectomy. Six months later she presented with pain and pelvic fluid and underwent a laparoscopic appendectomy. Adhesions were present around the appendix and site of the prior gall bladder procedure. Cytology was negative for malignancy and granuloma were noted in the appendix.

Continued on page 9

Continued from page 8

Her mother had recurrent ovarian carcinoma and there was a distant family history of tuberculosis. She had visited Mexico frequently as a child but not recently.

She was identified as a TB suspect and was started on treatment with isoniazid (INH), rifampin (RIF), pyrazinamide (PZA) and ethambutol (EMB). She was subsequently discharged home to directly observed therapy (DOT). Her fever improved over the initial weeks of therapy and the ascites resolved. Two months later, the lab reported PZA resistance and identified her isolate as *Mycobacterium bovis*. Treatment with INH and RIF for 9 – 12 months was planned.

The patient completed 12 months of therapy for disseminated *Mycobacterium bovis* infection. At the end of therapy, a repeat CT scan showed a decrease in the pelvic fluid collection and mild thickening of the distal ileal mucosa. Multiple sub centimeter retroperitoneal and mesenteric lymph nodes were again seen but were stable. Repeat lab tests revealed CEA antigen, CA 125, ESR, and hemoglobin to be within normal ranges. She will be followed because of the extensive initial disease and the persistent abnormal CT findings. Repeat scans and laboratory tests will be done at 3 and 6 months post therapy.

Medical Issues

Tuberculosis (*Mycobacterium tuberculosis* and *bovis)* can infect the gastrointestinal tract after ingested organisms penetrate normal mucosa. This can occur in one of four ways:

1. swallowing of infected sputum coughed up from active pulmonary disease
2. hematogenous or lymphatic spread from a distant foci
3. direct extension from a contiguous site
4. ingestion of *M. bovis* infected milk products

Few patients present with intestinal TB and concurrent active pulmonary disease (20-30%) but almost 50% of smear-positive cavitating pulmonary TB patients have TB enteritis with a correlation between the severity of lung disease and intestinal involvement.

The most common region to be infected in the gastrointestinal tract is the ileocecal (80-90%) demonstrating wall thickening, ulcers, and stricture formation. The second site is the colon with segmental involvement, especially on the right side with ulcerative colitis and pseudo–polyps usually seen. Rarely, the esophagus and stomach are infected.

Most patients are young adults. The peak incidence is between the ages of 20 and 40. Females are somewhat more commonly affected than males. Diagnosis may be very difficult and less than 50% of cases are correctly diagnosed. Treatment, if started early enough, is usually successful; immunocompromised patients or misdiagnosed end-stage disseminated infections have a poor prognosis. Follow-up issues or risks for successfully treated patients include adhesions, obstructions and blockages. Female patients may suffer infertility. *M. bovis* – infected patients are always resistant to PZA and must receive at least 9 months of therapy.

Teaching Points

- Delays in diagnosis of gastrointestinal TB (GI TB) - whether caused by *M. tuberculosis OR M. bovis* - are due to many factors:
  - Patients usually present with non-specific symptoms of weight loss, abdominal pain, anorexia and/or ascites. Nausea or vomiting may be present, especially with an obstruction. The symptoms mimic a host of other conditions which must be ruled out.

Continued on page 10

Continued from page 9

Teaching Points continued

Type of Symptom	Percent with Symptom
Pain	90%
Abdominal Tenderness	80%
Weight Loss	70%
Nausea / Vomiting	60%
Fever	36%
Constipation	35%
Diarrhea	25%

  - Patients may have non-specific laboratory findings; anemia, normal WBC count, elevated ESR, CEA, CA125, and liver enzymes. An alkaline phosphatase elevated out of proportion to other liver enzymes is suggestive of infiltrative disease of the liver.
  - The TST can be variable; it is usually negative in patients presenting with primary intestinal TB or disseminated disease. A positive TST does not always indicate active disease and a negative TST does not exclude disease.
- GI TB is difficult to diagnose for many reasons:
  - Chest x–rays indicating pulmonary TB infection are positive in less than 1/3 of cases. Barium studies are helpful in 66% of patients while ultrasound and CT scans are useful for detecting peritoneal, hepatic, splenic and nodal involvement.
  - Pathology usually indicates inflammation and fibrosis of the bowel wall and the regional lymph nodes. Patients can have mucosal ulcerations; as the disease progresses ulcerations become confluent and can lead to bowel wall thickening, fibrosis and pseudo-tumoral mass lesions. Strictures and fistulae formation can occur.
  - Biopsies from areas of involvement show caseating granuloma with the presence of epitheloid cells, Langhan's giant cells and occasionally positive AFB smears (negative smears do not rule out infection).
  - Stool cultures may be positive for *Mycobacterium* sp. and should be also be ordered to rule out Yesinia, actinomyces and amebiasis.
  - Patients will need to have malignancies ruled out including ovarian and colon cancer. Other GI pathologies such as appendicitis, cholecystitis, and Crohn's disease need to be considered in the differential diagnosis. In the case of Crohn's disease, TB disease MUST be ruled out prior to initiating TNFα blocker therapy.
- The most common sites for TB disease within the gastrointestinal tract are:
  - Primary: ileocecal region – 44-93%
  - Secondary: ascending colon
  - Others in descending order: jejunum, appendix, duodenum, stomach, esophagus, sigmoid colon and the rectum
- Treatment - as with other forms of TB disease, GI TB responds well to the standard antitubercular therapy when started early in the disease. Surgery is reserved for management of complications. Treatment should be initiated while waiting for culture results; improvements are usually seen within 2 weeks depending on the severity of symptoms.
- GI TB is more often found in immunocompromised patients, either due to HIV, chronic renal disease, diabetes or immunosuppressive drug therapy. It may present with pulmonary TB (20-30% of patients only) but it is more commonly the primary organ system involved.

Continued on page 11

Continued from page 10

- Primary gastrointestinal tuberculosis due to *M. bovis* should be considered when there has been a history of drinking non-pasteurized milk from areas where *M. bovis* is present in cattle herds such as along US Mexican border.

References

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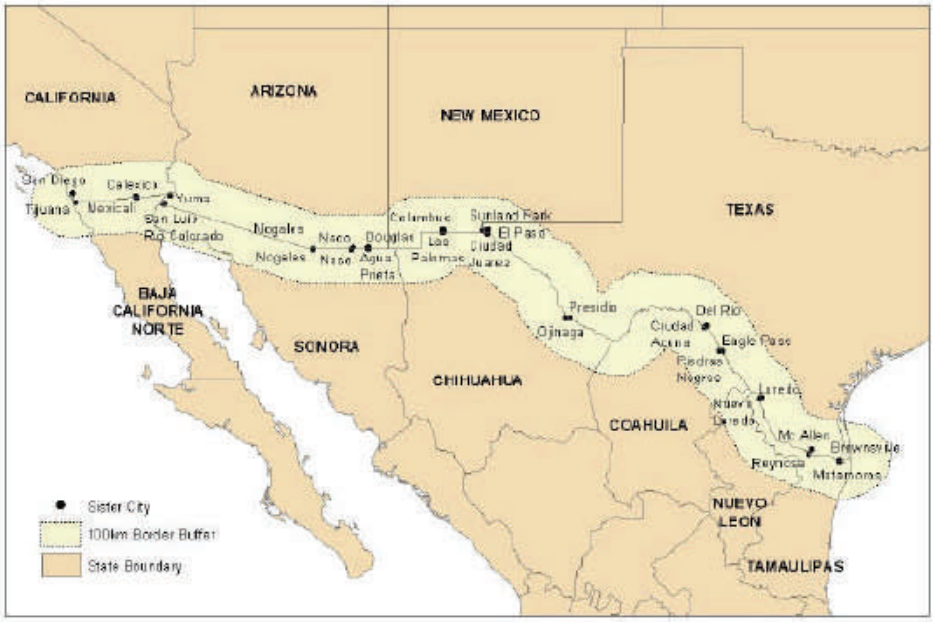
Chow, Kai M., et al. "Tuberculous Peritonitis-Associated Mortality is High Among Patients Waiting for the Results of Mycobacterial Cultures of Ascitic Fluid Samples." Clinical Infectious Disease August 15, 2002, Volume 35, p. 409-413.

Collado, Caroline, et al. "Gastrointestinal tuberculosis: 17 cases collected in 4 hospitals in the north eastern suburb of Paris." Gastroenterologie Clinique et Biologique April 2005, Volume 29, Number 4, p. 419-425.

Coyle, Walter J. and Sheer, Todd A. "Gastrointestinal Tuberculosis" in Tuberculosis & Nontuberculous Mycobacterial Infections. New York: McGraw Hill, Medical Publishing Division, 2006.

Regional News:The US–Mexico Binational Tuberculosis (TB) Referral & Case Management Project, *Continued from page 7*

to see this TB Referral and Case Management Project as vital to the improvement of TB treatment outcomes and the reduction of drug resistance on both sides of the border. Plans are underway to implement the Project at other sites and possibly to expand to other diseases.



References

www.borderhealth.org

The US-Mexico Binational TB Referral & Case Management Project Manual; 2003

Laserson, Elizabeth ScD., Ferreira, Elizabeth MD. "Binational Referral System for Binational TB Patients Pilot Project (Card project) Update." draft document; January 2005

US-Mexico Border Binational TB Day, April 4, 2005; Minutes

Laserson, Elizabeth ScD., Ferreira, Elizabeth MD. "The US-Mexico Binational TB Referral & Case Management: Preliminary Evaluation Findings." PowerPoint Slide Show; July 19, 2005

Upcoming Trainings

- *Heartland National TB Center—2006 dates*

Date	Course	Location
July 11-13	Nurse Case Management	Lisle, IL
July 19-20	Nurse Case Management	Des Moines, IA
August 29-31	Contact Investigation	Wichita, KS
September 26-28	Contact Investigation	San Antonio, TX
October 5	TB Update (Midwest TB Controllers)	Des Moines, IA
October 25	Contact Investigation (4 Corners Meeting)	Flagstaff, AZ
November 7-9	Nurse Case Management	Dallas, TX
November 28-29	Contact Investigation (National Unidos Meeting)	Las Cruces, NM
December 5-8	TB Intensive	Tyler, TX

Please go to http://www.heartlandntbc.org/training.asp for contact and registration information for each course. Proposed topics are subject to change; check website for the latest updates.

- *CDC*

August 15-17, 2006 — TB Education & Training Network Conference, Atlanta Georgia

- *Other*

October 31-November 4, 2006 — 37th Union World Conference on Lung Health, Paris France
November 4-8, 2006 — Annual American Public Health Association Conference, Boston, MA

Related Links

- TB Education & Training, National Prevention Information Network
- Division of TB Elimination, CDC
- TB Education & Training Resources
- World Health Organization, Tuberculosis
- Global Health Reporting
- Global Health Facts on TB
- Tuberculosis Research Today
- Stop TB Partnership
- American Lung Association

In the Works

The following products (algorithms) have been updated and are located on the Heartland website. They are available for printing or downloading.

- Assessing and Managing the Risk of Liver Disease in the Treatment of LTBI (PDF ~ 257 KB)
- Evaluation of Pregnant Patient at Risk for TB (PDF ~ 242 KB)
- Management of the TB Patient at Risk of Hepatotoxicity (PDF ~ 260 KB)

TBeat is the quarterly newsletter for the Heartland National TB Center. We would like to make this a successful and much-anticipated resource for our partners; to that end you may submit news and note-worthy items for consideration. Examples of items to send are:

- TB news from your state
- Interesting and informative real-life case studies
- Upcoming trainings in your state that you would like to highlight or open up for regional participation
- New information or studies on TB

Please send any submissions to mary.long@uthct.edu or fax to (210) 531-4535; include your name, contact information and source information if from a publicized resource. For case presentations, please include salient clinical information and the teaching points covered. HNTC holds final editorial authority for all submissions; receipt will be acknowledged.