Case Study #2

Lana Yamba, MD, MPH

September 15, 2023

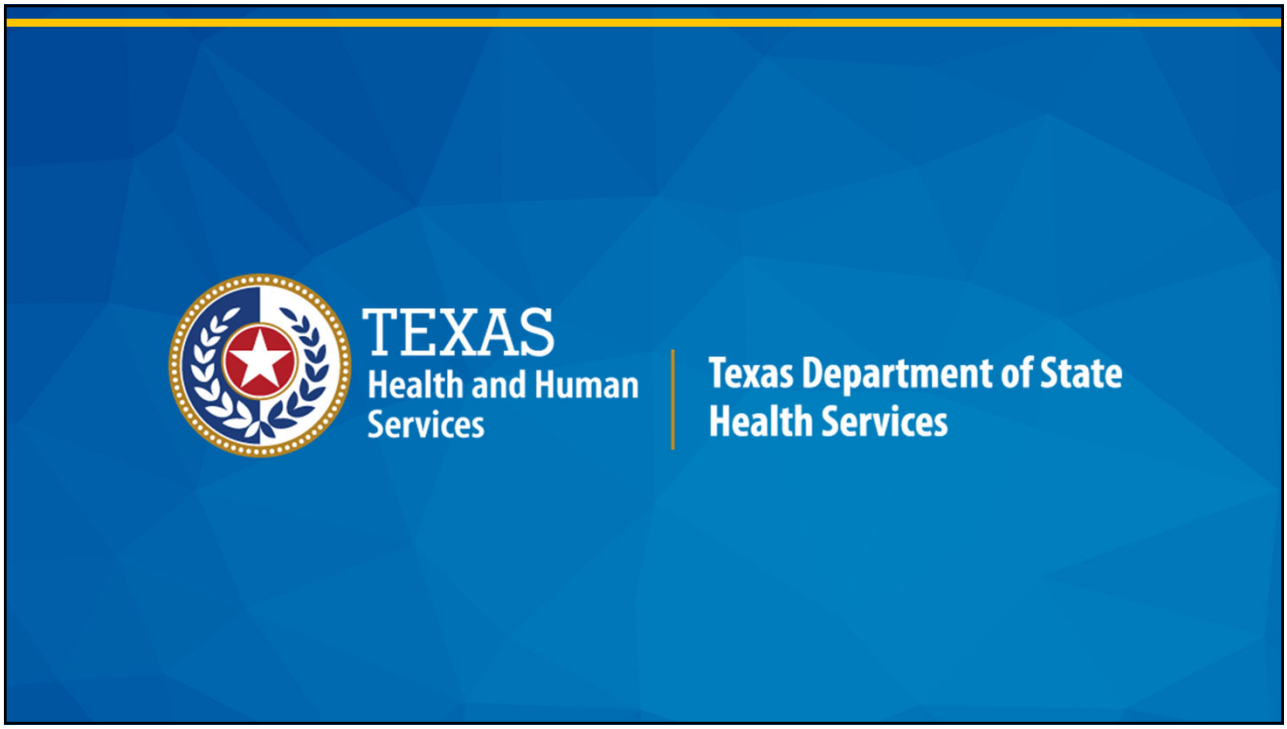
TB Intensive
September 13 – 15, 2023
Richmond, TX

1

Lana Yamba, MD, MPH has the following disclosures to make:

- No conflict of interests
- No relevant financial relationships with any commercial companies pertaining to this educational activity

2



3

Abdominal Tuberculosis

Lana Yamba, MD, MPH, CCRC
Tuberculosis and Hansen's Disease Program/Binational Tuberculosis Program
Texas Department of State Health Services, Region 11

4

Case Presentation

TEXAS Health and Human Services | Texas Department of State Health Services

5

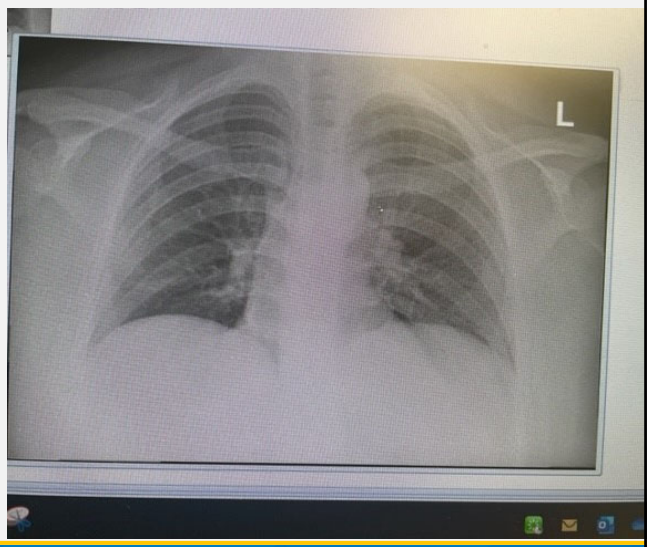
Case presentation

- 36-year-old female who was started on RIPE for suspected TB Disease (+QFT, abnormal CXR at baseline) from the hospital and referred to us on 12/2/2022 for continuity of care.
- The pt. had h/o of multiple hospitalizations/ER visits. She was initially admitted 11/11/22 with c/o of lower back pain and swollen ankles.
- PMH: HTN, COVID19 (+) in Jan 2022, HIV negative.
- Denied any alcohol, drug, or tobacco use.
- TB risk factors: having h/o covid 19. Denied prior TB exposure.
- RIPE started on 11/30/2022 at the hospital. Continue with RIPE with us 12/2-12/6
  - On 12/6/22 Pt. was again admitted and evaluated for abdominal pain and elevated liver enzymes . TB meds were placed on hold for drug induced Liver Injury.
  - Pt remained in ER and was evaluated for possible metastatic disease/lymphoma or possible sarcoma.

6

CXR done 11/11/22

- CXR – Right pleural effusion with basilar consolidation or atelectasis



7

CT scan of chest- 11/23/22: Findings

- 11/23/2022 – CT of the chest without contrast

– Bilateral lower lobe atelectasis, slightly more pronounced on the left with small bilateral pleural effusions.

– No infiltrates, nodules or areas of bronchiectasis are seen.

8

11/23/22-CT Abdomen & Pelvis: Findings

- 11/23/2022 – CT abdomen & Pelvis

– Extensive abnormal retroperitoneal and left iliac lymphadenopathy.

– Enlarged spleen with multiple low-attenuation masses . These findings are consistent with the history of miliary tuberculosis.

– Large possible necrotic solid appearing mass in the left pelvis. measuring approximately 7.5x6x6 by 7 bouts 5.7cm finding nonspecific. Origin unknown. Massive left sided adenopathy.

9

CT Abdomen & Pelvis

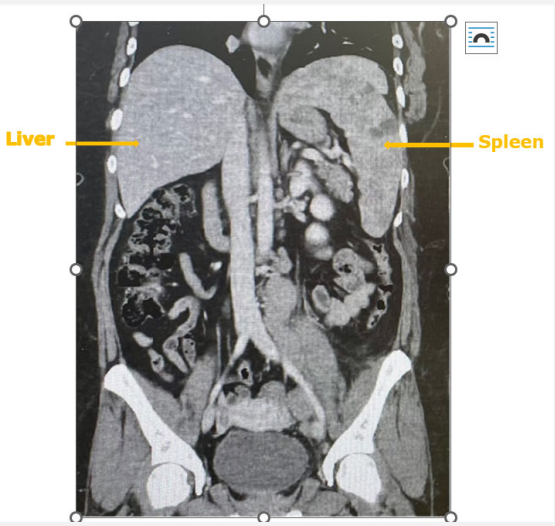
- 11/11/2022 – CTAP

– multiple pathologically enlarged lymph nodes in the lower para-aortic region, left common iliac and left external iliac chain.

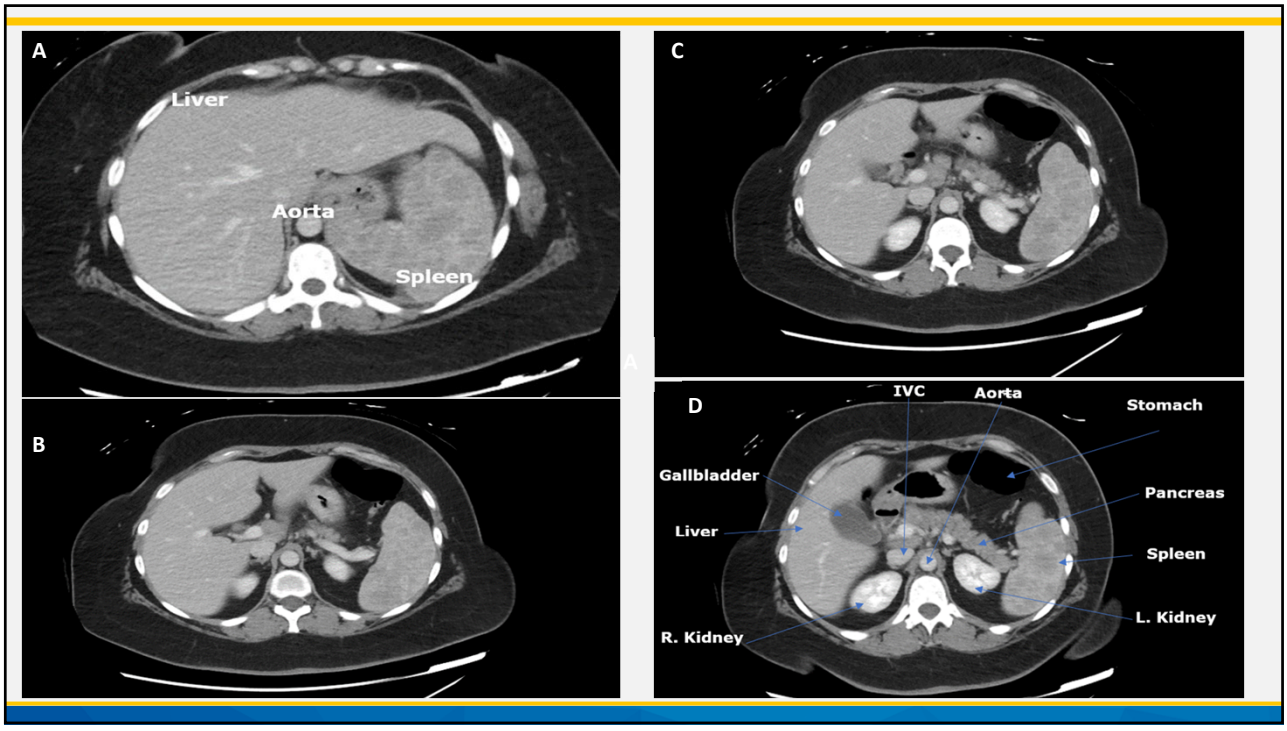
– In addition, there are multiple low-density lesions in the liver.

10

CT scan of Abdomen-Pelvis



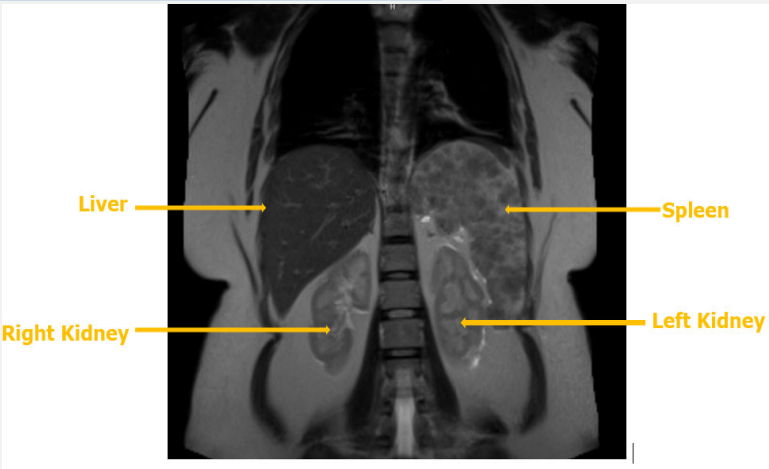
11



12

MR images of abdomen

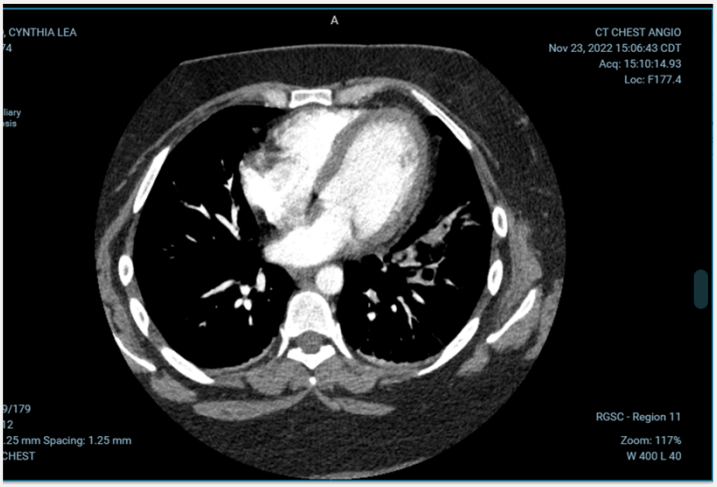
11/23/2022 – MR images of abdomen w/ and w/out contrast – moderate splenomegaly with to numerous to count non-enhancing nodules and masses throughout the parenchyma consistent with TB. Abnormal retroperitoneal and left iliac lymphadenopathy.



13

CT Angiography of the chest

11/23/2022 – CT Angiography of the chest – No evidence of pulmonary embolism, thoracic aortic aneurysm, or dissection. Basilar atelectasis with small pleural effusions



14

Case presentation cont'd

- On 12/20/22 Pt. underwent splenectomy for enlarged spleen with numerous to count nodules and masses.

15

Surgical Pathology Report

– SPELENECTOMY and REMAINING PORTION OF SPLEEN SUBMITTED SEPARATEELY

- Stain for AFB positive.
- Stain for fungal organisms negative
- Extensive necrotizing granulomatous inflammation consistent with the patient's history of tuberculosis.
- Extramedullary hematopoiesis was present.
- No evidence of lymphoma. There is no definitive morphologic or immunohistochemical evidence of lymphoma in this specimen. Only very rare, scattered medium to large B-cells are noted and are favored to represent reactive immunoblasts, secondary to the extensive granulomatous inflammation
- There is insufficient evidence for the diagnosis of T-cell/histiocyte rich large B-cell lymphoma.
- Lymphadenopathy and hepatosplenomegaly can be seen in cases of disseminated tuberculosis and can mimic lymphoma on imaging. Correlation with clinical and radiographic findings and follow up of size and extent of lymphadenopathy after treatment of tuberculosis was recommended.

– CHOLECYSTECTOMY

- No gallstones identified. Chronic cholecystitis and cholesterolosis. Surrounding fat with necrotizing granulomatous inflammation.

16

Case presentation cont'd

- PERIPHERAL BLOOD SMEAR 12/15/22

Pancytopenia. Severe thrombocytopenia. Moderate normocytic hypochromic anemia. Moderate leukopenia with mild left shift. Negative for blast or malignancy.

- Hematologic Neoplasia Assessment 12/20/22:

- Flow Cytometry: Bone marrow aspirate, left iliac – no specific immunophenotypic abnormalities detected

- FISH Target Gene Panel:
  - Bone marrow – No assay specific abnormalities detected by Aggressive B-cell Lymphoma FISH panel
  - Tissue, pelvic left mass – No significant lymphoid immunophenotypic abnormalities detected

17

Case presentation cont'd

- CT guided core biopsy left pelvic mass - 11/25/22

Atypical lymph histiocytic infiltrate with features worrisome for lymphoma, probably B-cell origin large B-cell lymphoma. Negative EBV, AFB stain negative, AFB culture negative as per 01/12/23.

18

Case presentation cont'ed

- 01/11/2023 – CT of chest – Interval development of numerous bilateral pulmonary nodules, most concerning for metastatic disease. New mediastinal adenopathy was also concerning for malignancy. Interval development of large right and moderate left pleural effusions with overlying atelectasis. Liver appears enlarged.

19

Laboratory Results

	11/23/22	11/27/22	11/29/22	12/02/22	12/13/22	12/14/22	12/29/22	01/05/23	01/17/23	01/17/23	01/18/23
AST	79				216H	140H	111H	238CH	297CH		
ALT	93				158H	112H	102H	130H	107H		
Total Bili					5.1H	3.5H	0.8	0.9	1.5H		
Alk Phos					287H	199H	252H	366H	450H		
BUN		10			15	13	11	16	21	23	
Creatinine		0.7			0.7	0.8	0.6	0.57	0.47	0.8	
Hgb/Hct		11.2/34.4		11.3/34.1			9.4/29.6L	10.7/33L	9.4/26L		7.5/23.0L
WBC		2.60		2.66			5.31	4.0L	5.2		5.66
PLTs		95		89L			327	288	167		149
PT/INR			12.7H/1.1							14.1/1.2	
PTT			31							29	

20

More Results

- **QFT: Positive**
- **HIV: Negative**
- **Hep A, B & C: Non-Reactive**

Date	12/06/22	12/07/22	12/06/22
Source	Sputum	Sputum	ABD Fluid
Smear	AFB (-)	AFB (-)	-
Culture	Negative	Negative	-
NAAT	Not done		

21

Discharge Summary

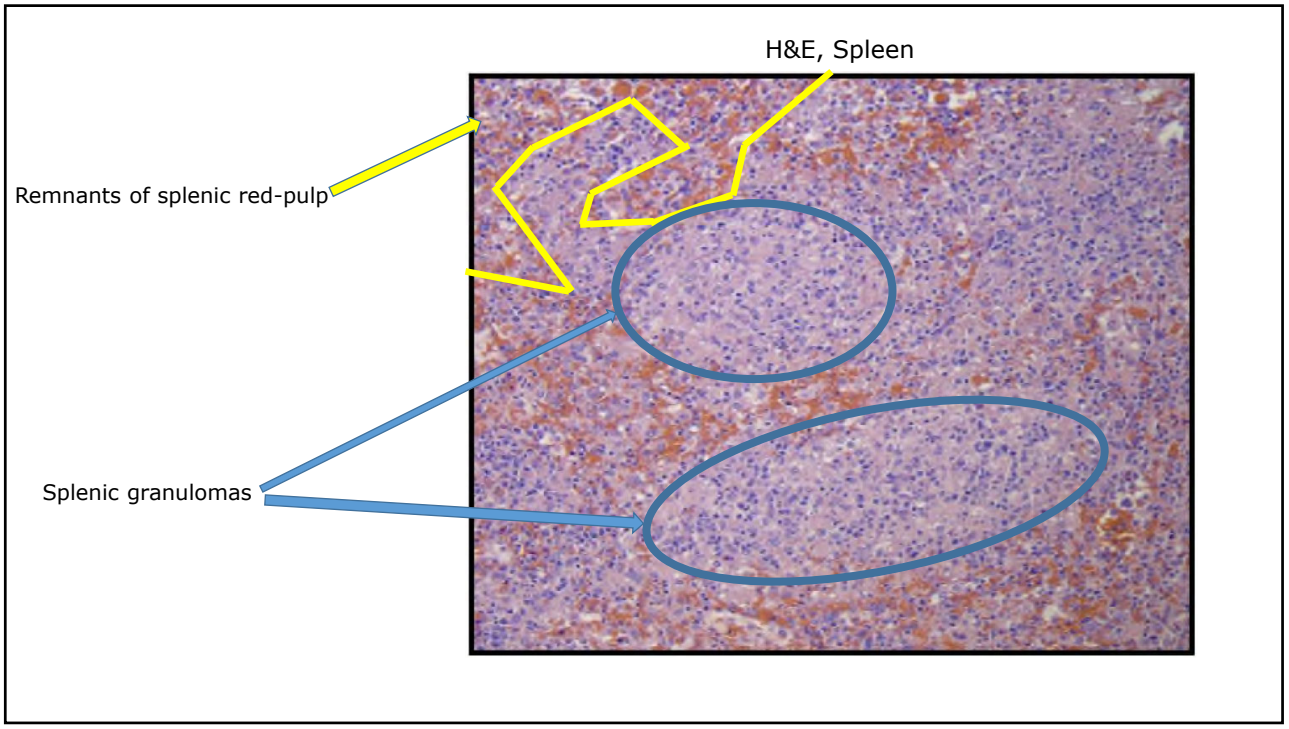
- Discharge Summary for last admission 01/17/2023 to 01/18/2023
- Presented to ED with c/o melena x 4 and hematemesis x1.
- On admission, hemoglobin 10.6, hematocrit 31.1, T bili 1.5, AST 339, ALT 136, alkaline phosp 580, albumin 2.2.
- After admission to the ICU, the patient had another large, maroon-colored hematemesis and tarry stool, followed by worsening tachycardia up to 160s, B/P 96/68. pt. was Intubated and massive transfusion protocol was initiated in addition to vasopressors.

22

Discharge Diagnoses

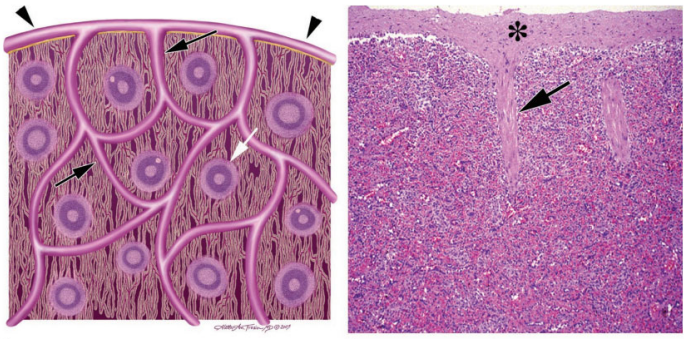
- Ultimately patient's family decided on comfort measures and Pt was terminally extubated at 0900am, expired shortly after at 0909am on 1/18/23.
- Critical Care Diagnosis:
  - Acute GI Bleed
  - Acute Blood loss Anemia
  - Bilateral Pleural effusions
  - Transaminitis
  - Tuberculosis
  - Lymphoma

23



24

Spleen, H&E – Normal Architecture



1. 2.

Figures 1, 2. Normal spleen. **(1)** Drawing depicts normal splenic architecture. A branching network of trabeculae (black arrows) extends from the inner aspect of the capsule (arrowheads). Primary and secondary lymphoid follicles of the white pulp (white arrow) are scattered throughout communicating compartments of red pulp. **(2)** Photomicrograph (original magnification, ×10; hematoxylin-eosin [H-E] stain) shows a trabecular branch (arrow) arising from the capsule (*) and extending into normal splenic red pulp.

Splenic structures
- Fibrous capsule
- Red pulp (60-70%)
- White pulp
- Smooth muscle trabeculae

Not just a sack of blood; Known fxns:

1. Filters blood – resident histocytes phagocytose old/damaged blood cells.
2. Makes/develops lymphoid white blood cells and antibodies.
3. Helps maintains the levels of fluid in your body.
   1. Can compress when for bursts of energy increase need for Oxygen (race-horses)
   2. Can make new blood cells when bone-marrow can't keep up with demand

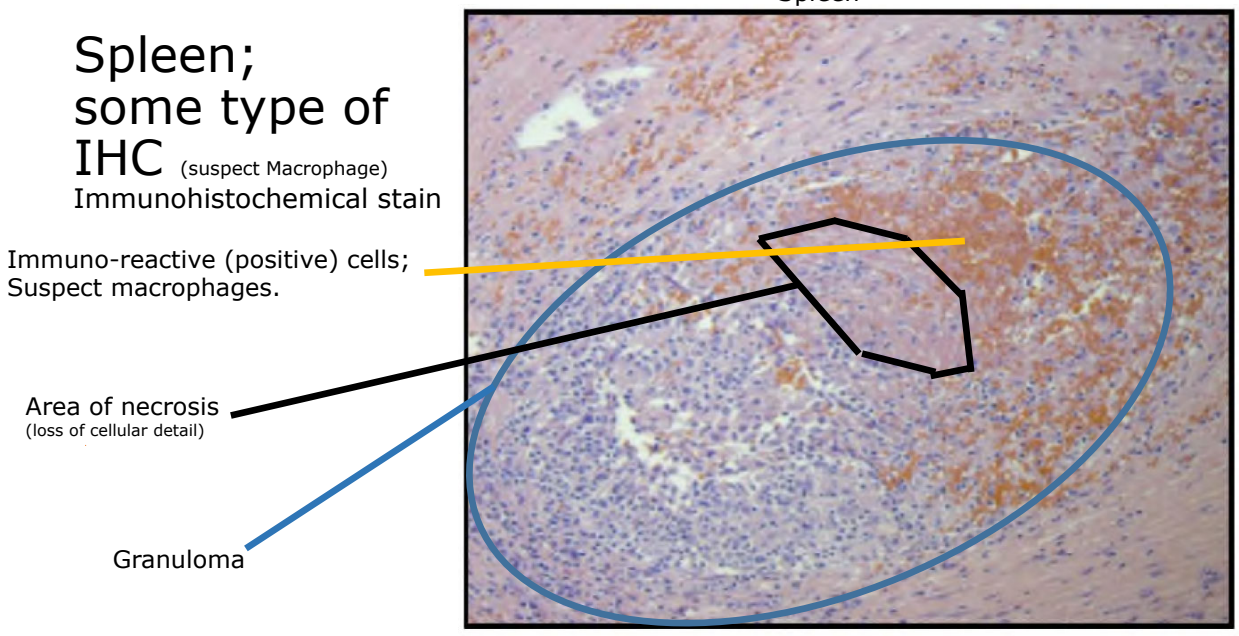
Abbott, Robert M., et al. "From the archives of the AFIP: primary vascular neoplasms of the spleen: radiologic-pathologic correlation." *Radiographics* 24.4 (2004): 1137-1163.

25

Spleen

Spleen; some type of IHC (suspect Macrophage)

Immunohistochemical stain



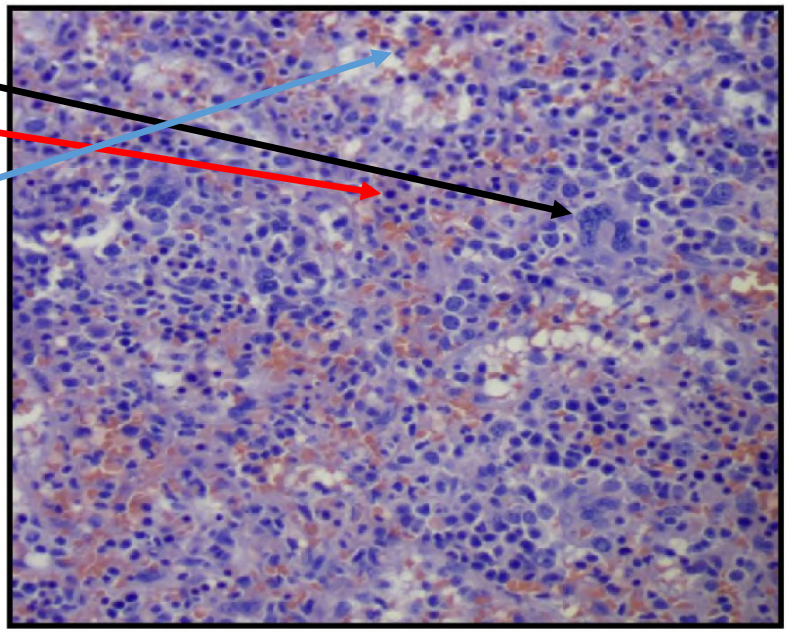
26

H&E, Spleen

Megakaryocyte
(platelet precursor)

Immature red-blood cells
(erythroblasts, metarubicytes, etc.) –
*note the red staining of the cytoplasm

Band neutrophil
(immature granulocyte)



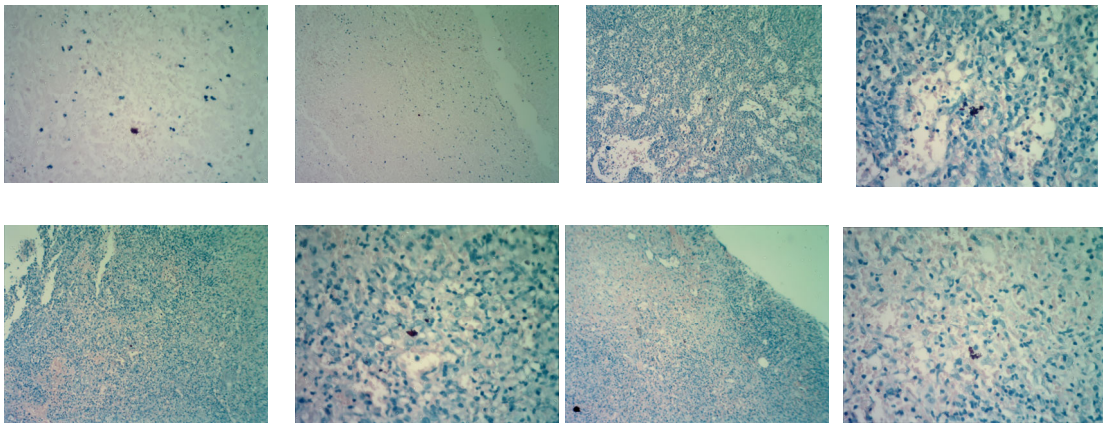
Hematopoeisis normally occurs in the bone-marrow.

When occurs outside the bone-marrow we refer to this as: extra-medullary hematopoeisis.

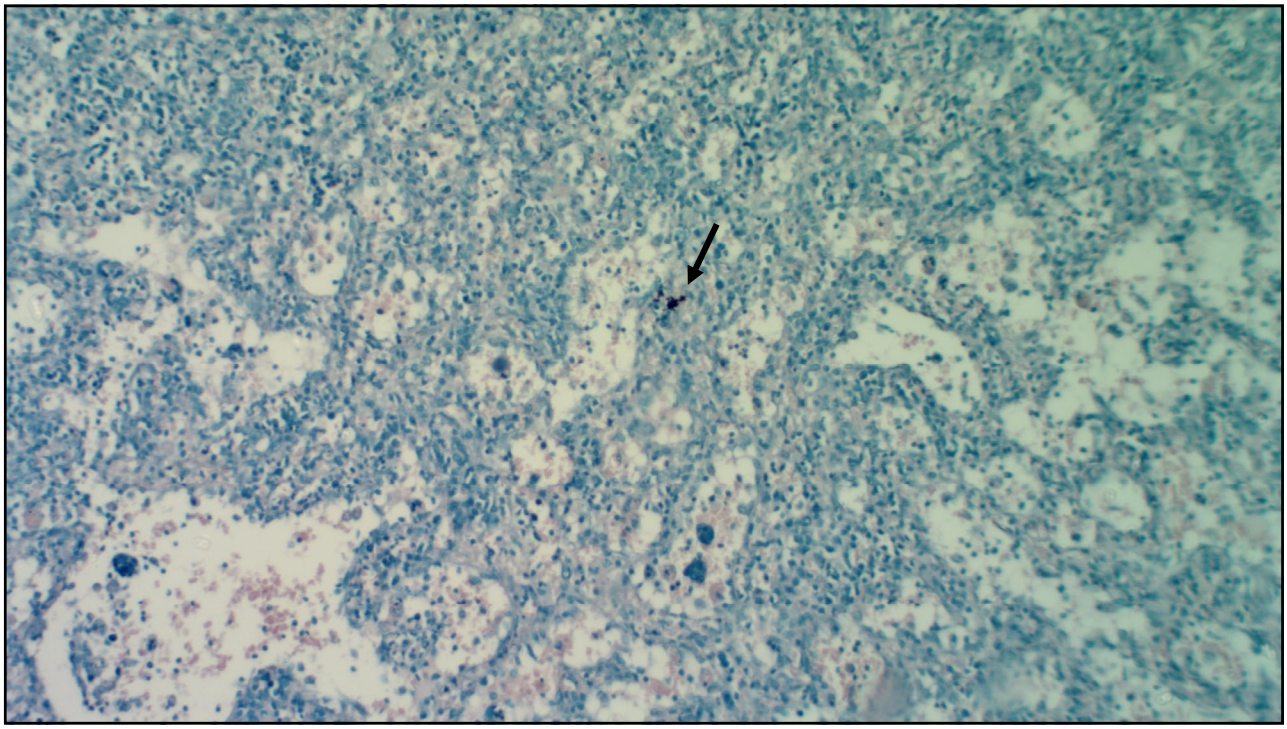
This often occurs in chronic disease

27

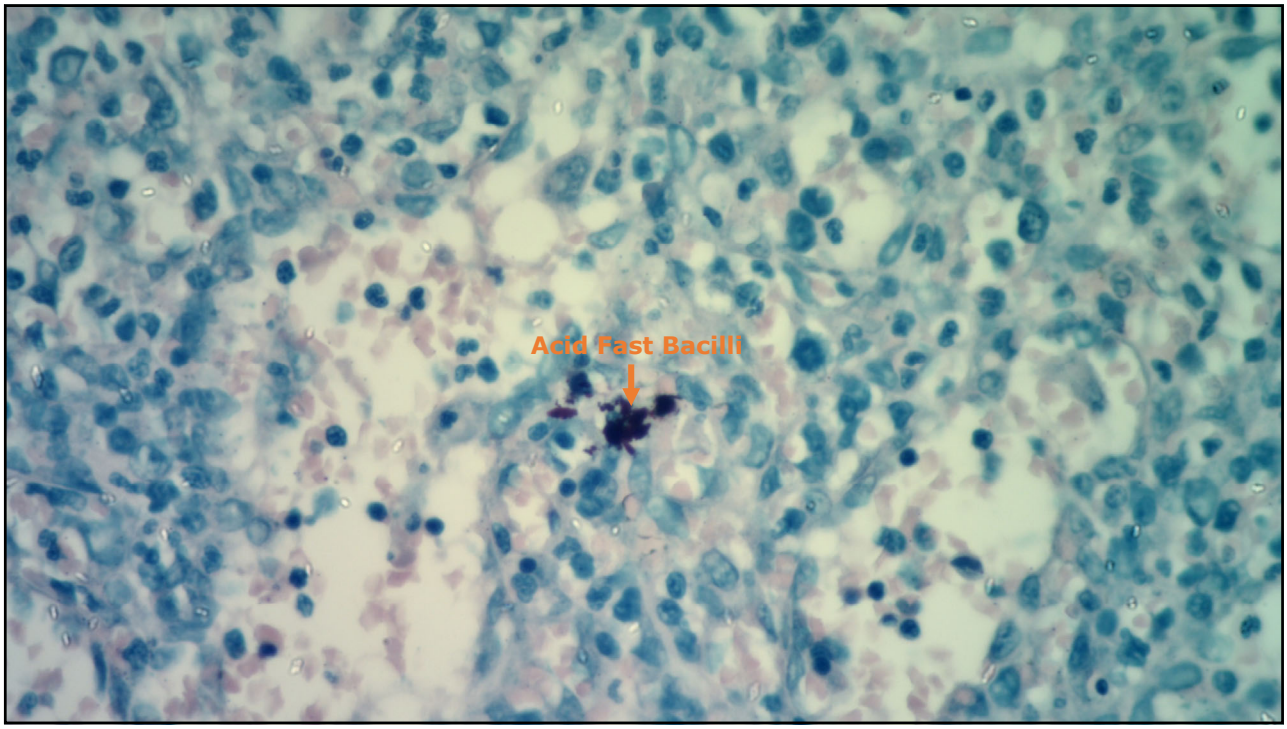
Spleen AFB (acid-fast bacteria) stain



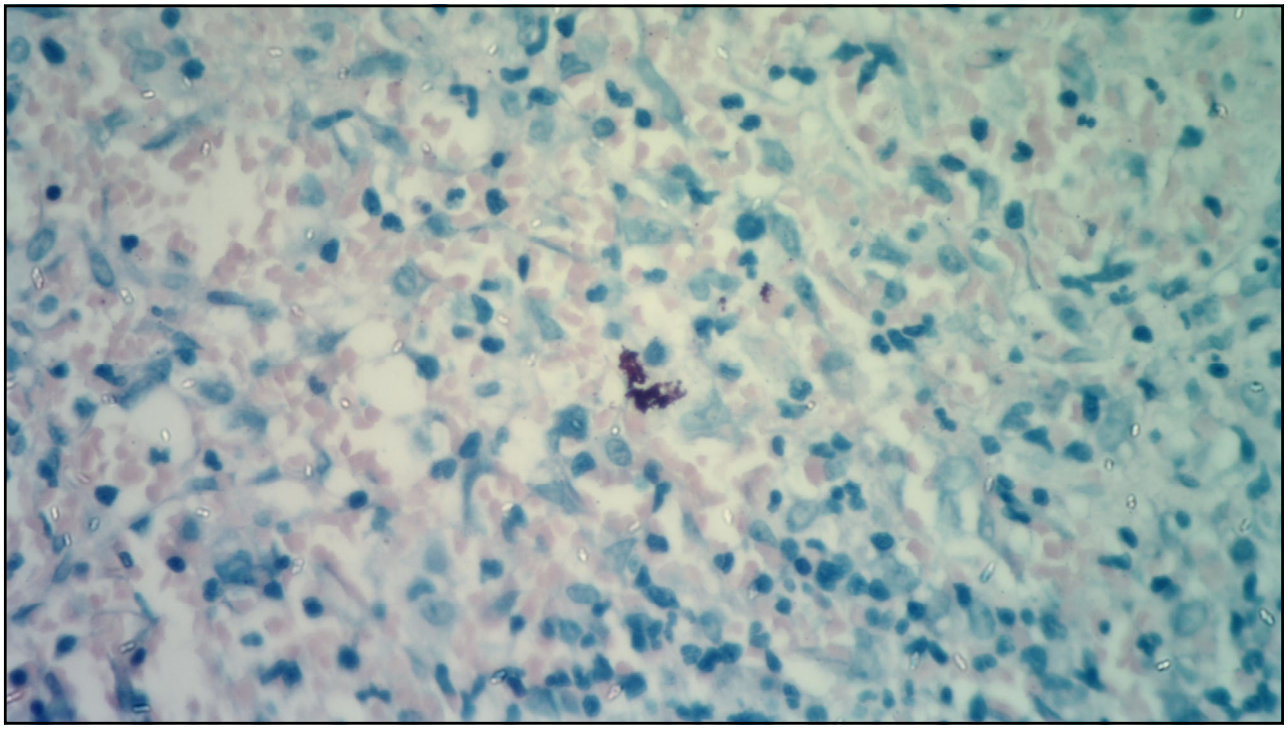
28



29



30



31

Case presentation c'ed

- Disseminated TB involving the spleen, lymph node, liver, gallbladder and lungs in a setting of a possible malignancy (lymphoma?) with metastatic lesions in lungs

32

Abdominal Tuberculosis

- Diagnosis of abd TB is often delayed due to the lack of specific symptoms and laboratory findings.
- As a result, effective treatment is delayed which causes significant morbidity and mortality.
- Abdominal pain is the most common presentation, followed by weight loss, ascites, diarrhea, N/V, fever, cough.
- Timely diagnosis based on a high index of suspicion in populations in which tuberculosis is common and management with a combination of TB medications and conservative surgery can reduce the mortality of this disease.

Table 1 Presenting symptoms (*may be more than one in each patient)* and signs and their frequency in patients (n=32)

Symptoms and signs	Number of patients	Percentage (%)
Abdominal pain	16	51.2
Weight loss	16	51.2
Ascites	12	38.4
Diarrhea	10	32
Cough and sputum	6	19.2
Vomiting and nausea	5	16
Fever	4	12.8
Perforation	3	9.6
Bone pain	2	6.4
Night sweats	2	6.4
Urinary symptoms	1	3.2
Mass in the lower quadrant	1	3.2
Cervical pain	1	3.2
Evisseration following laparotomy	1	3.2
Incidental	1	3.2
Operation because of brid ileus	1	3.2

33

Abdominal Tuberculosis

- Abdominal TB constitute up to 12% of extrapulmonary TB
- Abdominal TB is **the sixth most common** form of extra-pulmonary TB after lymphatic, genitourinary, *bone* and joints, miliary and meningeal TB
- Abdominal TB can affect the gastrointestinal tract, peritoneum, mesentery, abdominal lymph nodes, liver, spleen, and pancreas. The most common site of involvement is the ileocecal region.
- It also tends to mimic other inflammatory (Crohn Disease) or neoplastic conditions(Lymphoma)

34

Pathogenesis

- There are various ways tuberculosis can spread into the abdomen:
  - One route is through ingestion of the AFB bacilli.
  - The second Path is from hematogenous spread from a primary lung infection during childhood with subsequent reactivation,
  - Through the lymphatics from infected lymph nodes.
  - Primary GI TB , usually caused by M. bovis; from ingestion of contaminated milk from infected cows..

35

Abdominal Tuberculosis

- The diagnosis of abdominal TB can be established by one of the following criteria:

❖Definitive diagnosis
  - Histologic and microbiologic evidence of Mycobacterium tuberculosis
  - The presence of granulomas with caseous necrosis, or
  - Successful culture of M. tuberculosis from the tissue specimen, or
  - The presence of documented TB in another site with typical operative findings and granulomas;

❖Clinical diagnosis
  - Clinical and radiological features of abdominal TB, responding to TB medications in the absence of definitive diagnosis.
  - Clinical presentation is extremely varied, and therefore, clinical features alone cannot confirm the diagnosis of abdominal TB.

36

Abdominal Tuberculosis

Treatment of Abdominal TB:

- A combination with **isoniazid, rifampin, pyrazinamide and ethambutol** for 6-9 months is the recommended first line of management unless there is a need for surgical intervention.

37

Conclusion

- Abdominal TB being a curable condition, it can still result in significant morbidity and mortality.
- Considering abdominal TB in the differential diagnosis of patients with TB disease who present with chronic abdominal symptoms is crucial.

38

Questions / Discussions

39

Discussion

- Abd TB and elevation of liver enzymes, what would you do?

1. Continue RIPE
2. Hold RIPE, wait for LFTs to normalize, then restart RIPE with or w/o rechallenge
3. Hold RIPE and start Liver friendly regimen with or without rechallenge

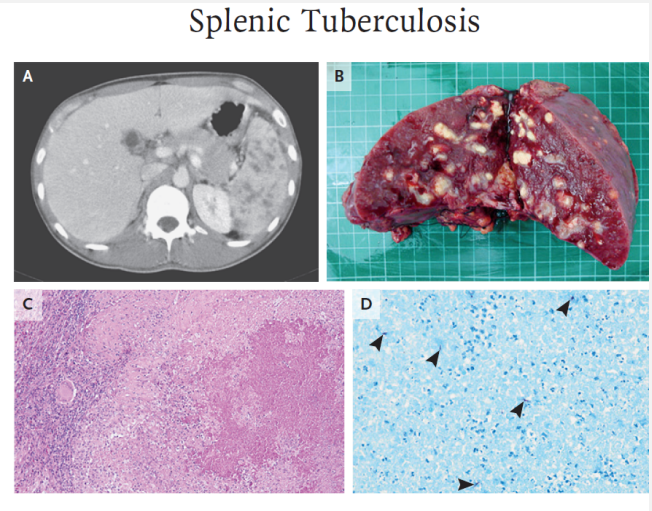
40

Thank you!

41

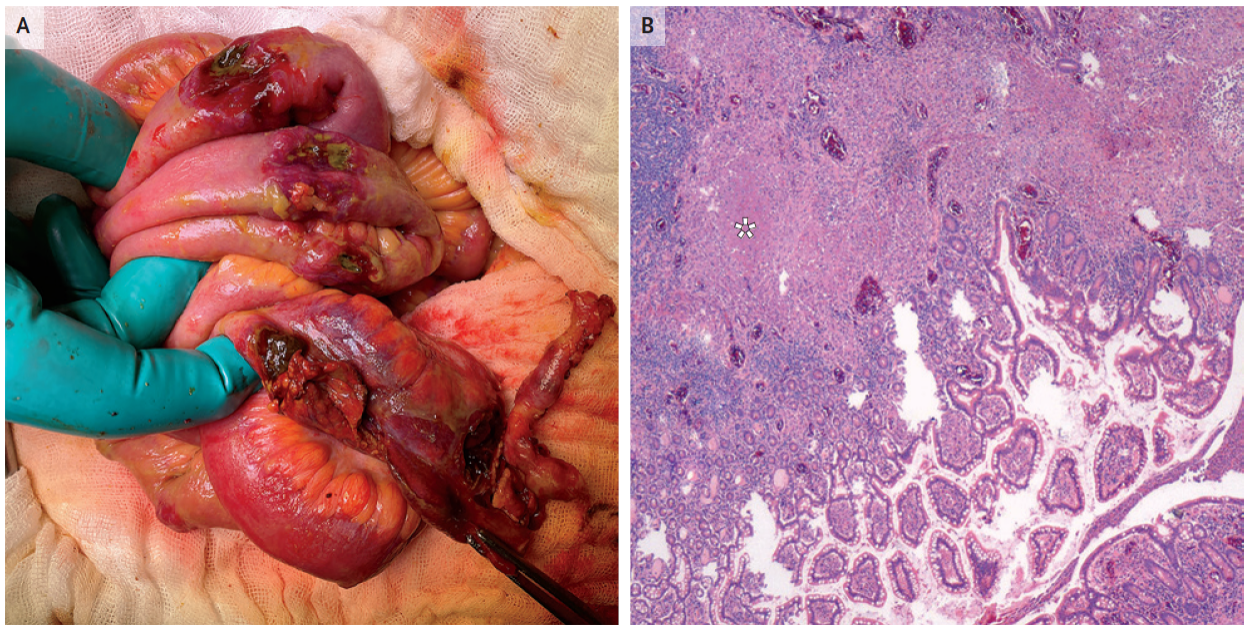
Splenic TB – A Case report published on January 21, 2023 at NEJM.org.

- CT of the abdomen showed an enlarged spleen with numerous hypodense lesions (Panel A). A splenectomy was performed to evaluate for cancer.
- Gross examination of the spleen showed numerous necrotic nodules with purulent discharge (Panel B).
- A histopathological examination showed granulomatous inflammation with caseous necrosis (Panel C) and acid-fast bacilli (Panel D, arrowheads).
- A tissue culture was negative. Real-time polymerase-chain-reaction testing of the tissue identified Mycobacterium tuberculosis, which confirmed a diagnosis of splenic tuberculosis.



42

Intestinal Tuberculosis



43