

Teaching Points

- Distinguishing Miliary TB from other infectious etiologies is essential for proper management.
- Recognizing the array of signs/symptoms that may be associated with miliary TB, including rare presentations, can help inform diagnostic workup.
- Changes in diagnostic approach may be indicated in some scenarios in order to accurately and rapidly confirm infectious etiologies.

Introduction

- Miliary tuberculosis (TB) is a potentially lethal infection that can be challenging to diagnose, even for experienced clinicians
- The lung is typically the primary source with other organ involvement caused by hematogenous or lymphatic spread or direct contact
- Genital TB is relatively rare, accounting for less than 10% of cases of extrapulmonary TB (EPTB). Incidence varies across regions and is likely underestimated.
- Female genital TB (FGTB) affects the fallopian tubes in 90% of women, the endometrium in 70%, and ovaries in 25%. Infection can cause menstrual dysfunction and infertility due to damage to reproductive organs.
- Miliary TB with genital involvement is exceedingly rare, with few cases reported in the literature.

Case Description

- A 23-year-old female was admitted due to recurrent fevers, chills, night sweats, and 15 pound weight loss in one month.
- Vitals: BP 113/77, HR=135, RR: 22, SpO2=98% on 4L NC, BMI=19.6kg/m2.
- Labs: Hb:10.6, Na: 129, total protein 8.9, AST/ALT: 93/57, ALP: 424, and lactate 3.5

Pertinent Social and Medical History:

- Born in the Philippines, lived there for 10 years; lived in the US for 13 years; works as a NICU nurse.
- 3 years ago: positive PPD test with a negative chest x-ray
- 1 year ago: negative Quantiferon test
- 6 months ago: developed skin lesions on arms, chest. Biopsy showed thickened collagen, increased interstitial mucin, and negative AFB smear. Diagnosed with early stage keloid and treated with intralesional steroids for six months
- 3 months ago: developed intermittent bloating, constipation, frequent urination, decreased appetite and amenorrhea
- Sputum smears for AFB taken during the first six days of current admission were all negative after 2 weeks

Hospital Course:

- Quantiferon was positive on this admission
- Patient was started on RIPE therapy due to high index of suspicion
- Blurry vision and emesis prompted MRI brain and lumbar puncture, findings were highly suggestive of TB meningitis, patient received a short course of steroids.
- Bilateral adnexal masses were suspicious for tubo-ovarian abscess vs malignancy vs. genital tuberculosis. Patient was treated with a course of antibiotics on admission. Peritoneal studies were negative for malignancies.
- Patient remained tachy (100-140) with recurrent night fevers (102) over the entire hospital course and started on beta-blocker.
- One month after admission, one of the six sputum cultures grew acid fast bacilli and two of the DNA PCR's were positive for TB

Table 1: Pleural, Peritoneal and Cerebral Spinal Fluid analysis

	Pleural	Peritoneal	CSF
Appearance	Hazy	Clear	Clear
Color	Yellow	Yellow	Colorless
Xanthochromia			Negative
Total WBC	344	69	203 (Ref: 0-10)
Total RBC	1827	525	11
CSF Bacteria			Not Present
Polys/Neutrophils			
Fluid	36	3	88% (Ref:0-7)
Lymphs	52	64	5% (Ref:28-96)
Monocytes	11	12	7% (Ref:15-45)
FL Mesothelial Cell	1	10	
Macrophages		11	
Number of Cells			
Counted	100	100	100
Albumin		2.2	
Amylase	43	32	
LD, Fluid	1161	688	
Glucose	83	96	30 (Ref:40-70)
Protein	4.8	5.1	287(Ref: 12-60)
Triglyceride	73	99	
AFB Smear for acid fast bacilli	Negative	Negative	Negative
Adenosine Deaminase	59.6 (Ref<9)	38.7(Ref<7)	37.6 (Ref<7)



Figure 1 Bilateral complex adnexal masses, containing internal air, suspicious for tubo-ovarian abscesses (10 days after initial CT ABD pelvis).

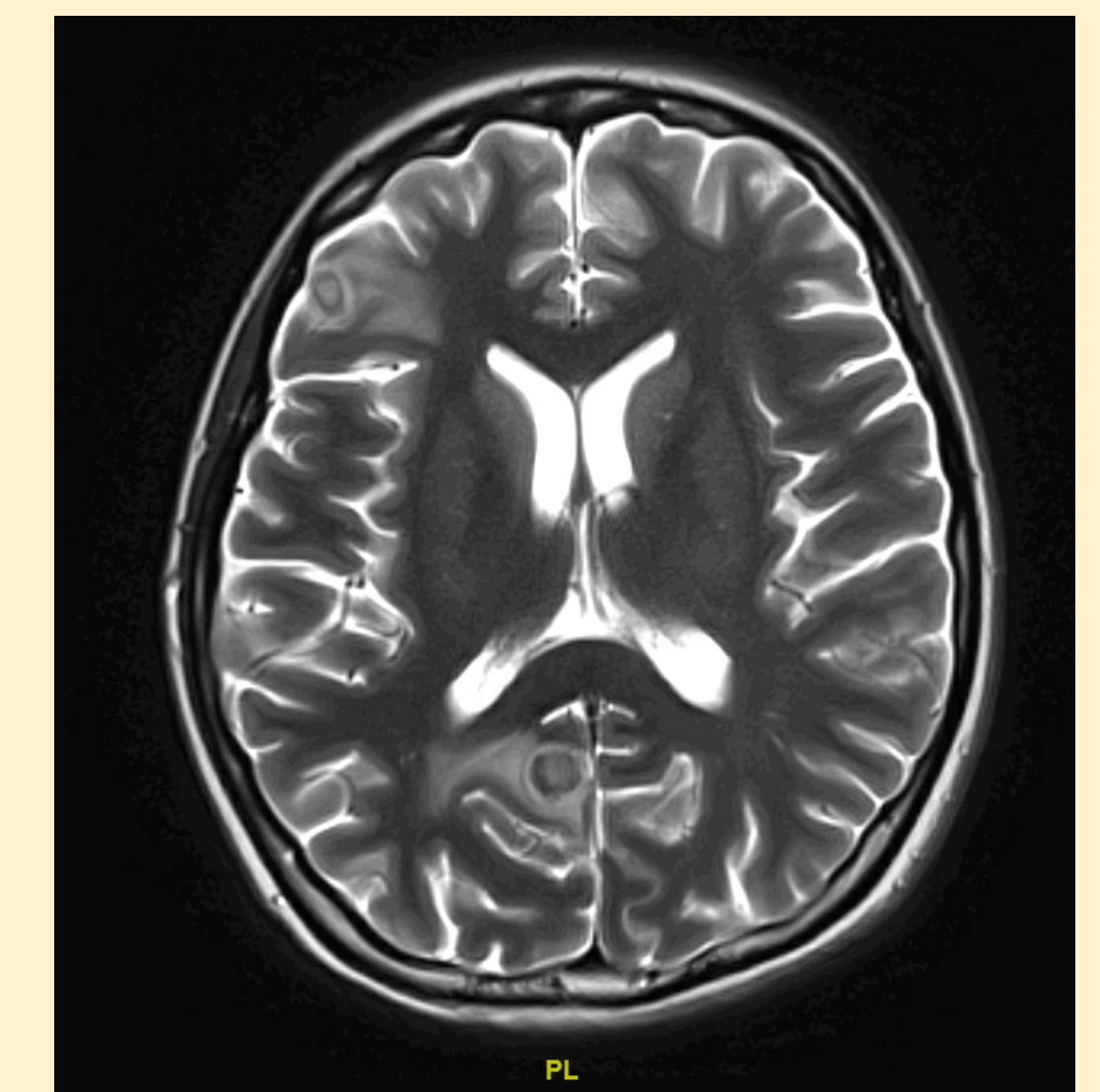


Figure 3: Target lesions in the right frontal and right parietal lobes with vasogenic edema.

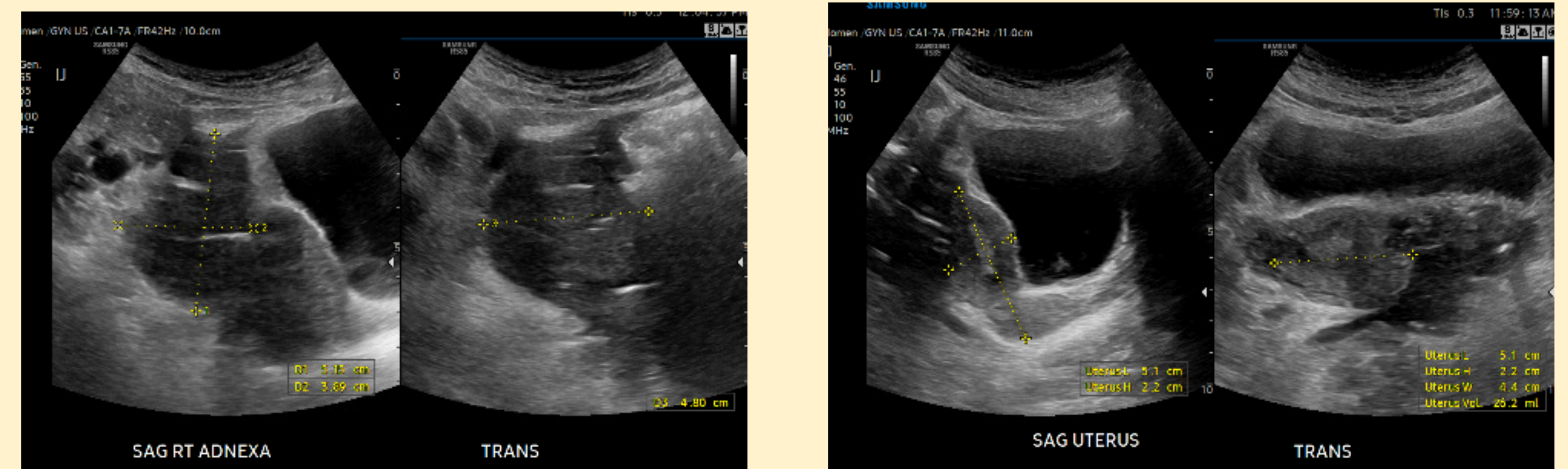


Figure 2 Transvaginal US: Bilateral complex adnexal masses. Given the presence of internal foci of air, the possibility of bilateral tubo-ovarian abscesses is raised.

Discussion

- A unique case of Miliary tuberculosis with genital involvement in a healthy young individual.
- Presenting features are similar to those of malignant ovarian cancer, which has one of the highest mortality rates for gynecological malignancies.
- The presence of air in the ovaries is commonly seen in patients infected with gas forming bacteria such as *C. perfringens*, *S. pyogenes* and *K. pneumonia*.
- In the setting of TB, it is unusual to see air in the adnexa especially in the absence of fistulas.
- Subjecting the patient to an adnexal biopsy carries a high risk of creation of a fistula in the setting of TB and was not done.
- There were several interesting findings and questions about this case:
 - *The quantiferon negative test one year prior to admission was most likely a false negative.
 - * Were skin lesions actually keloid or were they a response to activation of TB causing tuberculin hypersensitivity reaction? Typically, tuberculin hypersensitivity results in granuloma, necrosis and increased dermal mucin seen on histology. The patient's biopsy did have features of tuberculids.
 - * Did six month of intralesional steroids accelerate the progression of TB?
- As a result of this case, our hospital practice has changed; if the index of suspicion is high for TB, PCR of sputum is now ordered with AFB smears.

References/Acknowledgments

1. S.K Sharma. Miliary Tuberculosis. Microbiol Spectr . 2017 Mar;5(2).
2. Rickard BP. Malignant Ascites in Ovarian Cancer: Cellular, Acellular, and Biophysical Determinants of Molecular Characteristics and Therapy Response. Cancers (Basel). 2021 Aug 26;13(17):4318.
3. S.K Sharma. Challenges in the diagnosis & treatment of miliary tuberculosis. The Indian Journal of Medical Research: May 2012,v135(5),p 703-730.
4. Golden MP, Vikram HR. Extrapulmonary tuberculosis: An overview. Am Fam Physician. 2005;72:1761-8.

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