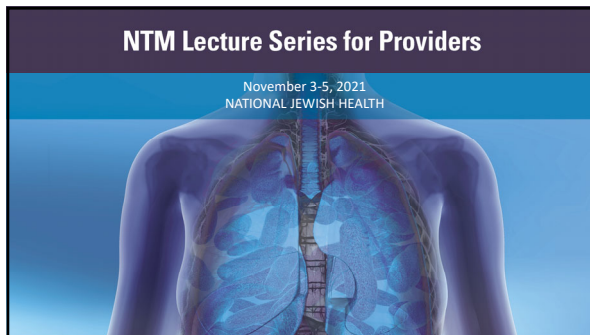
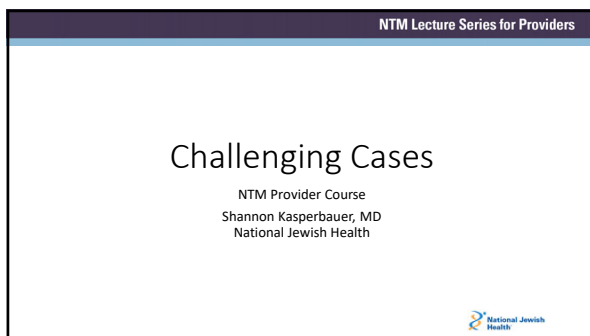
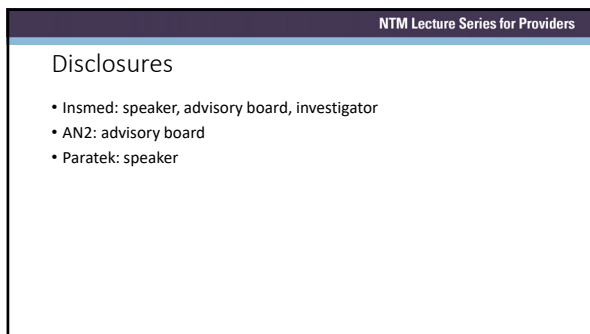


Challenging Cases (Part 1)








Challenging Cases (Part 1)

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Objectives


- Recognize underlying host vulnerability to bronchiectasis
- Appreciate diagnostic tools for NTM-LD
- Differentiate clinically relevant infection from non-pathogenic infection



NTM Lecture Series for Providers

Case One


- 40 year old female
- Healthy child
- Pneumonia at 17, 20 years old
- Pulmonary MAC diagnosed and treated on 3 separate occasions
 - First incidence at age 25
 - No culture data while on treatment
- No history of sinusitis, otitis media or other recurrent infections
- No history of infertility
- No family history of pulmonary disease



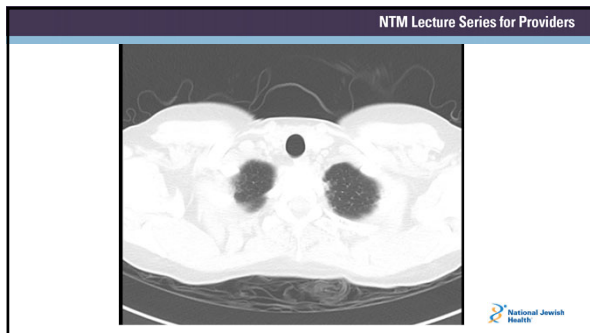
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Case One

- Current symptoms of chronic cough, sputum production and fatigue
- 3/3 sputum cultures are smear -, culture + *M. avium*



Challenging Cases (Part 1)



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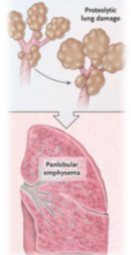
What additional diagnostic testing is most likely to reveal her underlying susceptibility to NTM lung disease?

1. Sweat testing
2. Alpha 1 antitrypsin level and phenotype
3. Quantitative immunoglobulins
4. Interferon gamma auto-antibody testing

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- Sweat chloride: 21 mmol/L (within normal)
- Quantitative immunoglobulins: normal
- Alpha 1 level: undetectable
- Alpha 1 phenotype: ZZ



National Jewish Health


NEJM., 2020, Vol.382(15), p.1443-1455

Challenging Cases (Part 1)

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Follow up 5 years later


- Patient is receiving Alpha 1 augmentation (Prolastin-C) therapy
- She completed 18 months of MAC treatment
 - With 12 months of negative cultures
 - No evidence of recurrence
- Airway clearance: vest, aerobika, hypertonic saline twice daily
- Chronic lower respiratory infection with MRSA



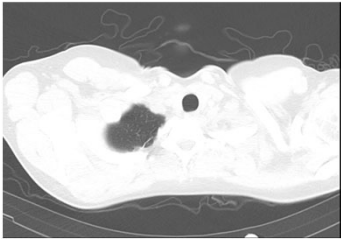
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Case Two

- 38-year-old female presented to NJ for an evaluation of severe asthma
- Childhood asthma, recurrent pneumonia, chronic sinusitis
- Hemoptysis at age 36, hospitalized with pneumonia
- First CT imaging at age 38



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Challenging Cases (Part 1)

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Diagnostic evaluation


- Smear +, culture + for MAC (3/3)
- Bacterial cultures + pseudomonas aeruginosa
- FEV1 57% predicted (ratio 60)
- IgE >5000



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What is the most likely diagnosis?


1. Asthma
2. APBA
3. Cystic fibrosis
4. All of the above



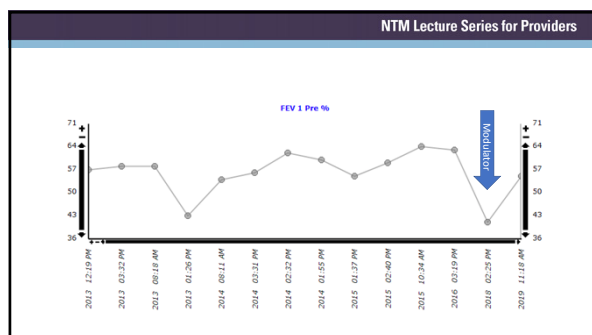
NTM Lecture Series for Providers

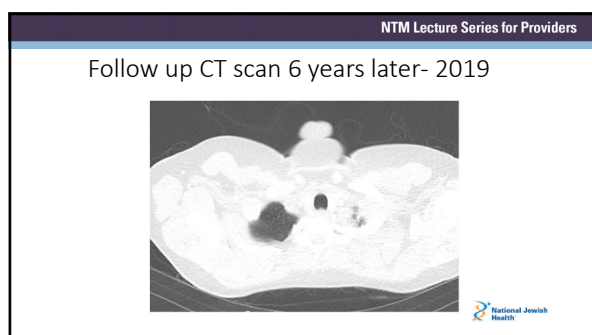
Follow up

- Sweat chloride 26, 39 mmol/L (above normal range)
- CFTR: deltaF508, R117H mutations
- She completed 12 months of negative cultures for MAC
- While on treatment for MAC, she began isolating *M. abscessus*
- She completed an additional 12 months of *M. abscessus* therapy
- 2018 she started modulator therapy



Challenging Cases (Part 1)





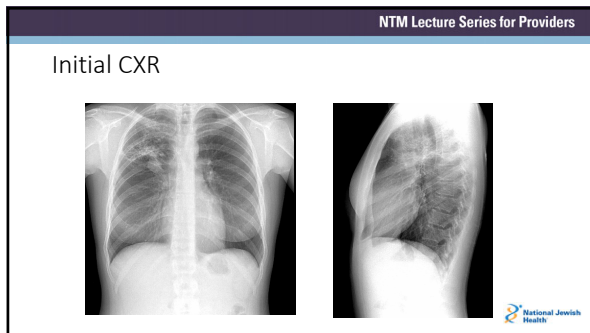
NTM Lecture Series for Providers

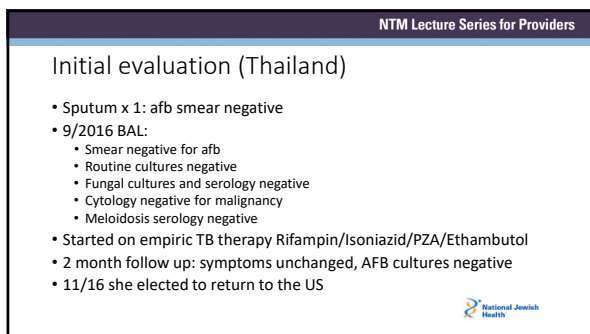
Case three

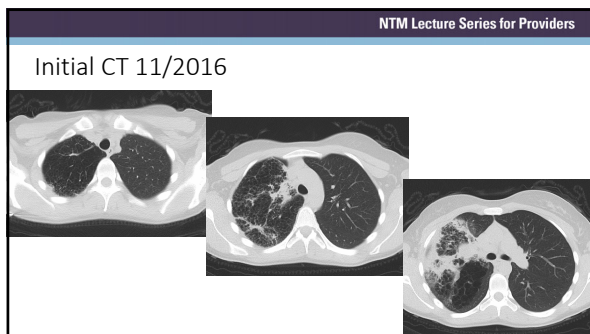
- 23 year old female
- In Thailand teaching English for 18 months (7/16) into stay: 3 weeks of dry cough without fever/chills/NS/wt loss

National Jewish Health

Challenging Cases (Part 1)





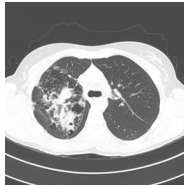


Challenging Cases (Part 1)

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NJ Evaluation 10/2017

- Continued cough, productive
- CBC WBC 11.1, Hgb 11.7, Plt 338
- No eosinophilia
- CMP normal
- HIV negative
- Immunology evaluation normal
- Fungal serologies negative
- QFT negative




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As an NTM suspect-What additional testing would be indicated?

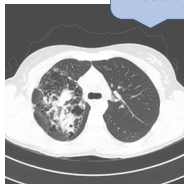
- Second bronchoscopy for repeat AFB cultures
- Universal PCR on BAL fluid
- Sputum induction x 3 for AFB smear and culture
- Serum IgA antibodies against mycobacterial glycopeptidolipid (GPL) core antigen



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NJ evaluation 10/2017

- BAL cell count: 94% neutrophils, 3% macrophage, 3% Lymph, 0 eosinophils
- BAL culture negative (bact/fungal/afb)
- BAL galactomannan negative
- 3 induced sputum: + *M. abscessus*



CT scan consistent with congenital abnormality: bronchial atresia

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Challenging Cases (Part 1)

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 **Medicine and Infectious Diseases**
Volume 26, Issue 12, December 1998, Pages 937-939




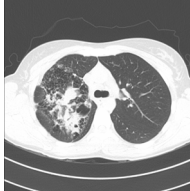
Effect of lidocaine (Xylocaine®) on culture of
tubercle bacilli in liquid medium


F. Enneux^{***}, C. Lemort^{***}, A. Hauchecorne^{***}, C. Lacroix^{****}, A. Morel^{***}



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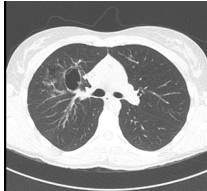

M. abscessus, subspecies *abscessus*: C28 sequevar




11/2017 1/2018 

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M. abscessus, subspecies *abscessus*: C28 sequevar

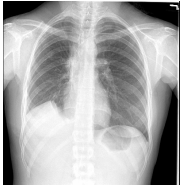


11/2017 1/2018 

Challenging Cases (Part 1)

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Follow up



- Aggressive IV + PO therapy
- Right upper lobectomy
- Completion of 12 months of negative cultures
- 3.5 years later, no evidence of recurrence

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Case Four

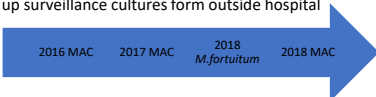
- 64 year old female with chronic cough of 4 years
- Repeated courses of azithromycin for bronchitis
- 2014 AFB cultures +M. intracellulare, macrolide resistant
- Treatment at NJH with ethambutol/rifampin/moxifloxacin + IV amikacin
- RML, lingulectomy

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Case Four

- 1/2016, she achieves 12 months of negative cultures and d/c therapy
- Intermittent cough
- Follow up surveillance cultures form outside hospital




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Challenging Cases (Part 1)

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With these follow up cultures would you:

1. Restart prior 4 drug NTM therapy
2. Start Azithromycin, ethambutol, rifampin (A/E/R) while waiting for susceptibility results
3. Order repeat imaging and start A/E/R therapy if her CT scan shows progression



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Follow up



2016	2017	2018
<i>M. chimaera</i>	<i>M. avium</i>	<i>M. timonense</i>

KEY POINTS

- Flares in symptoms over the years were attributed to pseudomonas aeruginosa infections and symptoms abate with antipseudomonal therapy.
- CT scan has remained stable now 5 years off therapy despite intermittent growth of different NTM species.
- Underlying bronchiectasis increases her risk of NTM-LD in the future
- Counseling includes: continued airway clearance, avoidance of immunosuppressive agents including ICS, environmental avoidance

