Challenging Pediatric Infections

Ritu Banerjee
Mayo Clinic, Division of Pediatric Infectious Diseases

Disclosures

None

Infections and children

• Frequent
• Vulnerable populations
• Unique syndromes

Challenging diagnoses

• Uncommon (but not rare)
• Atypical presentations
• Nonspecific initial symptoms
• Conditions that are not likely to be diagnosed unless specifically looked for

"The physician cannot make the diagnosis that he or she has not considered."
Unknown
Case 1

- 6 month old male with fever x 9 days, rash, irritability, and cervical lymphadenopathy
- GAS, Flu, RSV neg
- WBC 11, Hgb 9, Plts 350
- Urinalysis 21-50 WBC
- Defervesces with antipyretics. Sent home with TMP-SMX

Case 1, cont.

- Returns to ER 2 days later for persistent fever and rash
- Urine and bid cultures are negative
- Would you order any labs now?
  - WBC 16, Plts 550, ESR 100, CRP 198, ALT 56
- Next steps?
  - Echocardiogram
  - Admission

What is the diagnosis?

- A) Scarlet fever
- B) Stevens Johnson
- C) Measles
- D) Kawasaki Disease
- E) UTI
Clinical Pearls: Kawasaki Disease

- **CRASH and BURN =** Fever x 5 days plus 4 of the following features:
  - Conjunctivitis
  - Rash
  - Adenopathy
  - Strawberry tongue
  - Hands/feet: erythema → desquamation
- Incomplete Kawasaki: Fever plus fewer than 4 features

Clinical Pearls: Kawasaki Disease

- Laboratory abnormalities:
  - WBC > 15,000
  - Platelets >450,000
  - Hypoalbuminemia
  - Hyponatremia
  - Anemia
  - Elevated ALT, AST
  - Elevated CRP, ESR
  - Sterile pyuria

Case 2

- A 16-year-old previously healthy girl presents to the ER with a 1-day history of sore throat, high fever, and myalgias
- Group A strep test is negative and she is sent home
- She returns the next day with higher fever, chills, and severe right throat pain. She is tachycardic with HR 130. After antipyretics and fluid bolus HR is 125
Case 2, cont.

- A test for GAS is repeated and is again negative. She is sent home.
- What is your differential diagnosis?
- Next steps?

Case 2, cont.

- The following day she again returns to the ER with fever, chills, vomiting, cough, and dysphagia
- She is hypoxic and hypotensive
- Careful physical exam reveals a tender cord over her right neck (inflamed external jugular vein)

Case 2, cont.

- A neck CT demonstrates a peritonsillar abscess with rim enhancement.

Case 2, cont.

- It also demonstrates a hypodense thrombus within the anterior aspect of the right internal jugular vein.
Case 2, cont.

- Chest CT shows a left pleural effusion and multiple peripheral nodules consistent with septic emboli
- Blood cultures are obtained and she is started on cefepime, metronidazole, and vancomycin

What is the diagnosis?

- A. Ludwig’s angina
- B. Lemierre’s disease
- C. Toxic shock syndrome
- D. Q fever
- E. Sydenham’s disease

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What organism usually causes this infection?

- A. Acinetobacter
- B. Group A strep
- C. S. aureus
- D. Eikenella
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What antibiotic is the treatment of choice?

• A. Penicillin
• B. Clindamycin
• C. Metronidazole
• D. Cefepime
• E. Levofloxacin

Clinical pearls: Lemierre’s disease

• Septic thrombophlebitis of internal jugular vein (+/- external jugular vein)
• Presentation mimics strep throat or flu
• Caused by an anaerobe, so usual empiric antibiotics not effective
• Obtain blood cx and treat empirically with metronidazole
• Hypotension is a late sign of sepsis; do not overlook tachycardia as an early sign of sepsis
Case 3

- 14 yo boy with tetralogy of fallot s/p surgical repair and prosthetic pulmonary valve many years ago
- Develops fever and sore throat. Rapid strep test is positive so he is treated with amoxicillin for 10 days
- He is seen in the ER because fevers persist (T 101-103 daily)
- CBC is done and is normal. He is given augmentin for persistent fever

Case 3, cont.

- 2 days later he is seen by his cardiologist for persistent fever despite abx
- Echocardiogram reveals vegetation in pulmonary valve
- He undergoes valve replacement and path shows acute inflammation
- Multiple negative cultures from blood cultures and surgical specimen

What is the pathogen causing this infection?

- A) MRSA
- B) MSSA
- C) GAS
- D) S. pneumoniae
- E) HACEK organisms

We don’t know!

Clinical Pearls: Endocarditis

- Usually occurs in children with hx of congenital heart disease. Consider the diagnosis in such patients.
- Symptoms can be subacute, subtle, and nonspecific, or can be acute
- Obtain 4 to 6 blood cultures prior to giving antibiotics
- Most common cause of “culture negative” endocarditis is abx pre-treatment
Case 4

1 day after striking his right knee on the coffee table, a 10-year-old boy develops pain near the site of trauma. Two days later, the pain causes him to limp, and he develops a low-grade fever. He is seen in the ER, where he has tenderness over the proximal tibia. An x-ray of the knee is negative.

At this point, the most appropriate action is to:

- A. Obtain an MRI of the knee
- B. Obtain a bone scan
- C. Aspirate the proximal tibia
- D. Consult orthopedic surgery
- E. Prescribe ibuprofen, send him home on crutches, and have him follow up with his physician in 48 hours

I don't care, as long as you DON'T do “E.”

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Any are okay

Case 4, cont.

The ER physician is reassured by the normal plain film, his low-grade fever is attributed to a URI, and he is sent home with crutches and ibuprofen

The fever and pain both improve on ibuprofen but the parents are concerned because he prefers not to bear weight

They bring him to a different ER
Case 4, cont.

• In the second ER, an MRI is performed, which shows osteomyelitis of the right proximal tibial metaphysis
• Orthopedic surgery is consulted and needle aspirate shows many WBC and GPC in clusters

Clinical pearls: osteomyelitis

• Pain from trauma is immediate; pain from infection after trauma is delayed
• Hx of trauma is common in bone, joint, and muscle infection
• Do not be reassured by normal plain films in the first week
• Ibuprofen is a potent anti-inflammatory and can mask both pain and fever

Case 5

• 7 yo girl from northern MN develops high fever and rash on her ear in the summer
• No hx of trauma, travel, or camping
• She is given cephalexin for cellulitis

Case 5, cont.

• 2 days later she returns to the ER because rash has spread and she is still febrile
• She is admitted to the hospital for IV vancomycin but shows minimal improvement over the next day
• Lyme serologies are negative
• 2 days later she develops Bell’s Palsy
What is the diagnosis?

- A) Lyme Disease
- B) MRSA soft tissue infection
- C) Mastoiditis
- D) Ramsay-Hunt

Clinical Pearls: Lyme Disease

- Lyme serologies can be negative early in the course of disease
- Not all rashes associated with Lyme disease appear as classic Erythema migrans
- Consider Lyme Disease in anyone who lives/travels in a Lyme endemic area, even if no known tick exposure
Key points

• Beware of premature closure
• Consider what diagnoses might be overlooked
• Most clues to serious illness are in the history
• Obtain cultures before giving antibiotics