

East Meets West: An Infectious Disease Case

by

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Part I – Illness

Tuesday afternoon, January 8, 2013

“Wai, honey, maybe you should go to Med-Way Drugs to see if they have something besides isatis root that will help Ying’s fever.” Ying was sitting in the family room crying louder by the minute. He had been this way for a few days. “I am starting to worry because he seems hotter than he was a couple of days ago and he’s complaining about not being able to swallow because of the pain,” Min exclaimed.

“I don’t want to talk to the pharmacist about any of those ‘New World’ drugs, if that is what you are suggesting, Min. I just called my Mom and she said that her herbalist in Beijing always recommends yarrow for a fever. Maybe we can try that instead,” Wai suggested.

“His teacher told me that lots of other kids in his kindergarten class have been home sick. She said that they are usually out for a week, so I think we need to think about a more aggressive treatment,” Min added.

“Aggressive? These are the strongest herbs that I can find! Let’s give him some hot mint tea as well. That always helped my sore throats when I was a kid,” said Wai, as he started for the door. “In the meantime, I’m going to our herbalist for something more specific for his fever.”

Wednesday morning, January 9, 2013

Ying’s fever had spiked even higher despite the use of a variety of Chinese traditional treatments. His throat was erythematous and he was refusing to eat. His parents continued to worry about his condition and monitored his progress over the week with continued encouragement for food and fluids as well as the herbal medications Wai was recommended by his local herbalist.

Questions

1. In addition to isatis root and yarrow, what are other medicinal plants that some traditional medicine practitioners claim have an effect on alleviating fever? Are there any clinical trials to prove the effectiveness of each? List and research at least two.
2. Mint tea is sometimes used to relieve the pain of a sore throat. What other botanicals are used for patients with pharyngitis? Are there any OTC medications similar to mint’s action for pharyngitis?
3. List the potential pathogens you think Ying may have and the rationale for including these options.

Part II – Admittance

Admittance, January 11, 2013

Over the next couple of days Ying's condition exponentially worsened. Wai's herbalist had run out of options and encouraged them to rush Ying to the Neumann Hospital ER. Both Wai and Min were very worried and anxious, especially Wai, who disliked having to resort to conventional treatments for Ying. But they ultimately decided to go. A senior medical student made the following notes from the initial physical exam and lab tests:

Ying Chen – Initial Report

DOB: 11-16-2006

Gender: Male - Weight: 45.2 lbs. - Height: 42 inches

PHI: 6 yo Chinese male presents to ER with complaints of throat and ears hurting. Patient very agitated and fussy, complaining that he cannot swallow, with persistent cough. Parents report onset as 6 days ago with focus on throat only, with persistent and progressive pain every day. Mother reports increased sickness of kindergarten class. Pain is described as burning and scratching by child with nothing alleviating any pain beyond the mint tea parents made. Parents practice Chinese traditional medicine in the home and this visit marks the first for Ying in a Western institution. Parents came to hospital because they ran out of options.

Allergies: NKDA

Med Hx: Untold herbals, no Rx/OTC; Mother noted to contact local herbalist for list

FH/SH: Nothing disclosed by parents (some inherent distrust of Western medicine and slight language barrier); patient lives with parents and attends kindergarten

Vitals: T 39.9 degrees C, BP 110/71 mmHg, RR 40bpm, Pulse 110bpm

Physical exam:

(+) Drowsiness, agitation, ophthorrrhea, rhinorrhea, cough

(-) Epiglottitis, flushing, impetigo, circumoral pallor, rash, erysipelas

**Pharyngeal erythema with petechiae and dark white tonsillar exudates, tender; hypertrophied cervical lymph nodes*

Initial Laboratory Results:

WBCs: 11,800/uL, Differential: 78% PMNs, 18% bands, 4% monos

Chest X-ray: clear

Urinalysis: hematuria, proteinuria

Throat and blood cultures pending

Plan: Consult Pharmacy for optimal treatment

Questions

1. Now that you are provided with this additional information, what do you think is wrong with Ying?
2. What other assessments should the medical student have taken to more fully determine Ying's condition? Answer as a continuation of a SOAP note.
3. What tests can be utilized to determine the most likely pathogen? Explain your rationale for all possible pathogens.
4. What empiric treatment options should be considered given the resident's report? Fully explain your rationale.
5. Min and Wai are anxious about using conventional medicine. What can be done to assuage their concerns?

Part III – Progress

January 13, 2013

Before rounding with the care team this morning, you (the pharmacist on the care team) have a chance to meet with Ying and his parents. You decide to look up the progress notes made on him and find the following:

Day 0: Started on empiric therapy of Penicillin VK per pharmacy recommendations. Fever still persists, but less agitation and runniness is noted; improved diet and fluid intake is noted by dietician. Around 2300, Min alerts nurses to a rash on Ying's trunk; empiric therapy is discontinued.

Day 1: The throat culture on sheep blood agar revealed Streptococcus pyogenes (Streptococci) and Ying was given a diagnosis of streptococcal pharyngitis (strep throat). Blood culture confirms S. pyogenes. Gentamicin is initiated by the resident with renal dosing per pharmacy. ECHO scheduled for next afternoon.

Questions

1. What are some of the microbiological properties and virulence factors produced by this pathogen? Explain the typical mode of transmission and the epidemiological properties. If immunological tests had been run, what are some specific cytokines produced in response to a streptococcal infection?
2. Why would an ECHO be scheduled for Ying? What other tests should be run to minimize potential complications?
3. The urinalysis suggests distress at the level of the kidneys. What type of hypersensitivity is associated with an infection that becomes systemic to this degree? Explain the hypersensitivity.
4. What could be the potential cause(s) of Ying's rash?
5. Is gentamicin an appropriate agent for this patient? Why or why not? If not, what would you choose to replace it? (For either choice, include safety/efficacy monitoring parameters.)

Part IV – Discharge

January 19, 2013

Ying was finishing up his course of antibiotics and his parents were aiming for a great prognosis. All vitals had returned to normal and Ying was one blood culture away from being discharged. Min and Wai were now very interested in conventional medicine and had talked to Ying's doctor about his disease and the way the medications work. Seeing its effects on Ying had particularly affected Wai, who was steeped in Chinese traditional medicine.

Questions

1. Ying's doctor approaches you to talk to Wai and Min. She needs to attend to a few more patients before rounds. She wants you to explain the mechanism of action of what you would consider the best choice of antibiotic. Include other points of the pharmacology that may be relevant.
2. Based on your choice of antibiotic in Question 1 above, what is the medication's structure and why is it preferred over other medications? Be sure to include references to its structure-based activity, metabolism, and elimination.
3. How can you initiate a follow-up conversation with Ying's parents that incorporates their beliefs and practices so that you can effectively counsel them about Ying's care at home?

Two weeks after discharge, it is your duty to follow up with each patient from the care team and ensure optimal and holistic care. The second year resident forgot to include follow up points in Ying's patient record and now he was off on his next rotation.

Questions

4. Describe at least three counseling points that you would cover with Ying's parents. Be sure to include the following in your description: (1) safety, (2) efficacy, and (3) disease prevention/well-being.
5. How would you discuss the integration of Western medicine into the family while still honoring the family's traditional approach to medicine? Include and describe the use of a cross-cultural communication tool in your answer.



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