Management of Patients Presenting with Cough in a Time of Pertussis

Introduction

Minnesota is in the middle of a pertussis epidemic. Because of this we need to change the way we manage patients with cough during this period.

This is a time of pertussis. California has a highly publicized pertussis epidemic with 6000 reported cases and 10 deaths this year (1). As it turns out, so has Minnesota. We have fortunately had no deaths, but 1000 cases have been reported so far this year in Minnesota and 109 in Ramsey County alone. In Ramsey County there are 10 times as many cases this year as last year. Counties with the highest incidence are Ramsey – 109, Dakota – 115 and Hennepin – 175, the metro area (2). The incidence is higher in Minnesota than California.

Considering the management of patients with cough from a Bayesian perspective, this being a time of pertussis changes the prior probabilities, and thus changes the decision making calculus. Pertussis needs to be high on the differential. Patients are going to need to be treated presumptively, and we need to do far more culturing for pertussis.

We did a study in the 90s of pertussis in HealthPartners Medical Group (3). We found a lot of pertussis, and adolescents who presented with cough illness without asthma, pneumonia or sinusitis had a 25% chance of having lab evidence of pertussis. Our study found that standard culture and PCR techniques only pick up about 1/3 of cases of pertussis. The rate of pertussis this year in Minnesota is twice what it was when the study was done. In terms of symptoms, laboratory positive subjects were more likely to give a history of paroxysmal cough, post-tussive vomiting, gagging after coughing and had a longer median total duration of their cough illness.

Based on the study, in the absence of pneumonia, asthma or sinusitis, the following, dramatically increased the likelihood of pertussis:

1) Cough to the point of vomiting
2) Cough to the point of gagging
3) Paroxysmal cough
4) Cough duration of more than 10 days.

The highest rate was seen in patients age 10 through 19 and 40 through 49.
Recommended Management

Patient with paroxysmal cough with or without gagging or vomiting or a cough of 10 days or more in the absence of another explanation should be considered to probably have pertussis, and should be reported to MDH. They should be treated with a standard 5 day course of azithromycin. For children 6 months of age and older the dose of azithromycin is 10 mg/kg once the first day, and then 5 mg/kg/day once daily for the next 4 days. For infants under 6 months of age, the dose is 10mg/kg/day once daily for 5 days. (Bactrim is an alternative in azithromycin allergic patients 2 months of age and older.) These all should have either nasopharyngeal swabs or nasal washes done to do culture and PCR testing for pertussis, but treatment should not wait for results, nor be determined by the results. Family members of patients with paroxysmal cough (with or without vomiting or gagging) should be prophylaxed with 5 days of azithromycin as well. Any test positive patients should have all family and day care contacts treated.

This strategy will result in over treatment, with some patients who really don’t need it getting azithromycin. However, in this case the public health concerns of a highly contagious disease epidemic outweigh the public health concerns of overuse of antibiotics. Once the pertussis epidemic dies down, we should go back to the normal decision making for these patients.
In the absence of:
- Pneumonia
- Asthma, or
- Sinusitis...

Does the patient have?
- Paroxysmal cough?
- Cough to the point of vomiting or gagging?
- Cough lasting more than 10 days?

Not likely Pertussis

Consider the patient to have pertussis

Collect nasopharyngeal swab or nasal wash for testing.

Report to MDH

Treat the patient and family (close contacts) presumptively.

Less than 6 months of age.
- Allergy to Azithromycin?
  - No
    - Azithromycin 100mg/5ml
      - Sig: 10mg/kg/day
        - Once a day for 5 days.
  - Yes
    - Bactrim is an alternative for patients 2 months through 17 years of age.
      - TMP/SMX 40-200mg/5ml
        - TMP: 8mg/kg/day
          - SMX: 40mg/kg/day
          - Divide dose and administer twice daily for 14 days
            - (One ml/kg/day)
        - Contraindicated for kids <2 months of age

6 months to 17 years of age.
- Allergy to Azithromycin?
  - No
    - Azithromycin 100mg/5ml
      - Administered once a day
        - Day One: 10mg/kg
          - Max of 500mg/day
        - Day 2 – 5: 5mg/kg/day
          - Max of 250mg/day
  - Yes
    - Bactrim is an alternative for patients 2 months through 17 years of age.
      - TMP/SMX 40-200mg/5ml
        - TMP: 8mg/kg/day
          - SMX: 40mg/kg/day
          - Divide dose and administer twice daily for 14 days
            - (One ml/kg/day)

18 years of age and older.
- Allergy to Azithromycin?
  - No
    - Azithromycin (Z-Pak) 500mg day 1
      - 250mg/day for days 2-5.
  - Yes
    - Bactrim DS 1 tab bid for 14 days
References:
2. Minnesota Department of Health presentation to Minnesota Immunization Practices Advisory Committee, November 9, 2010

Questions: Please reply to this email, and your questions(s) will be directed to the author of this Pearl, Jim Nordin, MD, MPH.

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