A Respiratory Puzzle

Andrew McIvor, MD, FRCPC

Vince, 65, presents to the emergency department (ED) with a two-day history of yellow-green sputum and shortness of breath on mild exertion. There is no associated chest discomfort and no history of hemoptysis or weight loss.

The patient has a long history of chronic obstructive pulmonary disease (COPD) with frequent acute exacerbations of chronic bronchitis. He is still smoking a pack of cigarettes a day and has a 60-pack-year smoking history. There is no previous history of hospitalization.

Vince received an annual flu shot and a pneumovax pneumococcal vaccine three years ago. He is currently maintained on daily doses of tiotropium, along with the budesonide/formoterol combination. He is not taking any other medications.

Vince has no known allergies, although he does have a history of three to four acute exacerbations of chronic bronchitis (AECB) a year and last received a seven-day course of trimethoprim/sulfamethoxazole (TMP/SMX) two months ago.

Table 1 lists Vince's vital signs. The results of the physical and lab exams are recorded in Table 2.

What's your diagnosis?

a) AECB
b) Acute bronchitis
c) Community-acquired pneumonia (CAP)
d) Aspiration pneumonia

Table 1

Vince's vital signs

- Blood pressure: 140/72 mmHg
- Heart rate: 100 beats/minute
- Respiratory rate: 20 breaths/minute
- Temperature: 38.5 C
- Oxygen saturation: 90% on room air

Table 2

Results of physical and lab exams

- General appearance: No pallor, cyanosis, jaundice
- Cardiovascular: Normal
- Respiratory: Diffuse bronchi throughout chest; crackles in the base of the right lung
- Hemoglobin: 125 g/L
- White blood cellls: 16 x 10^9/L
- Chest X-ray shown in Figure 1 reveals a right lower lobe infiltrate.

Figure 1. Chest X-ray.

Answer:
CAP of the right lower lobe

The distinguishing features confirming CAP in someone who has a history of recurrent AECB or a known history of COPD are fever and the localization of signs to the right lower lobe. The presence of an infiltrate in the right lower lobe on the chest X-ray confirms this clinical diagnosis.

What is the treatment?

It is crucial to treat with the right class of antibiotic to improve patient outcome, prevent episodes of clinical failure and delay the development of resistance.

New guidelines have just been published on the treatment of acute exacerbations of chronic bronchitis in patients with COPD.

If this was an AECB, Vince would most likely fall into group II, for which the antibiotic treatment choice would be between amoxicillin/clavulanic acid and a fluoroquinolone. A macrolide would not be the preferred choice due to the emerging number of macrolide-resistant strains in Canada.

Because this patient is diagnosed with CAP, the initial antibiotic of choice would be fluoroquinolone. If hospitalization is required, the choice would be fluoroquinolone or the combination of cephalosporin and macrolide.

What's the GP's role?

The most appropriate person to choose an antibiotic for a patient is the treating physician, as he/she can consider the clinical diagnosis, risk stratify the patient to site of care and prescribe the appropriate medication.

Are there any cardiac side-effects?

It is important to remember that all antibiotics have the potential for serious or life-threatening side-effects.

Recently, regulatory authorities have significantly raised the bar for antibiotic approval with respect to efficacy, safety and tolerability of newly registered medications. Many medications available for treatment for respiratory tract infections, including TMP/SMX, chloramphenicol or even penicillin, would not meet the strict regulatory authority criteria in today's market.

The current mortality rate of CAP patients in Canada, if triaged to require admission to hospital, is approximately 16%. The mortality rate of similar patients being admitted with AECB causing ventilatory failure is around 11%.

Once the diagnosis of AECB or CAP has been made, it is extremely important to start patients on treatment immediately. Both quinolones and macrolides have excellent oral bioavailability. Even during the triage process, a first dose can be administered orally, as these patients do not usually have concomitant gastrointestinal upset. Dx

Dr. McIvor is an associate professor, department of medicine, Dalhousie University, and head, division of respirology, Queen Elizabeth II Health Sciences Centre, Halifax, Nova Scotia.

Share your cases with us!

Our mailing address:
955 boul. St-Jean,
Suite 306
Pointe Claire, Quebec
H9R 5K3

Our fax number:
(514) 695-8554

Our e-mail address:
diagnosis@sta.ca