

EVIDENCE-BASED APPROACHES: IMC Case on Asthma

Mr. Tiny Leung, a 28 year old African-American man, presents to the IMC with a chief complaint of cough. He has had a cough for the last two years. It gets worse in cold weather, when he exerts himself, and upon exposure to strong odors. He admits to some mild shortness of breath during these episodes and at times feels like "air is stuck in my chest". He states when he was in high school his pediatrician gave him an inhaler to use before track meets and practice because of similar symptoms. He had no issues up until two years ago, which is when he moved in with his girlfriend who has two cats. The cough and shortness of breath got so bad two weeks ago that he went to an urgent care center where he was given an albuterol inhaler. He states it really seems to help his symptoms. He has used the inhaler about 3 times daily and at least 3 nights over the last 2 weeks.

He denies any prior hospitalizations. He does not smoke, but his girlfriend's mother who is a chain smoker moved in with them 4 weeks ago. The patient denies any weight loss, fever, or chills. He endorses an occasional tension headache and admits to mild clear rhinorrhea for which he self treats with loratidine.

Past Medical Hx: Reactive Airways Disease and Eczema as child; Allergic rhinitis

Past Surgical Hx: Tonsillectomy at age 5

Allergies: NKDA

Medications: albuterol inhaler; loratidine 10 mg daily; Tylenol 325 mg 1 or 2 prn HA (utilized more often since girlfriend's mother moved in)

Social History: Denies tobacco, alcohol or illicit drug use; works as a manager of a local Subway restaurant; denies any occupational exposure to chemicals in past

Family History: Father, alive, 60: Hypertension, coronary artery disease; Mother, alive, 55: "chronic lung problems, but she smokes"; Brother, alive, 32: "uses a puffer as well"

ROS: Negative except as listed in HPI above.

Vitals: Temp: 97.6F, Pulse: 78; RR: 16; BP: 128/78; SpO2: 95% RA; Ht: 74"; Wt: 200 lb; BMI 25.7

Peak flows: 500, 510, 520 (L/min)

General: AOX3; NAD; Nontoxic; Pleasant; no conversational dyspnea

HEENT: PERRL, EOMI, oral mucosa moist, no oral lesions, minimal posterior pharynx drainage noted; TM's clear; nasal turbinates with mild blue hue, edema, 1 polyp noted in left nare

Neck: Supple, no JVD, no bruit, no nodes, no thyromegaly

CV: RRR, no murmurs, gallops or rubs, radial/DP/PT pulses 2+ bilaterally, no edema

Lungs: Bilateral end expiratory wheeze noted; mild prolongation of expiratory phase; no crackles or rhonchi; overall good air exchange

Abdomen: Soft, +BS, NT/ND, no mass, hernia, or organomegaly

Skin: Warm, dry, no rash

Neuro: Grossly intact

The MA who roomed him noted he was here for asthma and asked him to fill out an Asthma Control Test (ACT). He scored an 11.

Please use the link to Asthma guidelines to assist in answering the below questions:
<http://www.nhlbi.nih.gov/files/docs/guidelines/asthsumm.pdf>

Mr. Leung states he would just like a refill of albuterol which really seems to help him. You tell the patient you believe he has poorly controlled asthma given his symptoms as well as his ACT of 11. He asks what asthma is and what causes it.

1. What is the working definition of asthma (pg.9)?
2. Has a definitive cause of the inflammatory process leading to asthma been established yet (pg.9)?
3. What are some of the factors that are believed to cause asthma (pg.10)?
4. What are some of our patient's key symptom indicators for considering a diagnosis of asthma?
5. Is spirometry needed to establish diagnosis? Are peak flows an acceptable alternative diagnostic tool in asthma (pg.11)?
6. What are some differential diagnostic possibilities for asthma in adults (pg.12)?
7. What is the cut-off ACT score that indicates a patient's asthma is not under good control (Fig. 15, pg. 44)?

You review spirometry performed on the patient last week that was ordered at the urgent care. His FEV1/FVC ratio is 75%, FEV1 is 70% predicted, FEF25-75 is 70% predicted, with post-bronchodilator treatment his FEV1 improves 15% (well over 200 cc improvement). To review the interpretation of spirograms, please review the following article (read the whole thing- it's a good one!):

<http://www.mdedge.com/ccjm/article/93981/pulmonology/interpreting-pulmonary-function-tests-recognize-pattern-and-diagnosis/pdf>

8. Is the patient's spirometry consistent with a diagnosis of asthma?
9. What percent post-bronchodilator improvement is considered a significant bronchodilator response?
10. Utilizing the patient's clinical history and spirometry results, please classify the patient's severity of asthma? (Fig.14 from Guidelines will help)
11. Devise a medication treatment regimen for our patient. (Utilize figs. 14 and 16 from Guidelines as a quick reference)
12. What are the goals of therapy with asthma (pgs.15, 44)?

13. What are some possible environmental triggers you would advise this patient to attempt to eliminate?
14. When would you schedule follow-up with the patient, when would you repeat spirometry (pg.18)?
15. When should you consider daily peak flow monitoring for patients (pg.16)?

The patient states his friend told him aspirin was the best medication for headaches. He gets very good relief with Tylenol, but wonders if aspirin would be better.

16. What would you advise this patient? (pg.23)
17. What are the key educational messages to be taught to patient at this visit, and reinforced at all follow-up visits? (pg.18)

You just reviewed all of the above with your attending in the IMC bullpen when the patient's girlfriend's mother who drove him to IMC, became upset at how long the appointment was taking and came back to the patient's room. She sprayed a bunch of perfume onto herself in the exam room. You now note the patient is coughing strenuously and speaking in 4 or 5 word sentences. His vitals are stable, SpO2 94%RA and respiratory rate is 18. Exam shows diffuse wheezing. You have the mother return to the waiting room. The patient is moved to a different exam room and you ask for a stat aerosol treatment.

18. What are some risk factors for asthma-related death from exacerbations (pg.53)?
19. Please define the different levels of severity of exacerbations and what treatment options are available for each. (pg.54-55)

The patient is feeling much better in the new exam room after 2 albuterol aerosol treatments. You ambulate him around the clinic and he says he still feels a little "tight". Pulse ox and vitals are stable. Exam shows decreased wheezing and improved air exchange since aerosols, but still more wheezing than on initial exam.

20. What additional medication would you add at this time (pg.55)?
21. Would you send the patient to the ER now?

The patient calls you 2 weeks later. He has finished his prednisone 40 mg daily and is tolerating his Flovent HFA 110mcg 2 puffs bid (he is remembering to rinse his mouth after each use as you have instructed). He has only used his albuterol inhaler once over the last 7 days. His girlfriend made her mother move out when she heard the mother's smoking and perfume were possibly contributing to the patient's problems. The mother also was willing to take the cats. The patient states he will keep his appointment with you scheduled for next week.

Bonus – Calculate our patient's predicted peak flow