Clinical Case Discussions – Day #2

Case 1

An 8-year-old girl with severe asthma

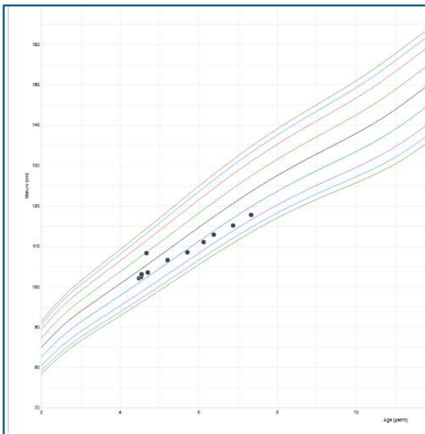
Brief history:
Former full term infant, first wheezing illness at 11 months, ICU admission at 2 years for asthma in the setting of rhinovirus infection, no intubation.
Triggers: URIs, exercise, cold air, Fall season
Comorbid OSA, now s/p adenotonsillectomy; negative allergy SPT to a panel of aeroallergens; no eczema, no food allergy

Around age 6 her asthma was poorly controlled on medium dose ICS-LABA plus LTRA with:
Sx: coughs most days. Mildly limited exertion. Use of rescue medication 3-4 x week d/t wheeze.
Risk: 3-4 courses of prednisone/year

Medication was stepped up: started on Budesonide-Formoterol 160 mcg, 2 puffs BID, continued Montelukast 5mg daily, Albuterol PRN; adherence is reportedly excellent

On repeat evaluation, only 1 exacerbation in the prior 12 months and occasional rescue medication use, markedly improved.
Parent reports that she is seeing a school counselor for anxiety and behavioral symptoms disruptive to school performance.

Examination: HEENT – normal, no nasal turbinate edema; Chest: clear to auscultation
Growth Chart:



Spirometry: FEV1 68-76% (<LLN), FEV1/FVC 0.6 -0.7 (<LLN)
Peripheral blood eos: 0.61; FeNO: 19ppb; Total IgE: 160; sIgE: negative to aeroallergens

Case 2

A 26-year-old personal trainer is referred for help with management of her asthma.

She reports the onset of asthma in early childhood. She recalls having been given nebulizer treatments each day after school. In middle school and high school, she took a steroid inhaler that seemed to work well, and she was able to run track and play tennis on school sports teams. In the last 2-3 years, however, she feels that her asthma has been "out of control." Despite taking the highest dose of inhaled fluticasone propionate 2 puffs twice daily, she has had frequent flare-ups requiring urgent care visits and short courses of prednisone; in the last year she has had exacerbations almost every other month. She is now on fluticasone/salmeterol combination 500/50 one inhalation twice daily and montelukast 10 mg once daily; she avoids using her albuterol inhaler as much as possible because it makes her jittery. Her asthma (cough, wheeze, and shortness of breath) interferes at times with her work and disrupts her sleep (which she finds particularly frustrating, now that her 2-year-old son is finally sleeping through the night!).

She has seasonal allergic rhinitis (spring through the fall), for which she takes an antihistamine and nasal steroid spray daily. She has only a remote history of sinus infections, no intolerance of aspirin or other non-steroidal anti-inflammatory drugs, and a normal sense of smell. For her work she rents gym space, which she finds somewhat dusty. At home she has a dog, which she has had for the last 4 years. She describes it as hypo-allergenic (a bichon frise) and only notes allergic reactions if it licks her skin or scratches her. She is allergic to cats but is very rarely around cats in other people's homes. She is frustrated by an intermittently hoarse voice, which she attributes to one of her inhalers.

On examination, she has mildly edematous nasal mucosa with clear watery nasal discharge; her chest is clear to percussion and auscultation. The remainder of her examination is normal.

Laboratory data include the following:

- Spirometry: mild airflow obstruction with and FEV1 = 77% of predicted.
- Exhaled nitric oxide is suppressed at 18 ppb.
- Complete blood count reveals peripheral blood eosinophilia with 600 eosinophils/uL
- Total serum immunoglobulin E (IgE) = 325 IU/mL
- Allergy skin tests (prick tests) positive to cats, dogs, dust mites, ragweed, birch tree, and alternaria.

Case 3

A 24-year-old nurse is referred by her obstetrician for management of her asthma.

As a young child she had exercise-induced symptoms for which she was given a quick-acting bronchodilator to use as needed. At age 13 she had a respiratory tract infection that caused a severe asthmatic attack. She does not recall the details but knows that she was treated in the intensive care unit and almost needed intubation and mechanical ventilation but was not intubated. At that time she was hospitalized for 10 days and decided then and there that she wanted to become a nurse. After this hospitalization she was maintained on a combination inhaled steroid/long-acting bronchodilator inhaler and had few symptoms and no major asthma attacks until nursing school. Her asthma worsened then, requiring repeated courses of oral corticosteroids until 4 years ago, when she was begun on monthly injections of mepolizumab. Since then, she feels that her asthma has been well controlled. Her asthma triggers include exercise in cold weather, exposure to cats or dogs (she has no pets at home but works as a visiting nurse with occasional exposure to animals in patients' homes), and "head colds" that always seem to "settle in my chest." Her last course of oral corticosteroids was last fall in the context of a respiratory infection.

She is now 12 weeks pregnant with her first pregnancy and feels well. She notes some tightness in her chest when walking fast outdoors. She might use her albuterol inhaler to bring relief from this sensation, sometimes remembering to use it before exertion, and she infrequently wakes at night to use it (which is new since her pregnancy). She has continued her budesonide/formoterol inhaler twice daily, sometimes skipping doses if she feels well. Her other medications are pre-natal vitamins, as-needed sumatriptan for migraine headaches, and propranolol as needed for stress-related anxiety, such as public speaking. She does not monitor her peak flow at home, feeling that she can tell how her asthma is doing based on how she feels.

On examination, she appears well. She has mild eczema on her hands. Her chest is clear to percussion and auscultation.

Her peak flow measured in the office is 320 L/min

Case 4

A 29-year-old construction worker seeks your help with her difficult-to-control asthma.

She reports the onset of asthma approximately 6 years ago. At the time she was smoking approximately 1 pack of cigarettes/day, but she quit smoking when she received the diagnosis of asthma.

She was initially prescribed inhaled mometasone 2 puffs twice daily (which she admits to having used somewhat erratically), but with on-going symptoms of asthma her treatment has been steadily escalated, first to low-dose fluticasone-salmeterol inhaler, then to high-dose fluticasone-salmeterol, and most recently to once-daily, high-dose fluticasone furoate/vilanterol.

Despite this therapy she remains markedly symptomatic, with typical symptoms of cough, wheeze, and shortness of breath, awakening several times each week with symptoms of asthma, for which she uses her new combination budesonide-albuterol inhaler and then tries to get back to sleep. She has not required emergency care, but over the past 6 months she has received 3 short courses of prednisone from her primary care provider for acute flares of her asthma.

She lives alone (and feels that her asthma is interfering with any intimate relationships). She has no pets and keeps a clean apartment. Her work can be dusty; if it gets particularly bad, she wears a face mask. She smokes only occasional marijuana, which she thinks may help her asthma rather make it worse. She had surgery years ago for a deviated septum but denies any current nasal symptoms. She reports only rare heartburn with certain spicy foods, which she avoids.

Her examination is notable only for soft musical expiratory wheezes diffusely on chest auscultation.

Spirometry indicates moderate airflow obstruction (FEV1 =62% of predicted) with significant (15%) improvement following bronchodilator.

Additional laboratory data:

FeNO = 16 ppb
Total IgE = 35 IU/L
Total blood eosinophils = 110 cells/μL
Allergen-specific IgE to cat, dog, dust mite, mouse, aspergillus, and cockroach – all normal.
Chest CT scan – air trapping on exhalation; no parenchymal abnormalities.
No sputum is available for examination.