

## You're the Flight Surgeon

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You are the flight surgeon at a southwestern Air Force base seeing clinic one summer afternoon when a 33-yr-old male air refueling tanker pilot comes in for his flight physical. He has a childhood history of asthma but has not used any inhalers since 12 yr of age and has a current aeromedical waiver for this disqualifying condition. He has no major complaints, but just wants refills of his fexofenadine and intranasal fluticasone to control his “drippy nose and itchy eyes.”

The pilot denies other medications, but being a thorough flight surgeon, you specifically ask him about over-the-counter medications and supplements. He reports taking workout protein and antacids as needed. He denies any allergies except his hay fever. He performs resistance and cardiovascular exercises 3–4 times per week and says that he consumes a typical American diet. He reports drinking 1–2 beers 1–2 times per week and denies ever smoking.

Physical exam is relatively unremarkable except for mild allergic shiners under his eyes and rhinorrhea. You also note his body mass index is 29. You are about to walk out the door to refill his allergy medications and get a jump on your afternoon schedule when he remarks that his heartburn is flaring up after some chicken wings he had for lunch. He asks if you could write him a prescription for antacids to save him a trip to the store. You decide to sit back down and ask a few more questions about the pain that he is having.

In response to your questions, he clears his throat and says, “Well, it's not really a pain, Doc, it's more of an uncomfortable burning sensation that I feel in the center of my chest after eating, and sometimes I feel a nasty backwash in the bottom of my throat when I watch TV in my recliner after supper.” His wife told him that he had heartburn and gave him antacids, which have helped some. He admits that although he has been dealing with this for several years, it has become more frequent of late, occurring 1–2 times a week now. He reports no family history of heart or lung problems. He specifically denies shortness of breath, radiation of the pain into his back, arm, or neck, nausea, vomiting, coughing up blood, or having black stools.

### 1. At this point, which of the following are reasonable to consider in your differential diagnosis?

- A. Gastroesophageal reflux disease (GERD).
- B. Peptic ulcer disease.

- C. Eosinophilic esophagitis (EoE).
- D. Barrett's esophagus.
- E. All of the above.

### ANSWER/DISCUSSION

**1. E.** At this point, you should not rule out any of the above diagnoses, although some are more likely than others. GERD immediately jumps to mind as it affects 10–20% of people in Western countries and presents with pyrosis and regurgitation.<sup>7</sup> While epigastric pain most commonly presents in peptic ulcer disease, 46% of patients may also present with heartburn or regurgitation.<sup>2</sup> EoE typically presents with dysphagia, but can also present with GERD symptoms,<sup>9</sup> and the member's history of asthma and allergies may also suggest EoE.<sup>8</sup> Rare though it may be, you respect that Barrett's esophagus can be a precursor of malignant adenocarcinoma in patients with multiple risk factors, such as being male, Caucasian, age greater than 50, centripetal obesity, chronic GERD, and hiatal hernia.<sup>1</sup> However, GERD is a likely initial diagnosis because it is so common.

You feel it reasonable to empirically treat his condition with lifestyle recommendations and medical management. You recommend that he lose weight, avoid foods that aggravate his symptoms, avoid reclining after dinner, and consider raising the head of his bed while sleeping. After discussing aeromedically approved medications with the pilot, he opts for twice daily ranitidine for 2 wk, stating that he remembers his father uses that medication. On questioning, the pilot denies any known family history of esophageal problems or cancer, just his father's heartburn. You instruct him not to fly for the next 3 d while ground testing ranitidine and to follow up if his symptoms worsen or return after 2 wk of treatment.

Approximately 6 mo later, the pilot returns with a story. His heartburn symptoms initially seemed to improve on the ranitidine, but then he started to have some trouble swallowing. He put off coming in to be seen due to frequent travel and just bought more ranitidine over the counter. But last week, a bite of Thanksgiving holiday turkey got painfully stuck in his throat a couple of seconds after swallowing. He was able to drink water but could not dislodge the turkey or cough it back

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up. “This is where it got stuck, Doc,” he says, pointing to the suprasternal notch. His wife took him to the emergency department, he was referred for an urgent endoscopy, and the turkey was removed.

He hands you the endoscopy report he obtained from gastroenterology this morning. Biopsies taken from multiple areas of inflammation in the esophagus showed more than 20 eosinophils per high powered field. Stacked circular rings, pronounced linear furrows, a stricture, and whitish papules were also noted. Therapeutic esophageal dilation was also performed during the procedure. The gastroenterologist told him that he may have EoE.

**2. All of the following are considered part of the diagnostic criteria for EoE except:**

- A. Symptoms and signs of esophageal dysfunction.
- B. Esophageal biopsies demonstrating > 15 eosinophils per high powered field.
- C. Failure of a 2-mo trial of a proton pump inhibitor (PPI) to rule out GERD.
- D. Assessment of non-EoE disorders that could lead to esophageal eosinophilia.

**ANSWER/DISCUSSION**

**2. C.** This response is correct, as it is the only false criterion. Although recommended in prior guidelines, a 2-mo failure of a PPI is no longer required to diagnose EoE, as it is now recognized that PPI-responsive eosinophilic esophagitis exists.<sup>6</sup> Esophageal dysfunction may manifest as difficult or painful swallowing, impacted food, pyrosis, food refusal, abdominal pain, chest pain, and vomiting, among other symptoms.<sup>6</sup> Endoscopic signs such as longitudinal furrows, rings, exudates, edema, strictures, and a narrow esophagus combined with > 15 eosinophils per high powered field on biopsies support a diagnosis of EoE.<sup>6</sup> Examples of non-EoE disorders that may contribute to esophageal eosinophilia include, but are not limited to, achalasia, Crohn's disease, connective tissue disorders, drug hypersensitivities, hypereosinophilic syndrome, infections, and non-EoE eosinophilic gastroenteritis.<sup>6</sup>

**3. Which of the following treatments are recommended for EoE?**

- A. Dietary restriction.
- B. PPI.
- C. Topical corticosteroids.
- D. Endoscopic dilation.
- E. All of the above.

**ANSWER/DISCUSSION**

**3. E.** Dietary restriction may involve elemental elimination of all potential allergens in an amino acid-based formula, empiric elimination from six common foods, or targeted elimination based on testing.<sup>5</sup> The effectiveness, safety, price, and convenience of PPIs make them a reasonable therapy for PPI-responsive eosinophilic esophagitis.<sup>6</sup>

Strong evidence supports use of swallowed topical steroids to treat EoE.<sup>5</sup> Symptoms related to strictures refractive to diet and medications may be treated with cautious dilation.<sup>6</sup>

The gastroenterologist wanted to start the member on twice daily swallowed fluticasone delivered from a metered dose inhaler. However, the pilot is concerned that the inhaler will ground him after being told that inhaler use was disqualifying for flying duties during his asthma waiver process.

**4. What is your chief aeromedical concern at this point?**

- A. The history of esophageal dilation.
- B. The need for a medical evaluation board to determine fitness for continued military service.
- C. Recurrence of distracting symptoms.
- D. The twice daily use of a steroid inhaler.

**ANSWER/DISCUSSION**

**4. C.** Dilation may produce chest discomfort or bleeding and poses risk of perforation,<sup>6</sup> but is not the primary concern in flight. Per the Medical Standards Directory, EoE is not a retention issue in the U.S. Air Force unless it is persistent and severe.\* However, according to the Medical Standards Directory and the Air Force Waiver Guide,<sup>4</sup> EoE may be disqualifying for flight as a “chronic or recurrent esophagitis not controlled by approved medications or with complications including stricture or reactive airway disease.” The Waiver Guide further indicates that the aeromedical concern of EoE involves symptoms that may distract the pilot during flight; it also notes that topical corticosteroids administration through a metered dose inhaler can be an acceptable treatment.<sup>4</sup> Of note, EoE may be considered disqualifying for flying duties according to Section 2-25 of Army Regulation 40-501 as a condition that interferes with swallowing<sup>12</sup> and according to Section 7.1 of the U.S. Navy Aeromedical Reference and Waiver Guide due to history of esophageal disease.<sup>11</sup>

Although EoE is not mentioned specifically in the Federal Aviation Administration's Guide for Aviation Medical Examiners, section 67.113 (b) of Title 14 of the Code of Federal Regulations allows the Federal Air Surgeon to deny a medical certificate based on a general medical condition that may prevent the airman from safely performing flight duties.<sup>3,10</sup> Symptoms of EoE could reasonably be considered such an unsafe condition. Consultation with a regional flight surgeon or the Aviation Medical Certification Division is suggested.<sup>3</sup>

You explain to the pilot that recurrent symptoms from the underlying medical condition are the flying concern, not the type of medication used to treat it. You say that swallowing fluticasone, rather than inhaling it, allows the steroid to work directly on the inflamed esophagus and will hopefully prevent food from getting stuck. The pilot breathes a sigh of relief before saying, “Ok, Doc, when can I fly again?”

\* U.S. Air Force. Section I: abdominal and gastrointestinal. USAF medical standards, I2. In: Medical standards directory (MSD). 2018:27. [Accessed 1 Nov. 2018]. Available from <https://kx2.afms.mil/kj/kx4/FlightMedicine/Documents/Forms/ShowFolders.aspx?RootFolder=%2Fkj%2Fkx4%2FFlightMedicine%2FDocuments%2FMedical%20Standards%20Directory%20%28MSD%29&FolderCTID=0x0120004DEB19A0C597EF4794DF99094B5AD8FC&View=%7BE6B00DAE%2DE012%2D41B4%2DB351%2DDE160D7DA68D%7D> to those with access.

You inform the pilot that he should be effectively treated, without symptoms and stable, before submitting a waiver to return him to flying. He says that he wants to do everything he can to help his condition and to get a waiver. You recommend that he see a nutritionist, undergo allergy testing, and take fluticasone twice daily as prescribed. You agree to see him back in a month or sooner if his condition worsens.

The pilot returns 1 mo later. The nutritionist counseled him to avoid milk, eggs, soy, wheat, nuts, and seafood, which he has done, although it has been a difficult diet for him to maintain. His allergy testing shows that he is allergic to milk and eggs, and so he decides to just avoid these two foods moving forward. The member reports that although his swallowing has improved on the fluticasone, it has not resolved, and he still has some symptoms of heartburn. You decide to add esomeprazole to his regimen and see him back in another month.

When the pilot returns a month later, he says that his symptoms have completely resolved on the esomeprazole and fluticasone, while avoiding milk and eggs. However, you discuss concern about the potential for relapsing symptoms over time. You explain that a repeat endoscopy could help provide additional confirmation that the treatment is working and hopefully show that he does not need another dilation. The pilot agrees, and after discussion with his gastroenterologist, repeat endoscopy is obtained and shows an improved clinical picture.

You submit an aeromedical waiver, which comes back approved with the stipulation that the member must fly with another qualified pilot. You inform the pilot of the good news while reinforcing to him that he must report any return of symptoms immediately. During the week of Thanksgiving the following year, the pilot sends you a giant turkey and thanks you for getting him safely back in the air.

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## REFERENCES

1. American Gastroenterological Association, Spechler SJ, Sharma P, Souza RF, Inadomi JM, Shaheen NJ. American Gastroenterological Association medical position statement on the management of Barrett's esophagus. *Gastroenterology.* 2011; 140(3):1084–1091.
2. Barkun A, Leontiadis G. Systematic review of the symptom burden, quality of life impairment and costs associated with peptic ulcer disease. *Am J Med.* 2010; 123(4):358–366.e2.
3. Bozung T. Eosinophilic esophagitis: to certify or not to certify. *Federal Air Surgeon's Medical Bulletin.* 2016; 54(2):16–18.
4. Brown MR, Van Syoc D. Eosinophilic esophagitis and eosinophilic gastroenteritis (Mar. 15). In: *Air Force waiver guide.* Wright-Patterson AFB (OH): U.S. Air Force School of Aerospace Medicine; 2018:310–314.
5. Dellon ES, Gonsalves N, Hirano I, Furuta GT, Liacouras CA, et al. ACG clinical guideline: evidenced based approach to the diagnosis and management of esophageal eosinophilia and eosinophilic esophagitis (EoE). *Am J Gastroenterol.* 2013; 108(5):679–692.
6. Dellon ES, Liacouras CA, Molina-Infante J, Furuta GT, Spergel JM, et al. Updated international consensus diagnostic criteria for eosinophilic esophagitis: proceedings of the AGREE Conference. *Gastroenterology.* 2018; 155(4):1022–1033.e10.
7. Dent J, El-Serag HB, Wallander MA, Johansson S. Epidemiology of gastroesophageal reflux disease: a systematic review. *Gut.* 2005; 54(5):710–717.
8. Guarino MP, Cicala M, Behar J. Eosinophilic esophagitis: new insights in pathogenesis and therapy. *World J Gastrointest Pharmacol Ther.* 2016; 7(1):66–77.
9. Kapel RC, Miller JK, Torres C, Aksoy S, Lash R, Katzka DA. Eosinophilic esophagitis: a prevalent disease in the United States that affects all age groups. *Gastroenterology.* 2008; 134(5):1316–1321.
10. National Archives and Records Administration, Office of the Federal Register. General medical condition, 14 CFR § 67.113. [Accessed 18 Dec. 2018]. Available from [https://www.ecfr.gov/cgi-bin/text-idx?SID=b15af4b6186bc7f1963dc7651cf63ece&mc=true&node=pt14.2.67&rgn=div5#se14.2.67\\_1113](https://www.ecfr.gov/cgi-bin/text-idx?SID=b15af4b6186bc7f1963dc7651cf63ece&mc=true&node=pt14.2.67&rgn=div5#se14.2.67_1113).
11. Naval Aerospace Medical Institute. 7.1 Eosinophilic esophagitis (EoE)/PPI-responsive esophageal eosinophilia (PPI-REE). In: *U.S. Navy aeromedical reference and waiver guide.* Pensacola (FL): Naval Aerospace Medical Institute; 2018. [Accessed 1 Nov. 2018]. Available from <https://www.med.navy.mil/sites/nmotc/nami/arwg/Pages/AeromedicalReferenceandWaiverGuide.aspx>.
12. U.S. Army. 2-25. Nose, sinuses, and larynx. In: *Standards of medical fitness.* Washington (DC): Department of the Army; 2017:14. *Army Regulation 40-501.* [Accessed 18 Dec. 2018]. Available from <https://books.google.com/books?id=XfaTCgAAQBAJ&pg=PA13&lpg=PA13&dq=U.S.+Army.+2-25.+Nose,+sinuses,+and+larynx.+In:+Standards+of+medical+fitness&source=bl&ots=9uXjZy51bb&sig=ACfU3U1sQ3ZKDY5Y2EXrxDkpYdJPax4ahw&hl=en&sa=X&ved=2ahUKEwjauOu1zaPlAhVMhOAKHWtNB1MQ6AEwFXoECAkQAQ#v=onepage&q=U.S.%20Army.%202-25.%20Nose%2C%20sinuses%2C%20and%20larynx.%20In%3A%20Standards%20of%20medical%20fitness&f=false>.