

Eosinophilic Esophagitis with Dysphagia and Food Impaction in a Young Adult

Anthony A. Cochet Jr.; Allyson E. Cochet; James M. Francis

- BACKGROUND:** Eosinophilic esophagitis (EoE) is an emerging esophageal disease associated with dysphagia and food impaction. Practice guidelines have only recently been developed. It affects 1/1000 individuals, predominantly young men. As this demographic represents a substantial portion of the military aviation population, aerospace medicine clinicians should be familiar with this diagnosis when evaluating dysphagia or impactions.
- CASE REPORT:** A 23-yr-old Caucasian man, a U.S. Air Force air traffic controller, presented to Flight Medicine following an episode of food impaction requiring evaluation in the local emergency department. The patient reported a 5-yr history of recurrent episodes of food lodging in his throat, requiring fluid and body repositioning for resolution. Medical history was significant for eczema. Upper endoscopy revealed an abnormal esophagus with macroscopic features of EoE and biopsies were also consistent with EoE. After further work-up, the patient was diagnosed with EoE and treated. Significant symptom improvement was noted after 2 mo of therapy.
- DISCUSSION:** This case outlines the evaluation of food impaction as well as the diagnostic criteria for EoE, which is a disease that affects patients with demographics common to the military aviation community. As the diagnostic and treatment guidelines for EoE are relatively new, it may easily be overlooked by the primary care physician, causing a delay in subspecialist consultation, thus delaying treatment. EoE is a condition with symptoms that pose high risk to the performance of aircrew duties; therefore, flight surgeons must be familiar with the aeromedical standards that accompany this diagnosis.
- KEYWORDS:** eosinophilic esophagitis, dysphagia, impaction.

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Eosinophilic esophagitis (EoE) is an emerging disease of the esophagus and a common cause of dysphagia and food impaction. Initial guidelines for diagnosis and treatment have only recently been developed, with the first publication released in 2007 and an update in 2011.^{5,9} It affects 1/1000 individuals and the highest incidence occurs in men in their 20s and 30s.^{3,15} As this demographic represents a substantial portion of the military aviation community, aerospace medicine clinicians should be familiar with this diagnosis when evaluating patients with dysphagia, symptoms of food sticking, or food impactions.

CASE REPORT

A 23-yr-old Caucasian, male active-duty U.S. Air Force air traffic controller experienced the sensation of food “getting stuck” while eating chicken wings, prompting his roommate to call the

on-call flight surgeon. After determining the patient was breathing without difficulty despite the food impaction, the patient’s roommate was instructed to take the patient immediately to the emergency department of the local civilian hospital. In the emergency department, the patient underwent chest x-ray and was given a GI cocktail. The food bolus eventually passed and subsequent barium swallow was unremarkable. The patient was monitored in the emergency department for a period of time following passage and was then discharged home. He presented to sick call at the Flight Medicine clinic that afternoon.

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The patient reported that episodes similar to this had happened before, but the dysphagia had never lasted as long as this most recent occurrence, making it more concerning to him. There was not anything unusual about the chicken wings and he was drinking plenty of fluids during the meal. He recollected approximately 10 episodes over the past 5 yr where food seemed to stick in his throat. Episodes were often associated with meat products, with the most common being chicken. The food always seemed to eventually move, but he learned to chew his food very slowly and carefully. It would not be unusual for him to chew a bite of meat or dry bread for an entire minute. If he sensed that the food was going to stick in his throat, it would almost always “go down” if he jumped up and down or put both of his arms in the air. He had never sought medical evaluation for this issue. He seemed genuinely surprised when he was informed by the flight surgeon that it was not normal to have repeated episodes of food sticking with trouble swallowing.

The patient denied any current medical problems. His childhood health history was significant for nummular eczema that resolved by age 5, therefore no aeromedical waiver was required. He also denied personal or family history of asthma or food allergies. He worked out regularly and never had difficulty with his physical fitness test. He denied surgical history, allergies to medications, or use of any medications. He did not smoke cigarettes, drink alcohol, or use illicit drugs. Vitals were stable and within normal limits. His physical exam was unremarkable.

The patient was referred to a nearby Department of Defense hospital where an upper endoscopy was performed. On inspection, the esophagus had evidence of trachealization, microabscesses, and longitudinal furrows in the proximal and distal portions (Fig. 1). The distal esophagus was narrow in caliber and a 2-cm superficial tear was evident after passing the typically innocuous 11-mm endoscope through the distal esophagus (Fig. 2). Biopsies of the esophagus were obtained which showed 30 eosinophils per high power field. The patient was started on twice daily esomeprazole for 8 wk to ensure biopsy findings were not from acid reflux. At the end of the 8 wk of

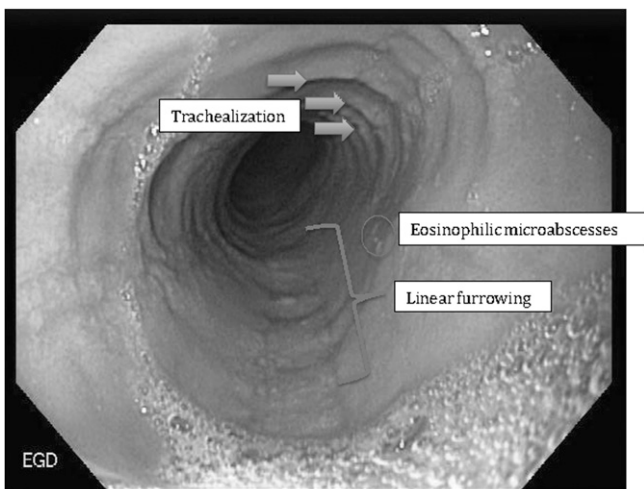


Fig. 1. Endoscopic view of the esophagus with trachealization, linear furrowing, and eosinophilic microabscesses.

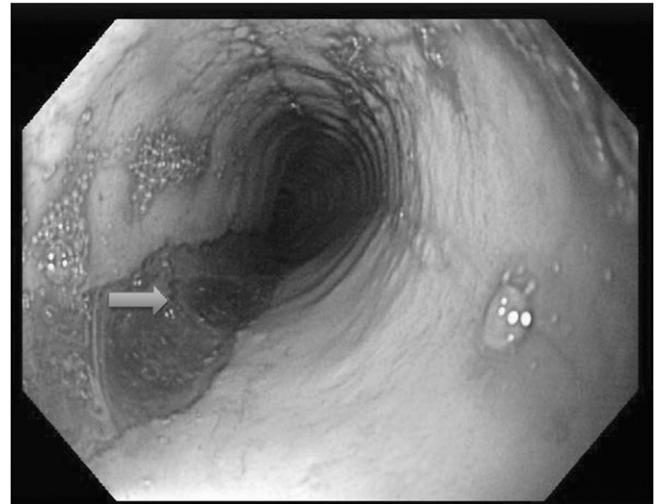


Fig. 2. Linear laceration of the esophageal mucosa after endoscopy in a patient with eosinophilic esophagitis.

therapy, food impaction had not recurred; however, the patient continued to have mild dysphagia with drier foods. Upper endoscopy was repeated with biopsies showing greater than 100 eosinophils per high power field, and the diagnosis of EoE was confirmed. He was started on a fluticasone inhaler (prescribed off-label as swallowed twice daily instead of inhaled) for topical treatment of his EoE with plans for 8 wk of high dose therapy initially (1760 mcg/d). Allergy/Immunology was consulted at the referral hospital. Food allergy testing and a trial of a six-food elimination diet were offered as EoE may be related to food allergies. After 8 wk of corticosteroid therapy, mild dysphagia persisted only intermittently. Repeat upper endoscopy is planned in the near future, with regular follow-up with GI recommended every 6 mo.

DISCUSSION

This is a case of eosinophilic esophagitis, a diagnosis that is increasing in incidence and prevalence. It is a clinicopathological condition characterized by symptoms of esophageal dysfunction like dysphagia and/or food impaction and high levels of eosinophils in the esophagus.⁹ Initial diagnostic and treatment guidelines were only first published in 2007 with an update in 2011.^{5,9} It can occur at any age, but is most common in children and adults less than 50 yr old and is three times as common in males as females. It is more frequently reported in non-Hispanic Caucasians compared to other ethnicities.¹⁶ Patients often have a history of atopy, which can include allergies and eczema.^{2,15}

In the adult, food impactions in the esophagus are most commonly associated with an esophageal stricture or ring; however, this may occur with multiple other esophageal abnormalities.²⁴ Approximately 80% of any type of foreign body in the esophagus will pass spontaneously, but non-passage can lead to severe, life-threatening complications like aspiration, ulceration, perforation, and fistula formation.¹⁸ Endoscopy

within 24 h is required for removal of a food bolus with subsequent treatment of the underlying etiology so that necrosis does not occur at the pressure point between the food and the mucosa. Urgent endoscopy is indicated for patients unable to handle secretions or for removal of sharp objects retained in the esophagus. Common symptoms of a food impaction include dysphagia after swallowing, the inability to swallow saliva, and a sensation of retrosternal fullness.⁷ Diagnosis of radiopaque sources of impaction may be made with chest x-ray, which also evaluates for free air, a finding that would require surgical consultation. Glucagon acts to relax the smooth muscle of the esophagus, particularly the lower esophageal sphincter, and can be administered intravenously to assist with passage of the food bolus.¹⁴

Patients with EoE often complain of dysphagia, chest pain, and/or food impaction and often report years of mild symptoms before definitive diagnosis. Many patients have a history, even resolved from childhood, of atopy like food allergies, asthma, eczema, or seasonal allergies.⁵ Upper endoscopy often shows characteristic features such as trachealization (Fig. 1), where there appear to be trachea-like rings in the esophagus, longitudinal furrowing of the mucosa of the esophagus, and small, white eosinophil-containing papules (microabscesses) throughout the affected areas of the esophagus.⁴ Biopsy specimens must show greater than or equal to 15 eosinophils per high power field. Over time, there can be fibrosis of the esophagus and friability of the mucosa, demonstrated in this patient by difficulty with passage of the endoscope and laceration during the procedure (Fig. 2).

Patients with high levels of eosinophils in the esophagus may have one of three diagnoses: EoE, proton-pump inhibitor-responsive esophageal eosinophilia, or gastroesophageal reflux disease. Initial treatment includes twice daily proton-pump inhibitor therapy for 8 wk. Endoscopy is repeated at 8 wk; symptoms and histological findings will remain in EoE, but will resolve with the other two diagnoses.⁹ First line treatment for EoE includes twice daily swallowed fluticasone, which comes as a respiratory inhaler. Patients should swallow the medication and then swish and expectorate water to rinse their mouth after administration to prevent development of oral thrush as the medication has no therapeutic benefit to the oropharynx.² This therapy was shown to achieve partial to complete histological

remission in 65–77% of patients, which was sustained after 50% dose reduction at 3 mo.¹

Prompt recognition and diagnosis of EoE is imperative as patients' risk for esophageal fibrosis resulting in stricture and stenosis increases in a linear fashion for each year they are untreated.¹³ These patients likely require esophageal dilation. The average delay in diagnosis was recently shown to be 4.6 yr, but is likely improving as clinicians become more aware of the diagnosis, signs, and symptoms.¹⁷ The esophagus may become narrow in caliber over time as fibrosis takes place.¹² Crepe-paper fragility of the esophagus manifested by tears in the esophagus during upper endoscopy may be evident and dilation of the esophagus to treat dysphagia must be done carefully to avoid perforation.⁶ Treatment of EoE should include an evaluation from a specialist in Allergy/Immunology. Specific food allergy testing may be performed with specific elimination of causative foods improving symptoms. In fact, the best treatment response rates are associated with dietary therapy.¹¹ Alternatively, a six food elimination diet can be tried. Cow milk, protein, wheat, egg, soy, peanut/tree nuts, and fish/shellfish are eliminated and the esophagus is evaluated endoscopically. If there is improvement in eosinophilia, serial food reintroduction is tried with endoscopy and biopsy in the interim. If eosinophilia worsens on reintroduction of a food, it is presumed to be an inciting etiology and permanently eliminated from the diet. Milk, wheat, egg, and soy have been identified as the four more common foods initiating EoE.¹⁰ EoE is not thought to be associated with increased risk of esophageal cancer or any other malignancy.

The diagnosis of this condition and its subsequent treatment has significant aeromedical implications as the symptoms that accompany EoE, such as dysphagia, food impaction, chest pain, or abdominal discomfort, can adversely affect aircrew duties, thus jeopardizing aircrew safety and mission completion. Per the USAF Medical Standards Directory as derived from AFI 48-123, history of EoE is disqualifying for all flying classes.^{19,20} The condition is waiverable under certain circumstances. Waiver potential exists for trained aircrew diagnosed with EoE. Those individuals must demonstrate sustained clinical stability without symptoms on or off waiverable medications, including proton pump inhibitors, topical corticosteroids, leukotriene inhibitors, approved antihistamines (loratadine

Table I. Summary of Aeromedical Waiver Guidelines and Service Retention as Defined by Each Branch of the Department of Defense.

	U.S. AIR FORCE	U.S. NAVY	U.S. ARMY***
Aviation Applicants	Disqualifying without potential for aeromedical waiver (Flying Class I Exam)	Disqualifying; aeromedical waiver considered on case-by-case basis (Class I or II Exam)	Chronic/recurrent esophagitis unsuitable for aviation duties (Class 1 Exam)
Untrained Aviators	Disqualifying without potential for aeromedical waiver (Flying Class II Exam)	Disqualifying; aeromedical waiver considered on case-by-case basis (Class I or II Exam)	Chronic/recurrent esophagitis unsuitable for aviation duties (Class 2 Exam)
Trained Aviation Assets	Aeromedical waiver granted if symptoms are controlled on or off approved medications* (Flying Class II)	Aeromedical waiver granted if symptoms are controlled on or off approved medications** (Class I or II Exam)	Chronic/recurrent esophagitis unsuitable for aviation duties (Class 2 Exam)
Service Retainability	Persistent/severe cases unsuitable for continued service	Persistent/severe cases unsuitable for continued service	Persistent/severe cases unsuitable for continued service

* Approved medications for aircrew duties defined by AFI 48-123.

** Approved medications for aircrew duties defined by U.S. Navy Manual of the Medical Department Regulations Article 0105.

*** U.S. Army Regulation 40-501 details aeromedical standards/service retention for chronic esophagitis without specific mention of eosinophilic esophagitis.

or fexofenadine), and cromolyn. Waiver is not recommended while on systemic corticosteroids, but may be considered after cessation if pituitary axis function proves normal. History of EoE is not disqualifying for air traffic control/ground based control duties or space/missile duties, but severe or persistent disease may disqualify those individuals for retention in the U.S. Air Force.^{19,23} Although EoE is potentially waiverable in the case of trained aircrew, waiver is unlikely to be granted in cases of aircrew whom have not started or completed training. Waiver potential does not exist for individuals applying for initial aircrew training.²⁰ Of note, the Medical History Questionnaire completed by U.S. Air Force aircrew applicants asks whether the patient has history of frequent indigestion, heartburn, stomach/liver/intestinal trouble, or ulcer, but asks no specific questions screening for symptoms that may elicit history of dysphagia or esophagitis.¹⁹

When submitting the initial waiver for a patient with EoE, the flight surgeon should submit a thorough history and physical examination focusing on the disqualifying condition with emphasis placed on frequency and severity of symptoms, exacerbating/alleviating factors, diagnostic evaluations, and treatment course. Gastroenterology consultation, including examination, esophagogastroduodenoscopy (EGD) report, and treatment recommendations must be included. Pathology reports of endoscopic biopsies are required, as is Allergy/Immunology consultation.²³

Both the U.S. Army and U.S. Navy maintain medical standards for aviation applicable to this condition. The U.S. Navy Aeromedical Reference and Waiver Guide considers eosinophilic esophagitis disqualifying for both aviation applicants and trained assets. However, unlike the U.S. Air Force, the U.S. Navy will consider waivers for asymptomatic flight training applicants on a case-by-case basis. Aeromedical waiver is recommended for trained assets who are asymptomatic on or off medications. Approved medications for U.S. Navy aviators with EoE mirror those approved by the U.S. Air Force, as does the diagnostic information required for waiver submission.²² The U.S. Army Regulation 40-501: Standards of Medical Fitness states that chronic or recurrent esophagitis does not meet medical standards for aviation, but makes no specific differentiation between EoE and other forms of chronic esophagitis.²¹ A summary of these regulations is shown in **Table I**.

The patient described was diagnosed with EoE. He was a young, Caucasian man, placing him within the demographic most commonly affected by this condition.⁸ He had characteristic symptoms for several years, including dysphagia, recurrent episodes of food sticking in his throat, and a personal history of atopy with childhood eczema. Given the fibrosis of the esophagus demonstrated by the difficulty passing the endoscope, he will likely require esophageal dilation in the future. It is important that aerospace medicine clinicians be aware of this emerging disease because prompt recognition and treatment can prevent worsening esophageal fibrosis and function. Although this condition is treatable and manageable, delay in diagnosis may lead to a disease state unsuitable to military aviation standards.

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