

ring and reduction in symptoms. In some patients, esophageal bougienage or more aggressive endoscopic manipulation (four-quadrant needle knife incision) may be required.

### EOSINOPHILIC ESOPHAGITIS

Eosinophilic esophagitis was originally described in the pediatric population, but in the last decade it has been recognized increasingly in adults as well. This inflammatory process is characterized on biopsy by dense eosinophilic infiltration of the submucosa that over time leads to structural abnormalities in most patients. The underlying etiology is proposed to be delayed hypersensitivity reaction to food allergens or immunologic response to allergens outside of the gastrointestinal tract, although identification of a specific allergen is often elusive.

Dysphagia is the most commonly encountered symptom, but patients also may complain of heartburn, chest pain, nausea, and other symptoms. Food impaction may occur, sometimes as a presenting symptom. Endoscopic findings include a uniform small-caliber esophagus, single or multiple corrugations, esophageal mucosal furrows, and stricture formation. Tearing of the esophagus can occur with simple passage of the endoscope, during biopsy, or after dilatation. Diagnosis is established after biopsies from the distal and middle esophagus demonstrate dense infiltrate of 15 to 25 eosinophils per high-power field.

All patients with eosinophilic esophagitis should be treated first with a PPI, possibly twice daily, regardless if there is evidence for GERD. Subsequent treatment relies primarily on swallowed topical steroids. Fluticasone inhalers are used, for example, but the contents are sprayed into the mouth and swallowed to coat the esophagus. This approach has proved to be effective in reducing symptoms and improving histologic findings. If this approach is used, patients should be instructed to wash their mouths out with water after each treatment to prevent the development of oral candidiasis. Budesonide or other oral systemic steroids may be considered in severe cases. All patients with eosinophilic esophagitis should be evaluated for allergic reactions to food or other allergens. The relationship between GERD and eosinophilic esophagitis remains to be elucidated.

### ESOPHAGEAL INFECTIONS

Infections of the esophagus are uncommon in immunocompetent individuals. They are, however, a major source of morbidity in those with compromised immunity related to immunosuppression, human immunodeficiency virus (HIV) infection, and other causes of immune suppression. Infectious esophagitis typically manifests with odynophagia as the most common symptom, and dysphagia is common as well. New onset of these symptoms in an immunocompromised individual warrants a detailed

evaluation; symptoms do not readily discriminate among the different etiologies, and therapy must be targeted and can be intensive depending on the overall setting.

*Candida* is perhaps the most common cause of infectious esophagitis. It may or may not be associated with oral thrush, and it tends to produce dysphagia with only mild pain on swallowing. *Candida* has a characteristic appearance on endoscopic examination, and esophageal brushings and biopsies demonstrate fungal hyphae (E-Fig. 35-4). Treatment with oral fluconazole is usually effective.

Herpes simplex virus is associated with more severe odynophagia and causes esophageal ulcers that are often multiple. Acyclovir is the treatment of choice for herpes esophagitis. Cytomegalovirus (CMV) also causes esophageal ulceration and odynophagia. Endoscopic examination usually demonstrates a single large ulcer in the distal esophagus, and biopsies reveal viral inclusions that confirm the diagnosis. Both ganciclovir and foscarnet are effective treatments for CMV esophagitis.

There may be more than one infectious process involved in an individual patient. HIV infection is associated with esophageal ulceration and odynophagia, although much less commonly in the present era of effective antiretroviral therapy. As the overall immune system improves, the esophagitis typically recovers as well.

For a deeper discussion on this topic, please see Chapter 138, "Diseases of the Esophagus," in Goldman-Cecil Medicine, 25th Edition.

### SUGGESTED READINGS

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