



Ear, Nose and Throat Disorders and GERD

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Gastroesophageal reflux disease (GERD) has been implicated as a causal or contributing factor in a wide spectrum of otolaryngologic conditions, including sinusitis, adenoiditis, tonsil and adenoid hypertrophy, otitis media, geographic tongue, halitosis, dental enamel thinning, vocal cord nodules, subglottic stenosis, sleep disturbance, asthma and aspiration. Although GERD has been accused of contributing to many disorders, it has not yet been convicted. While some studies suggest a link between GERD and numerous otolaryngologic disorders, there is no definitive evidence of cause and effect in virtually any of the above mentioned disorders. Undoubtedly, in some children with these problems GERD is the primary cause of their disorder; however, it is likely that GERD is a significant contributing problem in only a small proportion of children with ear, nose, and throat disorders. The difficulty lies in sorting out when GERD is the cause of a disorder, when it is a contributing factor, and when it merely coexists with an unrelated problem.

So when should GERD be suspected as a contributing factor in an ENT problem? In general, if a disorder does not respond to conventional therapy, then GERD may be considered a contributing factor. A good example would be a patient with chronic sinusitis who fails to respond to routine medical or surgical treatment.

What should be done when GERD is suspected of contributing to an ear, nose or throat problem? Clinicians must determine whether they are dealing with gastroesophageal reflux (GER), GERD, or extraesophageal reflux disease (EERD). The latter term refers to disease above the level of the esophagus. It is important to keep in mind that everyone experiences occasional reflux, and this does not signify the presence of reflux disease. Only a small proportion of children with GER have GERD. An even smaller proportion of children have reflux severe enough to cause EERD.

If GER is being investigated, the appropriate investigation should ideally be tailored to the question being asked. For example, the current gold standard for diagnosing GER is the pH probe. A pH probe detects acid in the esophagus, and is therefore useful when clinicians want to know whether acid is being refluxed from the stomach into the esophagus. However, a pH probe is not able to measure non-acid reflux (such as may occur during anti-reflux treatment), and cannot directly differentiate GER from GERD. In adults, it is known that if the pH at

the distal probe is less than 4 over 5% of the time, inflammation of the esophagus (ie, GERD) will probably occur. In children, it is not known exactly how much acidic reflux needs to be present to cause GERD, or how long the acid needs to be present. The more modern dual probe pH probes are useful for visualizing the height to which acid rises in the esophagus, but as stated previously, what is accepted as a normal amount of acid in the upper esophagus in children has still not been established. There is even less information on pediatric EERD. PH probes are therefore useful in diagnosing whether acid reflux is present, and hence are useful in ascertaining whether a fundoplication is intact or in verifying the effectiveness of anti-reflux medication. These probes are not able to definitively show whether GERD is present.

There are many other investigations for assessing GER, including the recently introduced impedance probe, which is similar to a pH probe except that it can also measure non-acid reflux, the volume of reflux occurring, and the height that the reflux progresses to in the esophagus. However, this is still primarily a research tool. To definitively answer whether GERD is present, an esophagogastroduodenoscopy (EGD) is required, with the patient under general anesthesia. While the appearance of the esophagus may confirm evidence of disease, biopsies are also taken, as inflammation of the esophagus may only be apparent under a microscope. An advantage of an EGD is that the biopsies may indicate the presence of eosinophilic esophagitis, which may present with symptoms similar to those seen in GERD.

If EERD is suspected, the investigations may include flexible nasopharyngoscopy and laryngoscopy, which is performed with a child awake while a flexible endoscope is passed through the nose to look at the throat and larynx. This may reveal inflammation of the back of the larynx, which is suggestive of EERD. In selected cases, bronchoscopy and sampling of lung fluid (for lipid laden macrophages) may be useful in determining whether reflux material is being aspirated.

Three treatment approaches are used: lifestyle changes; medical treatment; and surgical intervention. Lifestyle modifications include approaches such as sleeping with head of the bed elevated, not sleeping with a full stomach, and preferentially sleeping on the left side. Medical treatment is primarily aimed at reducing the amount of acid in the reflux rather than reducing the amount of reflux itself. H₂ antagonists (eg, Zantac) and proton pump inhibitors [(PPIs),eg, Prilosec] are the two main classes of drugs. Other medications that promote more rapid emptying of the stomach have the potential for side effects, and the most effective agent (Propulsid) has been withdrawn from the market. Surgical management involves creating a more competent one-way valve between the esophagus and the stomach. In patients with severe reflux, performing a Nissen fundoplication may be extremely helpful. .

So how does this apply to your patient? This depends on the severity of the disorder. If, for example, a child has chronic sinusitis or vocal cord nodules, a therapeutic trial of an anti-reflux medication may be a consideration. In this circumstance, the trial of medication is for both diagnostic and therapeutic reasons. To adequately

answer the question, a high dose of a very effective medication (PPI) is advisable. In my own practice, I often manage patients for a 4-week period with a high-dose PPI. I then stop the medication and see the child and family again 2 or 3 weeks later to determine if symptoms have improved and if they then deteriorate when treatment stops. If this occurs, I next try to find the minimum effective dose of medication that keeps a child free of symptoms. Although ideally one should not treat without a definitive diagnosis, it is difficult to differentiate between GER, GERD, and EERD. In some cases, the appropriate investigations are invasive enough that a therapeutic trial of a medication is a more attractive option. In terms of the choice of medication, PPIs such as Prilosec, Prevacid, or Nexium are far more effective than other products on the market. They also are extremely safe and have few side effects. On the downside, however, they are costly. In terms of which PPI to use, I feel that any PPI of this class of medications is superior to other types of medications. I therefore pragmatically choose whichever PPI is covered by a patient's insurance plan.

In some disorders, a more definitive diagnosis is required. For example, in children with subglottic stenosis, GERD may exacerbate the problem and may contribute to the failure of surgical repair. As subglottic stenosis is a serious disorder, with most children requiring a tracheotomy tube, and as surgical repair is a difficult undertaking, optimal assessment and management are essential. In these patients, assessment with an EGD, esophageal biopsies, and a pH probe should be considered prior to any surgical reconstruction of the subglottis. If the child shows evidence of reflux, either medical or surgical therapy is required prior to the repair of the subglottis.

Certain groups of children are particularly prone to reflux, including extremely premature infants, children with neurological disorders, tracheoesophageal fistulae or laryngeal clefts, cystic fibrosis, and obesity. Some of these children have complex needs, and are thus optimally managed with a comprehensive team approach. At Cincinnati Children's Hospital Medical Center, these complex cases are cared for by our Aerodigestive and Sleep Center team. This team comprises pediatric ENT surgeons, pediatric pulmonologists, pediatric gastroenterologists, sleep disorder specialists, and pediatric surgeons who work collaboratively. A typical patient would be a former 24-week premature infant with a tracheotomy for subglottic stenosis, who has had prolonged oxygen needs, has mild developmental delays, feeding problems with a risk of aspiration, and a past history of reflux despite having undergone 1 or even 2 Nissen funduplications. In this rare group of complex children, I believe there is a great benefit in interdisciplinary care to best address multifaceted individual needs.

Finally, it should not be forgotten that GER is almost universal in infants, and should be considered more physiological than pathological. In an otherwise normal child, spontaneous resolution almost always occurs by 12 months of age.

Recommended readings

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