

# ADVANCES IN GERD

Current Developments in the Management of Acid-Related GI Disorders

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## Management of Bile Reflux



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### G&H What is bile reflux, and how common is this condition?

**DS** When the material produced by the pancreas and the liver gets into the duodenum, it is mixed with duodenal fluid; altogether the duodenal fluid, liver secretion, gallbladder contents, and pancreatic secretion form a solution in the duodenum that contains bile but also many other components. When this solution gets into the stomach and then up into the esophagus, the patient experiences so-called bile reflux. However, a more appropriate name for this condition is duodenal gastroesophageal reflux because it more accurately describes the components of the material.

Bile reflux is very infrequent in healthy individuals. This condition is more severe in patients with gastroesophageal reflux disease, particularly those with severe esophagitis and/or Barrett esophagus.

### G&H How is bile reflux distinguished from acidic reflux?

**DS** It is not possible to distinguish bile reflux from acidic reflux in terms of signs and symptoms. As mentioned above, the liquid produced in the pancreas and the liver is concentrated in the gallbladder, goes into the duodenum, and then goes into the stomach due to duodenal gastric reflux, a physiologic condition that occurs during the postprandial period. Normally, there is always a certain amount of duodenopancreatic secretion that goes into the stomach. In the stomach, this solution is mixed with gastric content, which is, most of the time, acid. This material should not normally enter the esophagus, but in patients with gastroesophageal reflux

disease, the acidified gastric-duodenal contents refluxate into the gullet. Therefore, it is difficult to distinguish acidic reflux from bile reflux.

### G&H Why do some individuals have only acidic reflux, whereas other individuals have a combination of acidic and bile reflux?

**DS** It is not well understood why some individuals have only acidic reflux and other individuals have acidic and bile reflux. One possibility is that individuals who have bile reflux also have more duodenogastric reflux. An alternative explanation is that there is an abnormal collection of acidified gastric-bile fluid in the more proximal part of the stomach, the so-called acid-bile pocket. This can be a reservoir and origin of duodenogastroesophageal reflux.

### G&H Other than acidic reflux, are there any conditions with which bile reflux can be confused?

**DS** For many years, it was thought that bile reflux was synonymous with nonacidic reflux, and there are still many individuals who believe that the 2 conditions are the same. Nonacidic reflux is a type of refluxate that can be recognized only by impedance pH monitoring. Nonacidic reflux might or might not contain bile. In general, bile is more often associated with acidic gastric juice than with a nonacidic component of gastric contents.

### G&H How is bile reflux usually diagnosed?

**DS** The first, and most obvious, method of diagnosis is to detect the presence of bile and then measure it. If esophageal content is aspirated when there is reflux, a biochemical

analysis can be used to identify the presence of bile in the liquid that refluxed into the esophagus. Bile should not be in the esophagus; the presence of bile indicates the presence of bile reflux.

However, this diagnostic method is not very practical. An alternative method, the Bilitec monitoring system, was developed years ago to identify changes in the color of the refluxate in the esophagus. Because bile has a specific color range, this photo-colorimetric device enables a physician to determine whether there is bile in the refluxate and, if so, how much and for how long it was in the esophagus.

### G&H What are the most common treatment options for patients with bile reflux?

**DS** The treatment for bile reflux is the same as the treatment for acidic reflux. In general, everything that can reduce acidic reflux can reduce bile reflux. Examples include lifestyle modification, weight reduction, and the avoidance of eating immediately before sleep or being in the supine position immediately after meals. In addition, smoking has been found to be a factor in the development of acidic reflux. Thus, all of these factors should be applied to bile reflux as well.

Likewise, drugs that reduce the secretion of gastric acid (eg, proton pump inhibitors) or that reduce gastric contents or volume can be used to treat acidic bile reflux. Because prokinetic drugs increase the motility of the stomach and accelerate gastric emptying, they can also reduce bile reflux. Other drugs that reduce the relaxations of the lower esophageal sphincter, such as baclofen, have also proven to reduce bile reflux, particularly in patients who are refractory to proton pump inhibitor therapy. Finally, in the same way that antireflux surgery can reduce acidic reflux, it can reduce bile reflux as well.

At the present time, there are no drugs in clinical practice that can be used specifically to target bile reduction.

### G&H Since treatment for bile reflux is the same as treatment for acidic reflux, why is it important to determine whether reflux contains bile?

**DS** It has been shown that patients with more bile reflux have more severe esophageal mucosal damage, so there is a clear correlation between the amount of bile reflux and the severity of distal esophageal inflammation. In fact, patients with the most severe degree of gastroesophageal inflammation, Barrett esophagus, are those with the largest amount of bile reflux. Thus, the importance of bile reflux has to do primarily with the severity of the damage of the esophageal mucosa, the development of Barrett mucosa, and, potentially, the risk of cancer. It is known that the more bile reflux a patient has, the higher the risk of Barrett esophagus development; both

in vivo and in vitro studies have shown a link between bile that is in contact with esophageal mucosa and changes in the mucosa that are compatible with Barrett esophagus.

However, there is no need for patients with bile reflux to undergo special monitoring or take any prophylactic measures (apart from treatment of gastroesophageal reflux disease) unless they already have Barrett esophagus. Even in this case, endoscopic surveillance is controversial if the Barrett mucosa shows no signs of dysplasia.

### G&H What are the next steps of research in this area?

**DS** There are 3 main lines of research in this area. One is related to the impact of bile acids and bile salts in the esophageal mucosa and the development of Barrett esophagus and cancer. The second line of research involves the role of bile reflux in extraesophageal syndromes related to reflux (eg, the development of respiratory disorders associated with reflux). There is some evidence that the presence of bile in the aspiration of refluxate into the airways might be very important in the development of respiratory disorders. This is a marker of aspiration as well as a very important inflammatory component that can trigger inflammation. This is true for patients with reflux who have undergone lung transplantation and patients with cystic fibrosis. Thus, the appearance of bile in respiratory secretions is not only considered a marker, but it can also be pathogenic in the respiratory disorder. The third line of research involves the role of bile in the pathogenesis of nonerosive reflux disease and symptoms. It is known that patients who have persistent symptoms such as heartburn or regurgitation may have refluxate that contains bile acid despite receiving proton pump inhibitor therapy (because proton pump inhibitors do not reduce the presence of bile acid). Bile acids might have an impact on the esophageal mucosa of patients with nonerosive reflux disease and might be related to the persistence of symptoms in these patients.

### Suggested Reading

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