

GASTROESOPHAGEAL REFLUX IN PREMATURE INFANTS

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Having an infant or child with Gastroesophageal Reflux (also called GER or reflux) can be extremely overwhelming for parents and families. Reflux is painful, causing infants to cry constantly, refuse to eat, spit up frequently, and sleep poorly. The daily routine of giving medication, dealing with the constant vomiting and special feedings, and the frequent doctor visits can be exhausting. Making sure that you and your physician work together to treat the reflux using whatever methods are best suited for your child will help. If GER is left untreated, long-term complications such as feeding disorders, inadequate weight gain, narrowing of the esophagus, and damage to the tissue in the esophagus (called Barrett's syndrome) can develop.

Although GER is a common gastrointestinal problem in premature infants, some physicians may not be familiar with its signs, symptoms, and treatment, leaving parents feeling frustrated and overwhelmed. If your child suffers from GER, the following will help you understand the disorder and provide information for you to discuss with your doctor.

Gastro means stomach, and esophageal refers to the esophagus, the tube inside the throat that connects the mouth to the stomach. A muscle at the top of the stomach (also called the Lower Esophageal Sphincter or LES) naturally opens and closes to allow swallowing, burping, and vomiting. Refluxing occurs when the stomach acid and partially digested food flow back up through the LES into the esophagus. All children and adults will naturally reflux throughout the day, especially after eating. However, if the muscle opens too frequently and refluxing occurs too often, complications can develop.

Premature infants have an increased risk of developing GER. There are several medical conditions that can cause reflux, but in preterm infants, the most common causes are immature muscles and abnormal breathing from chronic lung disease. If the lower esophageal sphincter is weak or underdeveloped, it can remain open when it should be closed, letting the stomach contents flow back up the esophagus. When an infant or child breathes abnormally because of chronic lung disease, the muscles used for breathing work harder. As these muscles work hard to breathe, they can pull on the muscles near the top of the stomach, stretching the sphincter and causing it to remain open.

When the stomach contents flow inappropriately up into the esophagus they bring acid from the stomach. As the acid irritates the tissue inside the esophagus, it becomes inflamed and reddened. This condition is called esophagitis. Esophagitis is painful, similar to the pain of heartburn. This is why an infant will refuse to eat or stop eating - she is protecting herself from the pain of the acid touching the damaged tissue. If the reflux is severe, the stomach contents may go high enough into the esophagus to be aspirated or spilled into the lungs causing choking, color changes, frequent respiratory infections, apnea (breathing slows or stops) and/or bradycardia (slowed heart rate).

An infant with mild reflux can spit up with burps, but continue to eat well and grow normally. However, when the symptoms are significant enough to cause problems for the infant, such as poor weight gain or eating difficulties, medical intervention is needed. The symptoms of reflux are:

- spitting up frequently (more than 2 times a day);
- fussy often throughout the day (specifically before, during or after eating)
- refusing to eat,
- fighting eating;
- taking only small amounts of formula or food, regardless of the amount of time since the last feeding;
- back arching during feedings;
- bradycardia;
- choking or apnea during or after eating;
- skin color turns pale or grayish during or after eating;
- poor weight gain; and/or

- frequent respiratory infections.

Many parents say, “She acts like it hurts to eat” or “It just seems like she is in pain.” If your infant or child has any of the above symptoms and you are concerned that she may have reflux, talk with your pediatrician about having her evaluated. GER may be diagnosed by a single office visit, or a referral may be needed to a pediatric gastroenterologist for further evaluation. Your doctor or specialist will review your child’s symptoms, determine if her weight gain is appropriate, and possibly order special tests. These tests may include an upper gastro-intestinal X-ray (UGI), a milk scan, a 24-hour pH probe, or an endoscopy.

An UGI is an X-ray of the stomach and esophagus after your child swallows a liquid drink called barium. If your child is unable to swallow the barium it will be given through a small feeding tube placed through the nose or mouth down the esophagus and into the stomach. On the X-ray the barium shows any anatomical abnormalities (such as narrowing of the esophagus or blockages) and any refluxing of the barium from the stomach that might occur. A UGI is only 50% accurate because the refluxing might not occur at the time of the X-rays. Another test called a milk scan is very similar to a UGI. Your child drinks a liquid called technetium, which shows any refluxing or anatomical problems on a special scanning device. Parents are often concerned about the dangers of X-rays and consuming an unnatural liquid. The radiation from the X-rays is minimal (your child’s thyroid and genital area is covered by a special apron during the X-ray), and the barium and technetium are not harmful to your child’s health. The barium can cause constipation, but there are no other side effects.

A 24-hour pH probe is a fairly accurate test that shows any increased levels of stomach acid in the esophagus. A long, thin tube that is attached to a machine is placed in your child’s esophagus (via her nose or mouth) by a doctor or nurse. The end of the tube reads the acid level and records it on the machine after each feeding. After 24 hours the doctor will determine if the amount of acid in the esophagus is too high indicating GER. This test can be performed at home, however, some doctors prefer to hospitalize the infant during the test so a nurse can replace the probe immediately if it accidentally comes out.

The last, but most invasive test is called an endoscopy. In the doctor’s office or in the hospital, a flexible tube is placed through the child’s mouth and down into the esophagus. This tube has a microscope built into the tip, enabling the doctor to examine the tissue in the esophagus and look for any reddened or damaged areas. Because this test is uncomfortable for the child, it requires sedation or general anesthesia and is generally not performed unless all other tests are inconclusive and the suspicion of GER still exists.

Treatment of GER varies from simply thickening formula, to medication, to surgery. Your doctor may begin with thickening the formula and suggesting that your baby be in an upright position most of the day, especially after eating. Try to hold your baby without putting pressure on her abdomen. Burp your baby frequently (every 1/2 to 1 ounce) and encourage her to suck on a pacifier between feedings. This helps to keep the esophagus in motion, pushing anything in the esophagus back into the stomach.

If an infant is in pain, has slowed or stopped eating, or has apnea or bradycardia that is caused from reflux, more aggressive management needs to be done. Medications such as Zantac or Tagamet that decrease or block the production of acid, and/or Reglan which improves digestion, may be prescribed. These medications are often used in combination with one another; however, they should not be given in conjunction with some types of antibiotics because of the risk of serious side effects. In any case, check with your physician or pharmacist before giving your baby any medications for reflux.

Most children will out grow GER by one year of age. As children grow, their esophagus becomes longer and the stomach naturally begins to wrap around the muscle at the top of the stomach. It will also help when your child spends more time in an upright position as she develops.

At any age, if the symptoms are significant and medical intervention does not control the reflux, surgery may be needed. The surgical technique can vary, but the general purpose is to create an artificial sphincter at the top of the stomach by wrapping a small part of the stomach around the esophagus. Traditionally, surgery is done by using a two- to three-inch incision in the middle of the abdomen. Some surgeons perform the surgery laproscopically using four 1/2 inch incisions on the abdomen.

Choosing to have surgery is not an easy decision. Discuss all your options with your pediatrician, GI specialist, and surgeon. If possible, talk with other parents whose child has had surgery for reflux. Evaluate whether the surgery will help your child's pain and growth, and if the benefits from the surgery will outweigh any possible complications. Complications can include gagging and retching after eating, a slight decrease in the stomach volume, scarring and/or infection at the surgery site.

Having a child with reflux can trigger many emotions. It is normal to feel anger, frustration, and sadness. Sometimes it helps to talk with those who can empathize with you and understand your feelings and concerns, such as other parents of children with reflux. You'll need support to make it through these difficult days. A national parent support group called PAGER (Pediatric Adolescent Gastroesophageal Reflux Association, Inc.) can help you find any further assistance you might need. Their website address is <http://www.reflux.org> or they are located at PO Box 1153, Germantown, MD 20875-1153, (301)601-9541.

For more information on premie medical, developmental, nutrition, and transitioning to school issues, or for emotional support please see *YOUR PREMATURE BABY AND CHILD: Helpful Answers and Advice for Parents* (Berkley, 1999) by Amy E. Tracy and Dianne I. Maroney, R.N.