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ORIGINAL ARTICLE

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The infant with chronic vomiting: the value of the upper GI series

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Abstract *Background*: Vomiting is very common in infants. It is usually attributed to gastroesophageal reflux and no radiological evaluation is performed. Pediatric radiologists, however, still perform many upper GI series in these infants to exclude an underlying anatomic abnormality as a cause for vomiting. *Objective*: To evaluate the yield of upper GI series in the evaluation of otherwise healthy infants 1 month to 1 year of age with vomiting for more than 30 consecutive days. *Materials and methods*: Clinical records and upper GI reports of 344 otherwise healthy infants that were referred for UGI by pediatric gastroenterologists because of chronic vomiting were analyzed. Patients with hematemesis, bilious vomiting, dysphagia, respiratory symptoms and patients that required hospitalization were excluded. *Results*: Findings other than gastroesophageal reflux were seen in only 2 patients out of 344 (0.6%). In one patient duodenal stenosis was diagnosed. In another patient a small hiatal hernia was seen. *Conclusions*: The yield of upper GI in otherwise healthy infants 1 month to 1 year of age with chronic vomiting is extremely low, and the performance of the UGI in this specific group of patients may not be justified.

Keywords Upper GI series · Vomiting · Gastroesophageal relux

Introduction

Most parents and pediatricians are familiar with the problem of chronic vomiting in infants. The great majority of these patients are not referred for a radiological evaluation, because the vomiting is attributed to gastroesophageal reflux and treated accordingly. Because of the very large number of infants with vomiting, however, the pediatric radiologist still ends up performing many studies: these studies are not done to "rule out reflux," but to exclude an underlying abnormality as the cause of vomiting [1]. Surprisingly little has been written about the findings in these patients. The purpose of this study was to ascertain how frequently anatomic abnormalities are found in chronically vomiting, but otherwise healthy infants.

Patients and methods

A total of 3,114 upper GI series were performed in our institution in infants 1 month to 1 year of age over the 10-year period from 1 June 1990 to 30 May 2000, of which 1,242 were performed to evaluate vomiting. We wished to include in the study only patients with documented chronic vomiting. Therefore, we included only otherwise healthy patients referred to us by the Gastroenterology Division because of vomiting for more than 30 consecutive days. In these patients the vomiting was worrisome enough for the primary-care physician to refer them for a gastroenterology consultation, and for a gastroenterologist to request an upper GI to exclude an underlying anatomic abnormality as a cause of vomiting. In all these patients complete medical records and a long-term follow-up were available. For each patient data such as age, gestational age, weight and height percentile, family history of vomiting, and the duration, frequency, and character of the vomiting were recorded. Reports of upper GI series were then analyzed, and only the first complete examinations were included. We considered the study

complete if it started with an oral administration of barium and ended with evaluation of the position of the duodenojejunal junction. The minimum of 30 consecutive days of vomiting as a definition of chronic vomiting excluded infants younger than 1 month of age from the study. Patients with known chronic debilitating surgical or medical conditions were also excluded. Patients with symptoms of dysphagia, bilious vomiting, hematemesis, respiratory symptoms, and patients that required hospitalization were also excluded. A total of 344 patients met the criteria and were included in this study. The male-to-female ratio was 1.5:1. The mean age was 8.1 months. There were 18 patients that stopped gaining weight or even lost weight prior to the upper GI study, but were not malnourished. Forty-six patients were premature at birth.

Results

Findings other than gastroesophageal reflux were demonstrated in two patients or 0.6% of the total patients included. In one patient the clinical picture suggested food retention, and duodenal stenosis was found on the upper GI series. This patient was successfully treated by a balloon dilatation of the narrowed segment and did well on long-term follow-up. In another infant a small hiatal hernia was demonstrated. This patient was a former premature infant of 27 weeks' gestation. He continued to vomit repeatedly and did not gain weight adequately and subsequently underwent Nissen fundoplication. Eighty-one patients demonstrated gastroesophageal reflux during the upper GI. On long-term follow-up all 342 patients without positive findings on upper GI did well. In 12 of them milk allergy was felt to be the cause of the vomiting.

Discussion

Chronic vomiting in infants is a very common problem. It is usually attributed to gastroesophageal reflux and a radiological evaluation is not performed. As has been shown in earlier publications, an upper GI series is usually not helpful in the management of gastroesophageal reflux and rarely influences treatment decisions [1, 2]. On the other hand, an upper GI series is very valuable in the diagnosis of underlying anatomic abnormalities as a reason for vomiting [1, 2, 3, 4, 5]. As stated by J. Leonidas "...the low diagnostic accuracy of the upper GI series for clinically important GER in infants, the high frequency of mostly innocuous GER in this age group, and the high rate of success of conservative treatment strongly suggest that therapeutic decisions should not be based solely on whether there is radiological demonstration of reflux. On the other hand, the upper GI series is valuable for detecting underlying anatomic abnormalities and may be used appropriately in infants whose clinical presentation suggests a high probability of such defects" [2]. Although it is widely accepted that anatomical abnormalities are an unusual cause of vomiting after the neonatal period, pediatric radiologists still perform a large number of upper GI series in infants, not because the clinicians need evaluation for gastroesophageal reflux, but because they are worried that an anatomic defect is causing the vomiting. Surprisingly little has been written about actual findings in this specific group of otherwise healthy infants. In our institution the number of such studies performed is increasing annually at a rate out of proportion to the total number of studies performed in this age group; 36% of all upper GI series performed for vomiting are performed to "rule out anatomic abnormality" in this group of patients. This study was not designed to evaluate the neonate with vomiting, because causes of vomiting are different in this age group and a higher incidence of anatomic abnormalities in neonates with vomiting is expected. [3, 4, 5]. We also did not include in the study children older than 1 year of age, because the frequency of gastroesophageal reflux declines with age and at this age vomiting is rarely caused by obstruction owing to congenital anomaly [5]. Acutely ill infants, infants with bilious vomiting, hematemesis, or respiratory problems were also excluded from this study.

Our study demonstrates that the yield of upper GI series in healthy infants with chronic vomiting is extremely low: only 0.6% of the patients studied had an underlying anatomic abnormality; therefore, the routine performance of upper GI series in this specific population may not be justified.

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