

Functional Gastric Outlet Obstruction Detected by Electrogastrogram and Gastric Emptying Results in Patients with Gastroparesis and Gastroesophageal Reflux Disease (GERD): Resolution of abnormalities by Balloon Dilation of Pylorus

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The cause of delayed gastric emptying is not apparent in many patients. Patients with idiopathic gastroparesis frequently have gastric dysrhythmias such as bradygastria or tachygastria. Increased normal 3 cycles per min (cpm) activity in electrogastrograms (EGG) patterns has been reported in gastric outlet obstruction.

Aims: 1) To determine the incidence of increased 3 cpm EGG activity in patients with gastroparesis and in patients with GERD and dyspepsia symptoms; 2) To determine the effect of balloon dilation of the pylorus on EGG activity, gastric emptying and symptoms in these patients.

Methods: Between July 2000 and October 2003, 202 subjects with GERD and dyspepsia, underwent standardized EGG with water load testing and solid phase nuclear gastric emptying studies (NGES). Patients with elevated 3 cpm EGG activity, consistent with gastric outlet obstruction, and abnormal NGES underwent 2 minute, pyloric dilation with a 20 mm TTS balloon by a single operator. 3-6 months post-dilation the EGG and NGES were repeated. The EGG results were compared to a previously established normal patient group.

Results: Of the 202 subjects evaluated, 30 (15%) of subjects had delayed gastric emptying. 5 of the 30 patients (17%) had high amplitude sustained 3 cpm activity before and after the water load test, suggestive of gastric outlet obstruction. At endoscopy, the pylorus appeared structurally normal and permitted passage of a standard 8.3 mm endoscope. There were no complications of the dilation. After dilation, the 3 cpm EGG activity changed as follows: The percentage of 3 cpm EGG activity at baseline before dilations was increased at 62.6% compared with after dilation (42.8%, $P=0.12$). The percentages of 3 cpm activity at 10 and 20 min after min the water load were 68.4% and 64.8% before pyloric dilation and decreased significantly after dilation to 25.8% and 38.2%, respectively ($P<0.01$). The NGES showed a return in normal emptying after dilation. The percentage of meal emptied at 60 min and 120 min was 14.0% and 38.2%, respectively, before dilation and improved significantly after dilation to 45.1% and 79.0%, ($P<0.01$). After dilation symptoms of post-prandial bloating and early satiety resolved and remained controlled at a mean follow-up of 24 months (4-39 months).

Conclusions: In a subset of patients with GERD and dyspepsia symptoms, increased 3 cpm EGG activity and gastroparesis, functional pyloric dysfunction is present and is treated effectively with balloon dilation.