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Case Reports

Hypertensive Lower Esophageal Sphincter: Response to Pneumatic Balloon Dilatation

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SUMMARY

Hypertensive Lower Esophageal Sphincter (HLES) is a manometric finding, characterized by a resting Lower Esophageal Pressure (LES) more than 2 standard deviations above the mean of normal range. We report a patient who presented with dysphagia, elevated LES pressure on esophageal manometry and barium swallow test showing delayed emptying. Following an unsuccessful trial of medications and bouginage pneumatic balloon dilatation resulted in marked improvement. HLES usually responds to medications and bouginage but in resistant cases, pneumatic balloon dilatation may be helpful.

INTRODUCTION

Hypertensive lower esophageal sphincter is one of the rare esophageal manometric disorders. When evaluated on manometry is characterized by a resting LES pressure higher than 2 standard deviations above the mean of normal range with normal peristaltic sequence in the esophageal body. Such findings are considered diagnostic for HLES[1]. Originally described by Code and associates in 1960[2], majority of patients with this disorder present with dysphagia and/or chest pain. Functional abnormalities of LES, including impaired relaxation with high residual pressure were reported by Friedin and Waterman et al[3,5]. Barium swallow test either appeared normal or showed associated hiatal hernia in some of these patients[5]. Majority of them responded to medications and bouginage, however, resistant cases required pneumatic balloon dilatation[4]. We report such a case with HLES, with symptoms of dysphagia, poor response to medications and Savary bouginage, but responded remarkably well to pneumatic balloon dilatation.

CASE REPORT

A 35 years old male presented with intermittent dysphagia for solids and liquids for one year. He denied history of heartburn, regurgitation or weight loss and had normal physical examination . Barium swallow test showed prolonged hold up of barium at the distal esophagus with normal appearance of gastro esophageal junction (Fig. 1). There was delayed emptying but the peristalsis was propogative on fluoroscopy. Upper GI endoscopy was normal. Esophageal motility study was carried out using a low compliance pneumohydraulic infusion system having 8 lumen polyvinyl catheter assembly with side hole openings perfused at 0.5 ml/minute with compressed nitrogen (Arndorfer Medical Specialties, Inc., Greendale, WI). Mean resting LES pressure was determined at end expiration for 4 distal openings using mean gastric resting pressure as a zero reference. LES relaxation and contraction in the esophageal body were assessed by 6 wet water swallows (5ml water given at 30 second intervals). Lower esophageal sphincter pressure was calculated as the mean pressure recorded from four sensors and found to be 31 mm Hg. Normal reference range of LES pressure of 41 volunteers in our motility lab is 10 - 25 mm Hg with a mean pressure of 15 + 2.7 mm Hg. He had a residual pressure of 20 mm Hg and post relaxation hypercontraction of sphincter, typical of HLES (Fig. 2). Esophageal body showed propagated peristaltic contractions in more than 90% of swallows, thus ruling out the diagnosis of achalasia (Fig. 3). After an unsuccessful trial of diltiazem 60 mg q 8 hourly for 1 month, he underwent bouginage with 45 and 54 F Savary dilators with transient relief. Two months later his symptoms

persisted and he was subjected to pneumatic balloon dilatation after getting informed consent. A Rigiflex

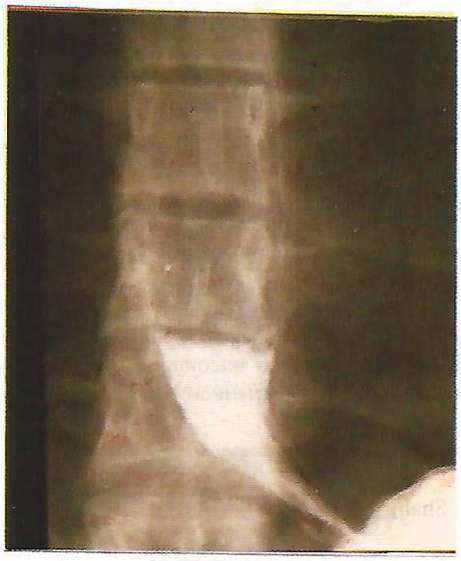

Fig. 1. Barium esophagogram showing hold-up of contrast in the esophagus before dilatation.

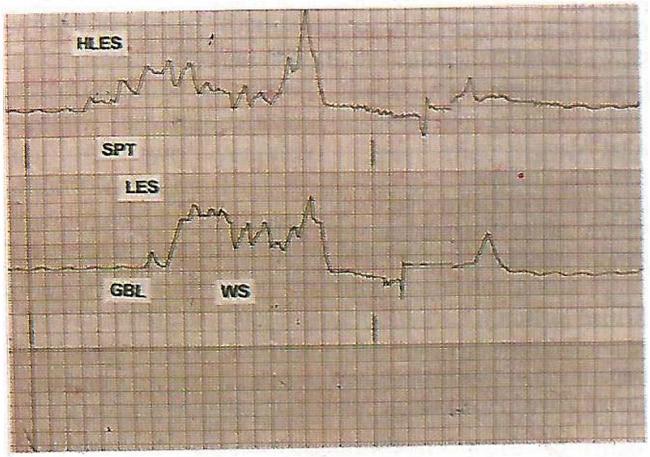

Fig. 2. Lower esophageal sphincter pressure recording showing excessively large and prolonged contraction of the sphincter following relaxation against wet swallow.

Microvasive balloon of 35 mm diameter when inflated, was used. After adequate sedation with intravenous diazepam 10 mg, the procedure was carried out as routine by obliterating the waist by rapidly inflating upto a pressure of 10 lb./in2 which was maintained for 60 seconds. Repeat barium swallow test, 5 minutes post-dilatation showed rapid entry of barium into the stomach with no signs of perforation (Fig. 4). He has remained asymptomatic on follow up of 12 months.

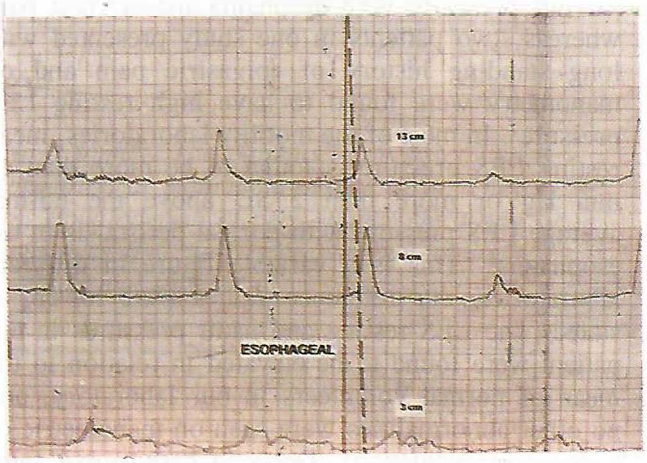

Fig. 3. Normal peristaltic sequence in the esophageal body in response to a wet swallow.

Fig. 4. Post-pneumatic balloon dilatation barium swallow test showing clearance of contrast from the esophagus.

DISCUSSION

Of the various esophageal motility disorders, HLES is now one of the well recognized primary esophageal motility disorders[6]. First described in

1960 at the Mayo Clinic as "Hypertensive gastroesophageal sphincter"[2], it is now named hypertensive LES[6] Although, of unknown etiology, Waterman reported a high prevalence of psychiatric abnormalities in these patients, as also seen in patients having Nutcracker esophagus[5]. Majority of patients presented with dysphagia and/or chest pain whereas, two patients in one study presented with long standing history of epigastric pain and on manometry were found to have high resting LES pressure[7]. In most of the motility laboratories, mean resting LES pressure is found to be more than 45 mm Hg or more than 2 SD above the normal average LES pressure with normal peristalsis in the esophagus[1]. This is a variable figure in different laboratories, our reference values were lower, as stated. The LES resting and nadir pressures in our patient were found to be elevated in relation to the mean of normal volunteers in our laboratory, and no other abnormalities were seen on manometric or endoscopic evaluations. Delay in barium exit from the esophagus was observed in our patient, which was abolished after balloon dilatation. The delay in esophageal emptying, despite intact peristalsis, is of interest that probably occurred due to decreased percent relaxation of the LES, with increased residual pressure and in addition, from prolonged post relaxation contraction (Fig. 2). Our patient is the only one we have encountered out of a total of 146 patients with various motility disorders. Failure of response to medications and bougienage, led us to try pneumatic dilatation. In two studies, it was reported that functional abnormalities of the LES existed, including impaired relaxation and increase in residual pressure[3,5]. Traube et al showed similar results of pneumatic dilatation in one of their patient[4]. In HLES cases resistant to bougienage and persistent symptoms with impaired esophageal emptying, we recommend pneumatic balloon dilatation for treatment of long term disturbing symptoms of dysphagia.

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