Preoperative manometry is not a predictor of postoperative dysphagia in chagasic achalasia

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Background: Heller's myotomy is probably the most performed operation for the treatment of achalasia. Although excellent and good results are usually achieved, some predictive factors for poor surgical outcome should be studied. Few papers have studied the correlation between preoperatory esophageal manometry and surgical outcome. **Aim:** This study examined a total of 28 patients with Chagas' disease esophagopathy that submitted to an esophageal cardiomyotomy and anterolateral partial fundoplication (Heller–Pinotti procedure). **Methods:** Surgical outcomes were assessed subjectively based on the healing of dysphagia. **Results:** Excellent and good results (absent or sporadic dysphagia) were found in group A; moderate and poor results (mild or incapacitating dysphagia) were found in group B. **Conclusion:** Resting pressure of the upper and lower esophageal sphincter, and amplitude and propagation of peristalsis of the esophageal body did not correlate with surgical outcome suggesting that preoperative esophageal manometry is not a predictor of dysphagia after esophageal cardiomyotomy and fundoplication in chagasic patients.

Keywords: achalasia, Chagas' disease, dysphagia, esophagus, manometry, myotomy surgery

Heller's myotomy is probably the most performed operation for the treatment of chagasic achalasia [1]. Excellent and good results exceed 90% in most cases, comparable with the outcomes of idiopathic achalasia [2]. Despite the fact that a number of cases have previously shown poor results, our group studied predictive factors for poor surgical outcome, such as previous endoscopic treatment, technical details and esophageal dilation.

Esophageal manometry currently forms part of the routine preoperative investigation of the achalasia. The aim of this study was to correlate preoperative manometrical findings and the results of surgical treatment, with regards to the treatment of dysphagia.

Patients & methods

A total of 27 patients were retrospectively studied, comprising 14 men and 13 women, with a mean age of 48 years (range 20–76). All patients complained of dysphagia. Chagas' disease was diagnosed based on serological tests, epidemiological antecedents and/or presence of extraesophageal manifestations of the disease. Surgical procedures were carried between June 1997 and June 2004. Ten (35.0%) patients had previously undergone endoscopic esophageal dilation.

Preoperative studies

All patients were submitted to an upper endoscopy to exclude concomitant diseases. A barium esophagram was also carried out in all patients. None of the patients had an esophageal width greater than 10 cm, or a sigmoid-shape contour.

Esophageal manometry was performed after an 8-h fast. An eight-channel perfusion catheter, with four channels radially disposed and oriented at 90° to each other, and four channels positioned longitudinally at intervals of 5 cm, was used (Synectics Medical). Position, pressure and length of the lower esophageal sphincter (LES) measurements were obtained using the station pull-through technique. Esophageal body function was assessed by administering ten wet swallows of 5 ml water boluses at 30 s intervals. The data was analyzed using a commercially available software program (Polygram, Synectics Medical). The following variables were assessed:

- Resting pressure of the upper esophageal sphincter
- Resting pressure of the LES: calculated as the midexpiratory pressure at the respiratory inversion point
- Amplitude and propagation of peristalsis: midrespiratory basal pressure and the contractile activity (% of peristaltic waves) after ten boluses of 5 ml of water

Surgical procedure

All patients were submitted to an esophageal cardiomyotomy and anterolateral partial fundoplication (Heller–Pinotti procedure) [1]. The

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myotomy extended for 5 cm in the esophagus and 1 cm in the stomach. Short gastric vessels were not divided. Laparotomy was used as the access route in all but 15 cases, where laparascopy was utilized (55.5%).

Follow-up

Patients were followed-up in the first, third, sixth, and 12th month postoperatively and annually thereafter. The mean follow-up period was 17.2 months (range 1–53 months). Surgical outcomes were assessed subjectively based on the healing of dysphagia according to the scale proposed by Vantrapen and Hellemans [3]. Excellent and good results (absent or sporadic dysphagia) were seen in group A, with moderate and poor results (mild or incapacitating dysphagia) in group B.

Statistical analysis

Student's t-test was used to compare values. Correlations between resting pressure of the LES and amplitude of contraction of the esophageal body were calculated based on the Pearson correlation coefficient (r). A p-value less than 0.05 was considered significant.

Results

Excellent and good results (group A) were achieved in 18 (66.7%) patients, with the remaining nine patients (group B, 33.3%) displaying moderate and poor results. In total, two patients were reoperated due to persistent dysphagia and submitted to esophagectomy.

Correlation between manometrical findings and surgical outcomes are outlined in **Table 1**. Resting pressure of the upper esophageal sphincter, resting pressure of the lower esophageal sphincter and amplitude and propagation of peristalsis of the esophageal body did not correlate with surgical outcome. In addition, there was no correlation between the resting pressure of the LES and amplitude of contraction of the esophageal body (r = 0.21, p = 0.34). The surgical approach undertaken (laparoscopic vs open), was not associated with different clinical results.

Discussion

Chagas' disease esophagopathy leads to a slow esophageal emptying due to a nonrelaxation of the LES, similar to idiopathic (primary) achalasia [2]. Moreover, esophageal body motility is also impaired [2].

In Chagas' disease, the basal pressure of the LES can be lower, normal or higher than idiopathic achalasia [2]. While some authors have been able to correlate the basal pressure of the LES with surgical outcome [4], others [5–8], including the present study, could not. Relaxation of the LES was not a prognostic factor [8]. As the aim of the myotomy is to alleviate resistance to food passage through the LES, it is intuitive to assume that patients with hypertensive sphincters are likely to have a more effective relief from dysphagia after such a procedure. However, although some reports correlate a lower LES pressure after treatment with better outcomes [8], postendoscopical dilation decrease in LES pressure has not been linked to better results with reagrds to dysphagia [6,9]. Esophageal body dysmotility may be a putative cause of dysphagia in the presence of a hypotensive LES, although no correlation between the resting pressure of the LES and the amplitude of contraction of the esophageal body was observed in our study.

Massive dilation of the esophagus is considered by some to be an indicator of inefficient motility of the esophageal body and an indication for esophagectomy, so-called end-stage achalasia [10,11]; however, few papers have evaluated the prognostic value of esophageal body motility. Zaninotto and colleagues, for example, did not correlate pretreatment amplitude of contraction of the esophageal body with surgical outcomes [7].

Table 1. Correlation between manometrical findings and postoperative dysphagia.

	Group A (n = 18)*	Group B (n = 9)‡	p-value (95% CI)
Resting pressure of the upper esophageal sphincter (mmHg)	65.5 ± 39.6 (2.5–137.3)	45.8 ± 26.5 (7.0–86.5)	0.14 (-5.5–44.9)
Resting pressure of the lower esophageal sphincter (mmHg)	33.1 ± 18.2 (14.4–80.4)	23.3 ± 14.8 (2.8–45.8)	0.21 (-3.0–22.6)
Esophageal body amplitute of contraction (mmHg)	32.5 ± 22.3 (10.0–93.0)	21.0 ± 6.8 (10.0 – 29.9)	0.07 (-0.1–23.1)
Aperistaltic waves (%)	95.0 ± 11.1 (67–100)	100.0 ± 0.0 (100–100)	0.25 (-13.9–3.9)

**Excellent and good results, ‡moderate and poor results. Results are expressed as mean ± standard deviation (range). CI: Confidence interval .*

It is clear that this study has several limitations such as the small casuist and different surgical approach (laparoscopic and open). In addition, postoperative dysphagia may be credited to such causes other than a preoperative manometrical profile, as technical errors. Postoperative manometry was available in a minority of patients; however, the two patients who required reoperations did not show significant changes in the postsurgical compared with the preoperative test. In addition, intraoperatively, no local alterations amenable to the cause of dysphagia – such as fibrosis of the myotomy, incomplete myotomy – were found.

Highlights

- The value of esophageal manometry as a predictor of surgical outcomes of the achalasia has not been fully elucidated.
- Resting pressure of the upper esophageal sphincter and of the lower esophageal sphincter as well as amplitude and propagation of peristalsis of the esophageal body, did not correlate with surgical outcome.
- Preoperative esophageal manometry is not a predictor of dysphagia after esophageal cardiomyotomy and fundoplication in chagasic patients.

Conclusions

The value of esophageal manometry as a predictor of surgical outcomes of achalasia is not fully elucidated. Although nonresecting surgery (esophagocardiomyotomy) is the most performed operation for the treatment of achalasia, some patients may benefit from an esophageal resection. For some authors [11], the identification of these patients may be based on massive esophageal dilation detected on radiological studies. Our study was conducted in the hope of to identifying these patients based on manometrical findings. However, we conclude that none of the parameters studied correlate with postoperative dysphagia, despite the limitations of a retrospective study with a small casuistic.

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