Kaohsiung Journal of Medical Sciences (2015) 31, 639–643

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://www.kjms-online.com

ORIGINAL ARTICLE

Comparison of treatment outcomes of endoscope-guided pneumatic dilation and laparoscopic Heller myotomy

Hsin-Ming Wang [a], Wei-Chen Tai [a], Seng-Kee Chuah [a,*], Hung-I Lu [b], Lung-Sheng Lu [a], Chih-Ming Liang [a], Chung-Huang Kuo [a], Yi-Chun Chiu [a], Keng-Liang Wu [a], Chi-Sin Changchien [a]

[a] *Division of Hepato-gastroenterology, Department of Internal Medicine, Kaohsiung Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Taiwan*
[b] *Division of Thoracic and Cardiovascular Surgery, Department of Surgery, Kaohsiung Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Taiwan*

Received 29 July 2015; accepted 1 October 2015
Available online 30 November 2015

KEYWORDS
Clinical remission;
Endoscope-guided pneumatic dilation;
Esophageal achalasia;
Laparoscopic Heller myotomy

Abstract The debate on which is the better choice between laparoscopic Heller myotomy (LHM) and endoscopic pneumatic dilation (PD) for esophageal achalasia has been ongoing for decades. This study aims to compare the results of endoscope-guided PD and LHM in 42 patients with achalasia between May 1996 and August 2011. Twenty-one patients who had received PD and 21 who had received LHM were enrolled. The cumulative remission rate was analyzed using the Kaplan–Meier method with the assessment of symptom scores between grades before and after PD or LHM done at 6 weeks, 6 months, 1 year, and then every year thereafter. Possible confounding factors related to the remissions were analyzed by Cox's proportional hazard model. For PD, the cumulative remission rates were 81.0% (1 year), 76.2% (2), 66.7% (3), 61.9% (4), and 47.6% (5). For LHM, the cumulative remission rates were 90.5% every year from the 1st to the 5th. The LHM patients had significantly better remission rates than the PD patients ($p = 0.033$, by log-rank test). The LHM group had a longer hospital stay than the PD group [median (interquartile range): 8 (6.5–10) days vs. 3 (2–3) days, $p < 0.001$) and had more reflux complications (52.4% vs. 19.0%, $p = 0.024$). No perforation occurred in either group. In conclusion, the 5-year cumulative effectiveness of LHM is better than that of PD despite the association of LHM with more reflux events (52.4%).

Conflicts of interest: All authors declare no conflicts of interest.

* Corresponding author. Division of Hepato-gastroenterology, Kaohsiung Chang Gung Memorial Hospital, 123 Ta-Pei Road, Niao-sung Hsiang, Kaohsiung County 833, Taiwan.
E-mail address: chuahsk@seed.net.tw (S.-K. Chuah).

http://dx.doi.org/10.1016/j.kjms.2015.10.003

Introduction

Achalasia is the primary motility dysfunction of the esophagus with the selective loss of inhibitory neurons of the myenteric plexus, which produces vasoactive intestinal polypeptides, nitric oxide, and inflammatory infiltrates and is thereby responsible for abnormal lower esophageal sphincter (LES) dysfunction. This results in the unopposed excitation of the LES and in the dysfunction or failure of the LES to relax in response to each swallow [1—6]. Dysphagia to both liquid and solid foods is the most commonly encountered symptom.

The currently available therapeutic options aim at loosening the LES and hence at relaxing it and relieving the obstruction of the esophagus [3]. Laparoscopic Heller myotomy (LHM) and pneumatic dilation (PD) are still the key treatment options, despite the introduction of peroral endoscopic myotomy (POEM) and laparoendoscopic single-site Heller myotomy with anterior fundoplication. Adding to the already ongoing debates on the superiority between PD and LHM, the first multiple-center randomized controlled 2-year follow-up research conducted by the European Achalasia Trial group indicated that LHM is not superior to PD [7]. However, publications on the satisfactory long-term success of laparoscopic surgical outcomes continue to emerge. Up to now, controversy surrounds the choice of LHM as the primary treatment for achalasia or as second-line treatment following failure of nonsurgical intervention after so many decades of real-world practice. This 5-year follow-up study aims to compare the results of endoscope-guided PD and LHM.

Patients and methods

Patients

We reviewed the medical files of the hospital admissions of patients with achalasia between May 1996 and August 2011. The PD patients were enrolled from 1996 and followed up until 2003, and the LHM patients were enrolled from 2006 and followed up until 2011. Twenty-one patients (12 men, 9 women) received LHM in the surgical unit, and 21 (13 men, 8 women) received endoscope-guided PD treatment in our unit. We excluded all patients who had prior treatments such as previous PD, botulinum toxin injection, and Heller operation; patients with esophageal obstructions caused by intrinsic or extrinsic events as determined by x-ray film examination and endoscopy; and patients with episodes of esophageal or gastric tumors, peptic stricture, prior surgical fundoplication, and incomplete chart recording. The mean age was 43.4 $\pm$ 17.78 years (range, 17 years to 78 years) in the LHM group and 49.9 $\pm$ 20.2 years (range, 18 years to 93 years). All patients had dysphagia of both liquid and solid foods; some had food regurgitation (92.8%), body weight loss (61.9%), chest pains (38.1%), and aspiration pneumonia (4.7%). The diagnosis was confirmed by one or more of the following examinations: endoscopic examinations, barium esophagography, and manometric study. We performed endoscopic ultrasonography or computed tomography to rule out pseudoachalasia. We performed endoscope-guided PD under conscious sedation (after the patients fasted overnight) using a 3-cm-diameter Rigiflex balloon dilator (Microvasive, Watertown, MA, USA). Depending on the tolerance of the patient, the balloon was inflated up to 10—12 pounds per square inch and maintained for 60 seconds, and the step is then repeated for another 15—30 seconds. The patients ingested Gastrografin after the dilation so that we could determine whether esophageal perforation had taken place. LHM was performed by experienced cardiac—vascular surgeons in Kaohsiung Chang Gung Memorial Hospital (KCGMH).

This retrospective chart review study was approved by both the Institutional Review Board and the Ethics Committee of KCGMH, Taiwan (IRB102-2468B). Written informed-consent forms were signed by subjects 18 years and older or by parents or guardians for younger subjects before they underwent endoscopic interventions.

Barium esophagogram

A timed barium esophagogram was performed on the patients before and after PD and LHM at the initial investigation, 6 weeks later, and every 1 year thereafter to objectively assess improvement in esophageal emptying.

Symptom score assessment

Symptom improvement status was determined using the Eckardt symptom score [8] at the initial investigation, 6 weeks later, and every 1 year thereafter. Depending on whether dysphagia, regurgitation, and chest pain occurred occasionally, daily, or several times during the day, a symptom score of 0 to 3 was determined. In addition, a symptom score of 0 to 3 was assigned to the degree of weight loss. Thus, a completely asymptomatic patient would have a symptom score of 0, whereas a severely affected patient could have a symptom score of up to 12. Patients were considered to have reached clinical remission if symptoms had totally disappeared or had improved by at least 2 points and did not exceed a score of 3. Patients who requested further therapy despite having a symptom score of less than 4 were considered to have treatment failure.

Statistical analysis

Statistical analysis was performed using the statistical software SPSS 17.0 (SPSS Inc., Chicago, IL, USA). Numerical data were compared using the Mann—Whitney test. For categorical data, the chi-square or Fisher's exact test was applied. The responses of both groups to the initial treatment, such as their manometric results, were compared, and their symptom scores were compared using the Mann—Whitney test. In both arms, the cumulative remission rate was analyzed using the Kaplan—Meier method with assessment of symptom scores between grades before and after PD and LHM in every year thereafter, and differences in curves between the two groups were statistically compared by log-rank test. A value of $p < 0.05$ was considered statistically significant.