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ABSTRACT

Background: Our understanding of esophageal hypomotility, particularly ineffective esophageal motility (IEM) on high-resolution manometry (HRM), continues to evolve, as evidenced by the Stanford IEM Symposium and the changes in HRM diagnostic criteria for IEM presented in the fourth iteration of the Chicago Classification (CC v4.0). Here, we evaluated endoscopic findings among a cohort of patients with IEM based on CC v3.0 and CC v4.0 diagnostic criteria.

Methods: 450 consecutive patients undergoing HRM were reviewed, and those meeting diagnoses of IEM per CC v3.0 thresholds constituted the study cohort. From HRM studies, the numbers of failed, weak, and fragmented swallows were collected, as well as mean distal contractile integral (DCI). Data from the upper endoscopy performed nearest to the HRM study were collected, specifically hiatal hernia, reflux esophagitis, Barrett's esophagus, and distal esophageal stenosis. HRM study data were re-interpreted, and those patients meeting CC v4.0 criteria for IEM ("consistent IEM") were compared to those not meeting CC v4.0 thresholds ("inconsistent IEM").

Results: 36/450 (8%) patients had diagnoses of IEM per CC v3.0 (58.4±2.8 years, 17% F, 58% Caucasian, BMI 29.6±0.9). 86% were on PPI at evaluation, and 56% had reported some dysphagia on symptom questionnaires. Mean DCI was 359.5±30.1, with 3.0±0.4 failed, 5.0±0.4 weak, and 0.6±0.2 fragmented swallows. Endoscopic findings among the total cohort included hiatal hernia (44%), reflux esophagitis (25%), Barrett's esophagus (19%), and distal stenosis (8%). 75% of the cohort retained an IEM diagnosis when re-evaluated with CC v4.0 thresholds. When compared to those patients who did not retain an IEM diagnosis, demographic data, clinical characteristics, and endoscopic findings were statistically similar, although no patients with inconsistent IEM had stenosis noted at endoscopy.

Conclusions: Hiatal hernia and other endoscopic findings of reflux (particularly reflux esophagitis and Barrett's esophagus) were common among patients with manometric diagnoses of IEM, despite high rates of PPI use. The proportions with these endoscopic findings did not appear to differ significantly based on whether an IEM diagnosis was consistent with CC v4.0 diagnostic criteria, though all patients with esophageal stenosis at endoscopy had consistent IEM. These findings should encourage further investigations into the potential progression of reflux and its complications among patients with varying degrees of esophageal hypomotility.

BACKGROUND

Our understanding of the definitions, clinical significance, and natural history of esophageal body hypomotility continues to evolve, as discussed at the Stanford IEM Symposium

Chicago Classification (CC) thresholds for a diagnosis of Ineffective Esophageal Motility (IEM) on esophageal high-resolution manometry (HRM) have changed with the transition from CC Version 3.0 to CC Version 4.0

AIMS

Evaluate clinical differences, particularly endoscopic findings, between those patients with CC v3.0 IEM who meet thresholds for CC v4.0 IEM versus those who do not meet these thresholds

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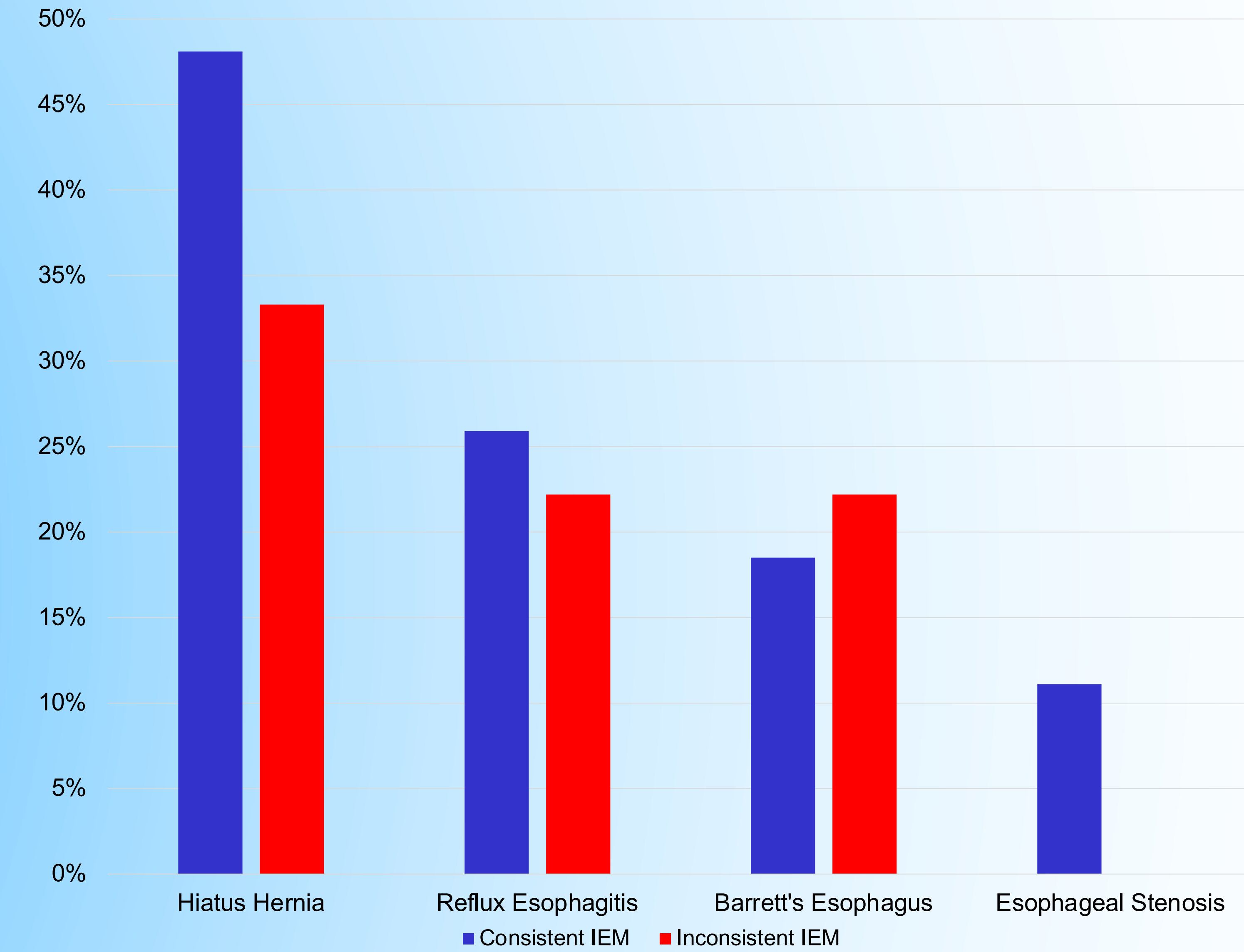
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RESULTS

Comparisons Between "Consistent IEM" and "Inconsistent IEM" Cohorts

	"Consistent IEM"	"Inconsistent IEM"	p Values
Demographics			
Age (years)	59.4±3.4	55.3±4.1	0.52
Female	11.1%	33.3%	0.12
Caucasian	63.0%	44.4%	0.33
Clinical Characteristics			
BMI	29.4±1.1	30.1±1.6	0.74
Dysphagia	59.3%	44.4%	0.44
PPI use	81.5%	100%	0.16
HRM Findings			
Mean DCI	293.8±23.4	556.5±63.4	<0.001*
Failed Swallows	3.3±0.5	1.9±0.5	0.14
Weak Swallows	5.0±0.4	5.0±0.6	1.00
Fragmented Swallows	0.5±0.2	0.7±0.5	0.66
Endoscopic Findings			
Hiatus hernia	48.1%	33.3%	0.44
Reflux esophagitis	25.9%	22.2%	0.82
Barrett's Esophagus	18.5%	22.2%	0.81
Esophageal stenosis	11.1%	0.0%	0.30

Endoscopic Findings Among "Consistent IEM" (blue) and "Inconsistent IEM" (red) Cohorts



CONCLUSIONS

- Hiatus hernia and endoscopic findings consistent with reflux, such as reflux esophagitis and Barrett's esophagus, are common among patients with Chicago Classification diagnoses of ineffective esophageal motility (IEM), regardless of Version 3.0 or 4.0
- However, all patients in this study cohort with esophageal stenosis reported on endoscopy met CC Version 4.0 thresholds for IEM
- Further investigations – with outcome measures – are warranted to better understand the relationships between the severity of esophageal body hypomotility and the progression of reflux disease and its complications in order to guide clinical management

METHODS

SUBJECTS:

INCLUSION CRITERIA

- Adults with high-resolution impedance manometry (HRIM; Medtronic, Minneapolis, MN) performed at a single open-access referral esophageal function laboratory meeting Chicago Classification (CC) Version 3.0 criteria for ineffective esophageal motility (IEM), with upper endoscopy data available

EXCLUSION CRITERIA

- HRM not meeting CC v3.0 criteria for IEM
- No upper endoscopy data available
- History of foregut surgery

DATA EXTRACTED

➤ Demographics

- Age
- Gender
- Race

➤ Clinical characteristics

- Body mass index
- Dysphagia on symptom questionnaires
- Proton pump inhibitor (PPI) use

➤ HRM findings

- Mean distal contractile integral
- Numbers of failed, weak, and fragmented swallows

➤ Upper endoscopic findings (performed closest to time of HRM)

- Hiatus hernia
- Reflux esophagitis
- Barrett's esophagus
- Esophageal stenosis

STUDY COHORTS

- HRM studies were re-interpreted to identify those patients meeting CC v4.0 criteria for IEM ("consistent IEM")

- "Consistent IEM" patients were compared to those not meeting CC v4.0 thresholds for IEM ("inconsistent IEM")

STATISTICS

- Data reported as mean ± SEM
- Categorical data compared using X² test
- Continuous data compared using 2-tailed Student's t-test
- p<0.05 required for significance
- IBM SPSS V.26 (Armonk, NY)