Characterizing Lower Esophageal Sphincter Dysfunction, Integrated Relaxation Pressure vs Distensibility Index. Who Gives a FLIP?

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BACKGROUND

- Lower esophageal sphincter (LES) physiology/pathophysiology is important in characterizing disorders of esophageal motility
- High resolution impedance manometry (HRIM) has traditionally been used however does not completely describe the LES function.
- FLIP has been utilized as an adjunct to HRIM, as the Distensibility Index (DI) can assess alternate aspects of LES physiology[1,2]
- DI is still being examined to determined how to utilize the information in clinical practice[3]

AIM

- To evaluate the relationship between DI and integrated relaxation pressure (IRP) pertaining to LES residual pressure made with FLIP compared to HRIM.

METHODS

- Retrospective study on patients who received a FLIP and HRIM within two years from each other during 2017 to 2021
- 227 patients with both tests performed
  - patients who had corrective GI procedures (Nissen fundoplication, sleeve gastrectomy, etc) during the time interval between the procedures were excluded
- Patients were grouped first by IRP abnormality and DI abnormality, and those groupings were compared against expected used Fisher's exact test
- The patients were then grouped by IRP abnormality, then mean DI for each group was calculated and compared using t-testing.

Patient Characteristics

	FLIP (n=313)	HRIM (n=227)	p-value
Age (years)	61.0	60.5	0.99
Sex	51% female	51% female	0.99

RESULTS

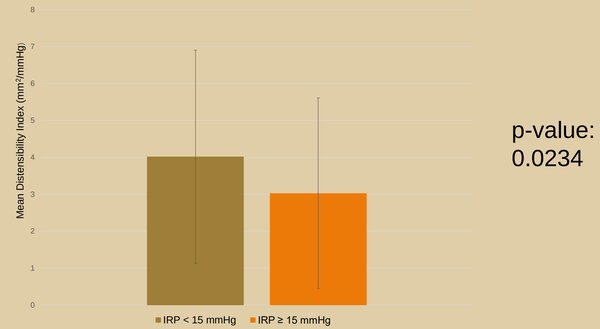
Fisher Exact Analysis of Patients Grouped by DI and IRP Normality, DI Cutoff 2.8

	DI < 2.8 mm²/mmHg	DI ≥ 2.8 mm²/mmHg
IRP < 15 mmHg	16	32
IRP ≥ 15 mmHg	81	83
p-value: 0.07		

Fisher Exact Analysis of Patients Grouped by DI and IRP Normality, DI Cutoff 2.0

	DI < 2.0 mm²/mmHg	DI ≥ 2.0 mm²/mmHg
IRP < 15 mmHg	11	37
IRP ≥ 15 mmHg	63	101
p-value: 0.06		

Average Distensibility Index by Normality of IRP



CONCLUSION

- Abnormal IRP is associated with a significantly lower distensibility index of < 3.1 compared to DI observed in normal IRP.
- Fisher's exact test revealed abnormal DI was not related to abnormal IRP
- DI and IRP appear to be closely correlated however imperfectly congruent, supporting the conclusion that DI and IRP are complementary in evaluating LES function.

REFERENCES

1. Hirano I, Pandolfino JE, Boeckxstaens GE. Functional Lumen Imaging Probe for the Management of Esophageal Disorders: Expert Review From the Clinical Practice Updates Committee of the AGA Institute. Clin Gastroenterol Hepatol 2017;15:325-334.
2. Ilczyszyn A, Botha AJ. Feasibility of esophagogastric junction distensibility measurement during Nissen fundoplication. Dis Esophagus 2014;27:637-644.
3. Carlson DA, Kou W, Lin Z, et al. Normal Values of Esophageal Distensibility and Distension-Induced Contractility Measured by Functional Luminal Imaging Probe Panometry. Clin Gastroenterol Hepatol 2019;17:674-681 e671.