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Introduction

Baseline impedance (BI) measured during a multichannel intraluminal impedance -pH (MII-pH) study can distinguish patients with gastro-esophageal reflux disease (GERD).

Limited data suggest BI measured during high resolution esophageal impedance manometry (HRIM) could be helpful in detecting patients with GERD.

However, measurement of BI with HRIM is not done routinely.

The **aim** of this study is to assess whether BI measured during HRIM (HRIM-BI) could serve to detect patients with GERD, thus eliminating the need for further evaluation.

Methods and Materials

Inclusion criteria

- Patients who underwent
 - HRIM and
 - MII-pH study off acid suppression
 - from May 2021 through May 2022

- Discontinuation of acid suppression
 - > 7days for PPIs
 - > 3days for H2RA
 - > 24 hours for antacids

Exclusion criteria

- Incomplete studies
- Patients with artifacts
- Nonconsecutive HRIM and MII-pH studies (> 10 days apart)

GERD was defined as AET>6% or acid reflux episodes >80

Baseline HRIM impedance was measured (**Figure 1**)

- during the resting period of HRIM
- at different levels (0,3,5,10 and 15cm above the LES)
- manually measured



Figure 1. Measurement of baseline impedance during resting period of HRIM.

Table 1. Baseline characteristics between patients with GERD and controls.

	GERD (n=18)	Controls (n=42)	P-value
Age	55.5	52.6	0.34
Female (%)	27.8	61.9	0.01
MNBI	1.5	3.1	<0.001
Distal total AET	12.87	1.87	<0.001
DeMeester	48.68	8.23	<0.001
HRIM BI 15cm	2.16	2.73	0.125
HRIM BI 10cm	1.79	2.43	0.053
HRIM BI 5cm	1.29	2.15	0.154
HRIM BI 3cm	1.44	1.97	0.058
HRIM LES	1.37	2.22	0.068

Results

60 patients (31 females)
Mean age 38 ± 5.5 years.
42 patients had AET<6% or reflux episodes <80
18 patients (30%) had MNBI<1500 Ohm (**Table 1**).

- MNBI and HRIM-BI at the 5 cm proximal to the LES were moderately correlated (Spearman Rho=0.439 p<0.001).
- 5cm above LES showed the best correlation to MNBI.
- A cut-off of MNBI<1500 ohm had good discriminating properties in detecting GERD

AUROC (**Figure 2**)

MNBI 0.884 (95% CI 0.77-0.99, p<0.0001)
HRIM-BI 5cm 0.686 (95% CI 0.58-0.78, p<0.0001)
HRIM-BI 3cm 0.679 (95% CI 0.57-0.78, p=0.002)
HRIM- LES 0.668 (95% CI 0.56-0.77, p=0.004)

None of the levels of measured MNBI (LES, 3cm, 5cm, 10cm 15cm above LES) had good discriminating properties.

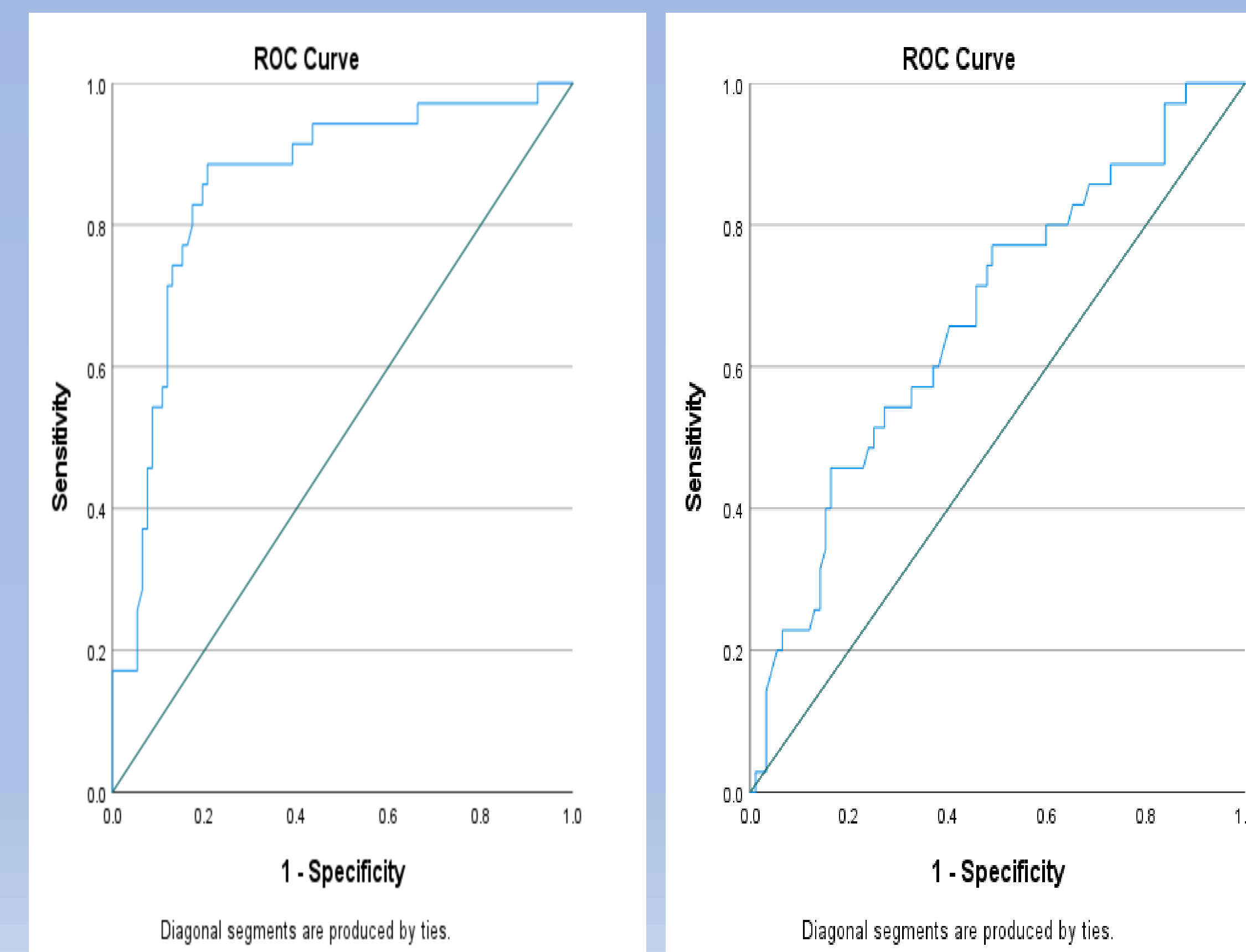


Figure 2. Area under the curve (AUROC) of
a) MNBI 0.884 (95% CI 0.77-0.99, p<0.0001) and
b) HRIM-BI 5cm 0.686 (95% CI 0.58-0.78, p<0.0001)

Discussion

HRIM BI

- performed significantly poorly (r=0.29-0.45, p<0.001) in predicting GERD
- regardless of level of HRIM BI measurement from LES
- Consequently, its utility is questionable.

MNBI had

- good discriminatory properties in distinguishing GERD
- a strong positive correlation with AET
- a high AUROC curve
- Consequently, MNBI COULD serve as an adjunctive diagnostic modality for GERD evaluation.

HRIM and MII-Ph

- provide different clinical information about impedance measurements
- are supplementary modalities
- are not interchangeable

Conclusions

Our results support previously published reports of the usefulness of MII-ph MNBI in detecting GERD. Unfortunately, our data do not support the use of HRIM BI in detecting GERD and obviating the need of 24 hour MII-pH, contrary to prior reports. The HRIM-pH does not correlate well to MNBI and has inadequate discriminatory properties.

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