

Supplementary material											
Table 1 Comparison of pH impedance metrics between ERD, NERD, RH, FH, high AET, and ERD with high AET patient categories											
Metrics per 24 hours	ERD (<i>n</i> = 13)	NERD (<i>n</i> = 8)	RH (<i>n</i> = 8)	FH (<i>n</i> = 6)	ERD with AET >4% (<i>n</i> = 5)	AET >4% (<i>n</i> = 13)	<i>P</i> value ERD vs NERD	<i>P</i> value ERD with high AET vs NERD	<i>P</i> value High AET vs RH	<i>P</i> value High AET vs FH	<i>P</i> value FH vs RH
Acid exposure time (%) [mean (SD)]	4.0 (4.3)	9.2 (5.1)	1.3 (1.1)	1.3 (0.9)	8.4 (3.6)	8.9 (4.4)	0.015 ^b	0.826 ^b	<0.001 ^b	0.001 ^b	0.948 ^b
Total reflux events [mean (SD)]	52.6 (50.9)	55.7 (33.1)	40.2 (32.5)	23.6 (28.0)	98.1 (55.9)	72.0 (46.3)	0.469 ^b	0.143 ^b	0.148 ^b	0.016 ^b	0.121 ^b
Upright (%) [mean (SD)]	4.8 (5.4)	8.4 (9.0)	1.6 (1.2)	1.6 (1.5)	10.1 (5.4)	9.0 (7.6)	0.385 ^b	0.380 ^b	0.005 ^b	0.010 ^b	0.698 ^b
Supine (%) [mean (SD)]	4.0 (5.35)	13.7 (12.9)	0.9 (1.5)	0.9 (1.0)	6.9 (4.3)	11.1 (10.7)	0.035 ^b	0.770 ^b	0.001 ^b	0.002 ^b	0.948 ^b
Number of long acid reflux episodes [mean (SD)]	2.2 (3.0)	4.1 (3.2)	0.3 (4.9)	1.1 (0.9)	5.0 (3.2)	4.5 (3.1)	0.150 ^b	0.558 ^b	0.001 ^b	0.014 ^b	0.061 ^b
Longest reflux time (min) [mean (SD)]	7.5(6.1)	23.8 (22.0)	4.1 (4.0)	5.9 (3.9)	12.7 (4.4)	19.5 (17.9)	0.055 ^b	0.884 ^b	0.002 ^b	0.018 ^b	0.332 ^b
DeMeester score [mean (SD)]	15.6 (15.4)	33.6 (19.1)	5.3 (4.2)	6.8 (5.4)	30.8 (11.5)	32.5 (16.1)	0.043 ^b	1.000 ^b	<0.001 ^b	0.001 ^b	0.606 ^b

Table 1. Mean (SD) of the number of acid reflux events, number of non-acid reflux events, upright reflux events, supine reflux events, total proximal reflux events, and total proximal reflux events in the study population												
Parameter	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Number of acid reflux events [mean (SD)]	36.4 (37.4)	47.6 (32.6)	27.3 (24.1)	15.3 (21.3)	72.7 (36.9)	57.2 (35.1)	0.469 ^b	0.143 ^b	0.060 ^b	0.005 ^b	0.070 ^b	
Weakly acid reflux events [mean (SD)]	15.5 (22.3)	7.5 (5.7)	10.2 (8.0)	7.5 (6.8)	24.8 (31.8)	14.2 (20.8)	0.772 ^b	0.420 ^b	0.800 ^b	0.861 ^b	0.519 ^b	
Number of non-acid reflux events [mean (SD)]	0.64 (1.6)	0.7 (5.7)	2.7 (4.2)	7.0 (16.0)	0.6 (1.4)	0.7 (1.2)	0.751 ^b	1.000 ^b	0.276 ^b	0.338 ^b	0.830 ^b	
Upright impedance reflux events [mean (SD)]	41.2 (43.3)	40.5 (26.9)	36.3 (30.4)	21.3 (19.1)	75.8 (53.0)	54.1 (41.0)	0.772 ^b	0.143 ^b	0.311 ^b	0.054 ^b	0.156 ^b	
Supine impedance reflux events [mean (SD)]	11.4 (14.9)	15.2 (13.8)	3.9 (2.6)	6.1 (9.2)	22.3 (20.0)	17.9 (16.0)	0.310 ^b	0.380 ^b	0.003 ^b	0.053 ^b	0.697 ^b	
Total proximal reflux events [mean (SD)]	15.5 (28.1)	13.2 (11.5)	2.3 (2.1)	2.0 (3.0)	35.3 (39.3)	21.7 (26.8)	0.403 ^b	0.341 ^b	0.018 ^b	0.013 ^b	0.459 ^b	
Total proximal reflux events [mean (SD)]	8.6 (17.3)	6.1 (6.4)	2.8 (3.5)	2.3 (3.4)	16.9 (27.1)	10.2 (17.3)	0.856 ^b	0.608 ^b	0.101 ^b	0.111 ^b	0.788 ^b	

Upright reflux	total events	proximal [mean (SD)]	13.1 (26.7)	10.2 (10.6)	1.9 (1.9)	2.0 (3.0)	29.2 (39.8)	17.5 (26.2)	0.537 ^b	0.420 ^b	0.022 ^b	0.027 ^b	0.638 ^b
Upright reflux	total events	proximal [mean (SD)]	8.7 (15.6)	6.1 (6.5)	2.9 (4.4)	2.6 (3.6)	16.1 (24.2)	9.9 (15.7)	0.971 ^b	0.419 ^b	0.117 ^b	0.121 ^b	0.737 ^b
Number of proximal reflux events	supine total	proximal [mean (SD)]	2.4 (5.7)	3.0 (5.1)	0.41(0.8)	0.0 (0)	6.2 (8.3)	4.2 (6.4)	0.316 ^b	0.266 ^b	0.026 ^b	0.010 ^b	0.204 ^b
Supine reflux	total events	proximal [mean (SD)]	1.0 (1.9)	4.7 (7.4)	3.1(6.4)	0.0 (0)	2.7 (2.2)	3.9 (5.9)	0.160 ^b	0.711 ^b	0.193 ^b	0.010 ^b	0.204 ^b
Number of episodes	of symptom recorded	[mean (SD)]	13.1 (18.0)	7.0 (4.2)	34.3 (33.0)	21.0 (45.7)	24.0 (24.6)	13.5 (16.9)	0.689 ^b	0.376 ^b	0.029 ^b	0.201 ^b	0.038 ^b
Symptom Index/impedance	SI for refluxes (%)	[mean (SD)]	24.6 (35.1)	14.7 (21.9)	29.7(23.2)	0.2 (0.4)	56.5 (39.5)	30.8 (35.3)	0.481 ^b	0.038 ^b	0.510 ^b	0.079 ^b	0.002 ^b
Symptom Index/	Sensitivity SSI for		13.1 (21.3)	2.8 (5.0)	25.7(21.8)	4.2 (10.2)	15.3 (13.3)	7.6 (10.7)	0.273 ^b	0.077 ^b	0.010 ^b	0.204 ^b	0.012 ^b

impedance refluxes (%)												
[mean (SD)]												
Symptom association probability for impedance refluxes SAP (%) [mean (SD)]		45.1 (50.3)	36.3 (50.2)	96.4 (9.0)	6.5 (15.9)	79.8 (44.6)	53.1 (51.2)	0.433 ^b	0.036 ^b	0.111 ^b	0.078 ^b	0.001 ^b
Symptom Index for pH events [mean (SD)]		18.2 (24.2)	14.7 (18.8)	21.2 (13.7)	0.0 (0)	36.9 (30.1)	23.2 (25.2)	0.792 ^b	0.119 ^b	0.884 ^b	0.010 ^b	0.001 ^b
Symptom Sensitivity Index pH [mean (SD)]		12.1 (19.5)	2.6 (2.6)	33.5 (28.9)	0.0 (0)	16.9 (18.9)	8.1 (13.2)	0.706 ^b	0.207 ^b	0.005 ^b	0.010 ^b	0.001 ^b
Symptom Association Probability pH [mean (SD)]		41.4 (46.5)	51.2 (43.4)	99.2 (1.3)	0.0 (0)	72.2 (41.5)	59.3 (42.3)	0.970 ^b	0.206 ^b	0.005 ^b	0.010 ^b	0.001 ^b
PSPW index% [mean (SD)]		86.6 (57.7)	61.4 (18.5)	83.3 (18.1)	68.9 (30.9)	61.3 (23.8)	61.4 (19.7)	0.147 ^b	1.000 ^b	0.011 ^b	0.598 ^b	0.604 ^b
MNBI of the most distal channel [mean (SD)]		2030.9 (1213.2)	768.9 (388.7)	2169.1 (1070.0)	1893.8 (894.7)	1408.4 (1326.2)	1014.9 (882.8)	0.005 ^b	0.306 ^b	0.030 ^b	0.044 ^b	0.439 ^b
Proximal MNBI (I7,I5) [mean (SD)]		2360.7 (304.4)	2232.6 (539.6)	2336.1 (640.3)	2131.8 (347.4)	2243.6 (339.2)	2236.8 (456.3)	0.664 ^b	0.770 ^b	0.717 ^b	0.599 ^b	0.796 ^b

Distal MNBI (3,5,7,9)	2452.3	1158.3	2526.0	2561.1	1751.8	1386.6	0.001 ^b	0.079 ^b	0.004 ^b	0.007 ^b	0.699 ^b
[mean (SD)]	(1042.9)	(350.5)	(727.5)	(651.7)	(769.1)	(599.3)					
MNBI [mean (SD)]	2421.8	1516.4	2462.7	2418.0	1915.7	1670.0	0.004 ^b	0.242 ^b	0.014 ^b	0.011 ^b	0.606 ^b
	(762.4)	(301.5)	(616.8)	(487.6)	(578.7)	(453.4)					
Number of Supragastric belches [mean (SD)]	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1.000 ^b	1.000 ^b	1.000 ^b	1.000 ^b	1.000 ^b
Abnormal distal MNBI [n (%)]	5 (38.5)	8 (100)	2 (25.0)	1 (16.7)	4 (80.0)	12 (92.3)	0.006 ^a	0.385 ^a	0.003 ^a	0.003 ^a	1.000 ^a
Abnormal PSPW index [n (%)]	4 (30.8)	3 (37.5)	1 (12.5)	2 (33.3)	3 (60.0)	6 (46.2)	0.557 ^a	0.592 ^a	0.174 ^a	1.000 ^a	0.538 ^a
Abnormal SI (for impedance refluxes) [n (%)]	3 (23.1)	1 (12.5)	1 (12.5)	0 (0)	3 (60.0)	4 (30.8)	0.502 ^a	0.217 ^a	0.338 ^a	0.255 ^a	1.000 ^a
Abnormal SAP (for impedance refluxes) [n (%)]	4 (30.8)	2 (25.0)	7 (87.5)	0 (0)	4 (80.0)	6 (46.2)	0.590 ^a	0.103 ^a	0.085 ^a	0.109 ^a	0.005 ^a
Abnormal SI (for pH refluxes) [n (%)]	2 (15.4)	1 (12.5)	0 (0)	0 (0)	2 (40.0)	3(23.1)	0.684 ^a	0.510 ^a	0.257 ^a	0.517 ^a	-

Abnormal SAP (for pH refluxes) [n (%)]	2 (15.4)	1 (12.5)	8 (100)	0 (0)	2 (40.0)	3 (23.1)	0.684 ^a	0.100 ^a	0.001 ^a	0.517 ^a	<0.001 ^a
Abnormal AET [n (%)]	5 (38.5)	8 (100)	0 (0)	0 (0)	5 (100)	13 (100)	0.006 ^a	-	<0.001 ^a	<0.001 ^a	-
Abnormal DeMeester score [n (%)]	6 (46.2)	7 (87.5)	0 (0)	1 (16.7)	5(100)	12 (92.3)	0.015 ^a	1.000 ^a	<0.001 ^a	<0.001 ^a	0.429 ^a
Number of refluxes more than 80 [n (%)]	3 (23.1)	2 (25.0)	1 (12.5)	0 (0)	3 (60.0)	5 (38.5)	0.656 ^a	0.293 ^a	0.336 ^a	0.128 ^a	1.000 ^a
Number of refluxes more than 40 [n (%)]	5 (38.5)	5 (62.5)	2 (25)	1 (16.7)	4(80.0)	9 (69.2)	0.268 ^a	1.000 ^a	0.080 ^a	0.057 ^a	1.000 ^a

^aFisher’s exact test for categorical data; ^b Mann-Whitney U test for scale data

AET; Acid exposure time, ERD; erosive reflux disease, FH; functional heartburn, NERD; non-erosive reflux disease, MNBI; mean nocturnal baseline impedance, PSPW; post-reflux swallow-induced peristaltic wave, RH; reflux hypersensitivity, SAP; Symptom association probability, SI; symptom index, SSI; Symptom Sensitivity Index.