OC-048

**INCREASING REFLUX STUDY DURATION
PROGRESSIVELY IMPROVES DIAGNOSTIC
CONSISTENCY: A PROSPECTIVE STUDY WITH 96 H
WIRELESS PH RECORDINGS**

doi:10.1136/gut.2011.239301.48

M R Fox,^{1,*} R Sweis,² D Menne,³ A Anggiansah,⁴ T Wong² ¹NIHR Biomedical Research Unit, Nottingham Digestive Diseases Centre, Nottingham, UK; ²Department of Gastroenterology and Hepatology, Guy's and St Thomas' NHS Foundation Trust, London, UK; ³Biostatistics, Menne Biomed, Tuebingen, Germany; ⁴Oesophageal Laboratory, Guy's and St. Thomas' NHS Foundation Trust, London, UK

Introduction Previous studies suggest that prolonged ambulatory reflux monitoring can improve measurement consistency; however, previous reports were not analysed appropriately or adequately powered to determine the impact on key clinical parameters. The aim of this study was to assess measurement consistency for acid exposure time (AET) and symptom association with reflux events used to establish the diagnosis of GORD.

Methods Acid reflux (pH) and symptom data were acquired by prolonged, 4 day, wireless pH recording (Bravo, Given Imaging). 163 consecutive patients presenting with predominantly typical reflux symptoms (heartburn, regurgitation) studied 2006–2009 with a record duration of >3.7 days were studied (636 days). Data were exported in XML format, redundant symptom markers were removed in one pass with reflux detection.

A cross-validation procedure assessed measurement variability (standard deviation (SD)) and diagnostic consistency of AET, symptom index (SI) and symptom association probability (SAP). The 4-day records were divided into 1-day sections and re-assembled as all possible subsets. Index parameters were computed for all subsets and labelled with a sequence identifier in the database. Bias due to self-referential comparisons was excluded (i.e., day 1 was not compared with day 123) and, also, no comparisons with 4-day results are given. Standard diagnostic thresholds were applied. In addition, the effect of varying threshold pH value used for reflux detection on diagnostic consistency was assessed.

Results Measurement variability: There was no change in AET or SI over time; however, SAP increased progressively with study duration. Standard deviation (SD) was higher for 1-day than 3-day records for AET (+50% (confidence interval (CI): 10%...120%)) and SI (+100% (CI 120%...270%)) with no important difference across the observed range. Results for 2 days were intermediate. Similar findings were present for SAP (1 day vs 3 days at 95% SAP (+100% (CI 10%...700%)); however, for this parameter measurement variability increased exponentially as SAP approached 100%.

Diagnosis: Consistency for GORD diagnosis increased with study duration (table 1) for all parameters studied.

Table 1 OC-048 Effect of study duration on test sensitivity and specificity

Diagnostic Parameter	Threshold Values	Consistency		
		1 day	2 day	3 day
AET	>5.6%/study (pH < 4)	0.57	0.67	0.82
	>5.6%/study (pH < 5)	0.69	0.82	0.82
SI	>50% (pH < 4)	0.69	0.78	0.88
	>50% (pH < 5)	0.69	0.77	0.87
SAP	>95% (pH < 4)	0.56	0.69	0.82
	>95% (pH < 5)	0.53	0.60	0.77

Conclusion Increasing the duration of reflux studies progressively improves diagnostic consistency for GORD based on both AET and reflux-symptom association analysis independent of diagnostic threshold applied.

Competing interests M. Fox Grant / Research Support from: Given Imaging, R. Sweis: None Declared, D. Menne: None Declared, A. Anggiansah: None Declared, T. Wong: None Declared.

Keywords oesophageal acid exposure, pH monitoring, reflux, symptom association probability, symptom index.