

settings. AIM: To assess the long-term outcome of patients presenting with GERD symptoms for diagnostic work-up in a usual clinical care setting and the clinical predictors of response/non-response. This abstract summarizes the interim analysis after recruitment of 100 patients. METHODS: One hundred patients referred for endoscopic assessment of suspected GERD within a single metropolitan area health service were recruited; 82 consecutive patients from the Royal Adelaide Hospital (RAH) and 28 from the Lyell McEwen Health Centre (LMH). Symptoms and psychological co-morbidities were assessed utilizing the Bowel Disease Questionnaire, the Hospital Anxiety and Depression Scale and the Nepean Dyspepsia Index. Questionnaires were mailed to the patients. Data on endoscopic findings at referral using the Los Angeles (LA) classification were included. As this was an observational study, routine clinical management by the referring GP was not altered. RESULTS: 68 patients were on proton pump inhibitor (PPI) therapy while 31 patients did not receive the treatment. In 58 patients endoscopy revealed no visible esophagitis. The frequency of heartburn was significantly associated with the presence of hiatal hernia but the frequency of reflux symptoms was not linked to the presence or severity of endoscopic lesions. Follow-up data > 2 month were available for 38 patients. Out of these 86.8% continued to have heartburn and 76.3% an acid taste after more than 2 months of treatment. The symptomatic response to PPI was significantly better ($p<0.01$) in GERD patient with hiatal hernia. A greater proportion (24.4% vs 0%) of patients at the RAH had higher grades of oesophagitis (LA C & D) and reported use of non-steroidal anti-inflammatory drugs compared to LMH ($p>0.05$). 36% of patients reported a history of anxiety and depression but these disorders were not correlated with symptom frequency or response to PPI therapy. CONCLUSIONS: a) Frequency of GERD symptoms is not associated with severity of mucosal lesions; b) presence of a hiatal hernia is linked to more frequent symptoms; c) presence of a hiatal hernia predicts a favourable response to PPI therapy.

T2016

Novel Integration of Video and pH/Impedance Recording Coupled with Cardiorespiratory Monitoring for Evaluation of Pediatric Gastroesophageal Reflux Disease

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Few data are available that document the nature and characteristics of the symptoms of gastroesophageal reflux disease (GERD) in neonates and infants. The recent development of an integrated system that monitors GERD symptoms using apnea, pH/impedance, and video monitoring permits the rapid integration of all parameters into a single, synchronized display. The commercially available Sandhill Scientific Impedance/pH Reflux Monitoring System and the Respironics Alice V Sleep System were combined with a video camera and a synchronizing device to yield a system that permits the visual observations of pediatric GERD recorded by video camera, the cardiorespiratory events detected by the apnea monitoring system, and the occurrences of acid or non-acid reflux detected by the impedance/pH monitoring to be viewed simultaneously. The following monitoring probes are connected to the patient in a systematic way: the nasal thermistor or capnograph, oxygen saturation and cardiorespiratory monitoring skin probes, intraesophageal pH and impedance probes, an actimeter to record body movement, and the adjustable belts that measure thoracic movements. The patient is positioned so that the camera can capture facial expression and major body movements. The impedance/pH system records the impedance/pH data and the sleep system with camera records the cardiorespiratory and video data. A program automatically synchronizes and merges the data. The Bioview software (Sandhill) then simultaneously displays, on a single computer screen, the synchronized video along with the graphical display of all physiological parameters. The correlation of signs and symptoms with video and acid or non-acid reflux can be seen quickly and easily during analysis. This novel technology will help delineate the clinical picture of GERD, help to characterize the symptoms related to non-acid reflux, and more precisely record symptom occurrence than commonly used paper diaries. The integrated system can be adapted for patients of all ages and may be of major interest to sleep physiologists. Supported by AstraZeneca LP

T2017

Does the Diagnostic Accuracy of Ambulatory 24-pH Monitoring Improve If Cut Off Levels of pH < 3.0 or 2.0 Are Used?

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Background: Conventionally, an acid reflux episode has been defined as a drop in pH<4.0. However, limitations persist in the diagnostic capability of standard 24-pH monitoring. We hypothesized that defining an acid reflux episode as a drop in pH to <3.0 or <2.0 may improve sensitivity and specificity of pH testing (measured at 2 different locations in the distal esophagus). Methods: GERD pts and controls (no reflux symptoms) as defined by 2 validated questionnaires (GERQ and RDQ) were prospectively enrolled. In both pts (off PPI for 7 days) and controls, 1 Bravo pH capsule each was placed 1 cm (distal capsule) and 6 cm (proximal capsule) above the GEJ. All pts and controls were encouraged to continue their unrestricted usual activities. ROC curves were constructed using data from both capsules and sensitivity and specificity were compared at pH<4.0, pH<3.0 and pH <2.0 for the diagnosis of GERD. Results: 21 GERD pts (mean age 55, 90% Caucasians, 90% males) and 12 controls (mean age 59, 65% Caucasians, all males) were enrolled. Of 21 GERD pts, 11 had NERD and 10 had EE (grades - 3 A, 4 B, 3 C). Data was evaluable in 20 GERD patients and 11 controls. Median acid exposure times (AET) (% time pH < 4, <3 and <2) over a 24-hr period are shown (Table). In the entire GERD group, the sensitivity and specificity of AET for GERD were - (pH<4.0 — 66%/77% proximal; 82%/62% distal), (pH<3.0—67%/65% proximal and 91%/57% distal) and (pH<2.0—72%/65% proximal and 45%/76% distal). In EE patients, the sensitivity and specificity of AET for GERD were - (pH<4.0 — 66%/77% proximal; 81%/80% distal), (pH<3.0—66%/77% proximal and 91%/80% distal) and (pH<2.0—73%/78% proximal and 73%/60% distal). In NERD patients, the sensitivity and specificity of acid exposure time for diagnosis of GERD were - (pH<4.0 — 66%/63% proximal; 64%/64% distal), (pH<3.0—66%/54% proximal and 54%/63% distal) and (pH<2.0—72%/54% proximal and 45%/63% distal). Conclusion: Esophageal acid exposure is higher at 1cm

compared to 6 cm above the GEJ in GERD compared to controls. However, using an AET at pH <2.0 or <3.0 is not useful to distinguish GERD from controls, especially in the NERD sub group. Neither the use of distal pH monitoring (1cm above GEJ) nor using cut off values of pH <2.0 or <3.0 help improve the diagnostic utility of ambulatory pH testing. Median Values for Acid exposure time (AET) at two different levels

AET	NERD		EE		Controls	
	Proximal	Distal	Proximal	Distal	Proximal	Distal
pH <4	4.7 %	8.1 %	10.3 %	14.1 %	2.5 %	4.9 %
pH <3	1.2 %	2.0 %	2.7 %	4.5 %	0.3 %	0.9 %
pH <2	0.1 %	0.3 %	0.5 %	0.8 %	0.0 %	0.4 %

T2018

A Composite Symptom Score Using Frequency and Severity Correlates Better to An Objective Measure of Gastro-Oesophageal Reflux Disease (GERD) Than One Scoring Frequency of Symptoms Alone

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Introduction: The prevalence of GERD is increasing. Community prevalence in Sri Lanka is unknown. There is lack of a practical screening instrument to use in an epidemiological setting. Objective : To develop a practical clinical score to screen for GERD in the community and assess whether a score using both symptom frequency and severity correlated better with an objective measure of GERD than one using only symptom frequency. Methodology: A cross-sectional validity study was performed in 100 GERD patients and 150 healthy controls comparable in age and gender. Ethical clearance was granted. GERD was diagnosed by upper gastro-intestinal endoscopy, including patients with all grades of oesophagitis. All subjects faced a GERD-specific interviewer-administered questionnaire with seven upper gastro-intestinal symptoms (heartburn, acid regurgitation, chest/abdominal pain, abdominal distension, dysphagia, cough, belching). Each symptom was graded using a 5-item Likert scale for frequency (never, monthly, 2-4 times per week, weekly, daily) and a 4-item scale for severity (no effect, mild, moderate, severe) and two scores generated. Score 1 being the sum of frequency of symptoms while score 2 was the sum of products of frequency and severity of each symptom. All GERD patients underwent 24h ambulatory pH monitoring. Face and content validity were assessed by expert consultation and literature review, internal consistency by Cronbach alpha statistics, reliability by intra class correlation coefficient estimation and concurrent validity by comparison of scores with 24 hour pH monitoring values as the gold standard. Cut-off values were determined by constructing receiver-operating characteristic curves. Results: For both scores, mean scores of cases were significantly higher than controls ($p<0.001$). Cut-off score for score 1 was ≥ 10.50 (sensitivity 92.0%; specificity 78.7%; area under the curve 0.937 respectively). Cut-off score for score 2 was ≥ 12.50 (sensitivity 90.0%; specificity 78.0%; area under the curve 0.929 respectively). Intra class correlation coefficient for score 1 and 2 were 0.94 and 0.82 respectively. There was good correlation between both symptom scores and 24-h pH metry parameters (Spearman rank correlation, $p=0.01$), but score 2 showed a significantly better correlation (correlation of Total reflux time pH<4 with score 1 and score 2 was 0.491 and 0.651; $p=0.001$, and of Demeester score with score 1 and score 2 was 0.590 and 0.747; $p<0.001$). Conclusion: Our GERD questionnaire is valid, reliable and showed better correlation with an objective test when both severity and frequency of symptoms were scored rather than frequency of symptoms alone.

T2019

Esophageal Thickness As a Possible Marker of Gastro-Esophageal Reflux Diseases -a Study Using Abdominal Ultrasonography -

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Background Gastro-esophageal reflux disease (GERD) is rapidly increasing also in Japan. It is believed that upper gastrointestinal endoscopy is one of the best modalities for diagnosis of GERD. However, GI endoscopy may not be necessarily performed in primary care setting. We previously reported that the thickness of esophageal muscles is significantly greater in non erosive GERD (NERD) patients compared to asymptomatic healthy volunteers using endoscopic ultrasonography (US) (DDW 2006, 2007). Other researchers reported that esophageal muscle was thickened in patients with reflux esophagitis. Accordingly, in this study, we investigated whether increased thickness of esophagus evaluated by abdominal US could be a possible marker of GERD. Patients and Methods Subjects of this study were 22 GERD patients (6-LAA and 2-LAB, and 14 NERD, 9 male, 13 female, mean age 60.6±15 yrs) and 31 controls (14 male, 17 female, age 68.6±12.5 yrs) who visited our hospital during 2006 to 2007. NERD was defined as patients with reflux symptoms more than twice a week. All these patients undertook upper GI endoscopy within 3 months of the consultation. After self-filling the symptom questionnaires, the esophageal thickness was measured at cervical and lower esophageal site with abdominal US. The operators were blinded to all the clinical informations. The US and upper GI findings and reflux symptoms were reviewed and the performance of abdominal US for diagnosis of GERD was studied. Results Upper esophagus could be detected in all the cases, while lower esophagus could not be detected in 2 of 53 subjects (3.8%). Esophageal thickness at cervical site in erosive GERD, NERD, and control was 2.3±0.6, 2.3±0.6, 2.4±0.6, respectively, and that at lower-esophageal site was 5.7±0.7, 4.4±0.8, 4.7±0.9, respectively. Thickness of lower esophagus in patients with erosive GERD was significantly greater than that with NERD and controls ($p<0.05$). The operators (blinded to all the clinical information) made diagnosis of GERD by abdominal US according to tentatively defined diagnostic criteria (mainly with increased esophageal thickness). As the results, the sensitivity, specificity and accuracy of abdominal US diagnosis for erosive GERD was 75.0%, 86.7%, and 84.9%, respectively. However, only 21.4% of NERD was diagnosed by these criteria. Conclusions Esophageal thickness defined by abdominal ultrasonography may be a possible marker for diagnosis of erosive GERD, suggesting that pathophysiological