≥50% AP improvement =40%. Specificity: ≥30% AP improvement =71%; ≥50% AP improvement=94%. ≥30% AP improvement was not significantly associated with interference with daily activities, while ≥50% improvement was (p=0.017). Neither of the AP pain intensity measures was significantly associated with 30% change in FDI. Global outcomes: Satisfaction with treatment was inversely related to the child's report of interference with activities (p<0.01) and symptom relief was positively associated with ≥30% improvement in FDI scores (p<0.009). **Conclusions-** Changes in AP intensity are significantly associated with global relief. 30% improvement in AP is more sensitive but less specific than 50% improvement in AP in detecting global relief. Sensitivity of >50% is low. The use of >50% as primary efficacy endpoint in clinical trials would result in a large proportion of children that considered themselves relieved having negative results in clinical trials. Alternative primary efficacy endpoints should be considered.

Su2058

When Is Pain Improvement Considered Clinically Meaningful? - First Study on Minimum Clinically Important Difference (MCID) in Children With Abdominal Pain (AP)-Predominant Functional Gastrointestinal Disorders (AP-FGIDs)

Miguel Saps, John Lavigne

Background- Clinical trials in irritable bowel syndrome (IBS) rely on patient reported outcomes (PROs) as primary endpoints. The Food and Drug Administration (FDA) and European Medicines Agency (EMA) established guidelines for the clinical evaluation of drugs for adults with IBS. These agencies established 30% improvement of pain as primary efficacy endpoint in clinical trials for IBS. Despite the importance of establishing efficacy endpoints in children, both agencies have not established PROs for children. The MCID is defined as the smallest improvement considered meaningful by the child. There have been no studies on MCIDs in children's AP rating in children with AP-FGIDs; because MCIDs in adults and children may differ, this is an important step in establishing meaningful pediatric PROs. We compared three alternative approaches to determining the MCID in children with AP-FGIDs. **Methods-** 80 children enrolled in a published, multi-site drug study with AP-FGIDs. The 3 approaches to calculating the MCID from a VAS-Likert scale (0-100 mm) were: (a)anchor-based approach based on responses to a global satisfactory relief question at the end of trial (e.g. "feeling better") ; (b) FDA and EMA-recommended percentage-based approach (cutoffs for improvement of 30% improvement in AP intensity); (c) a distribution-based approach, in which the MCID was based on the reliable change index (RCI), i.e. the smallest change score that indicates the 95% confidence interval for change scores based on the test-retest reliability of VAS measure. Calculation of the amount of change was based on the changes in VAS score from baseline to week 4 (endpoint) of the clinical trial. **Results-** For the anchor-based approach, 48 (57.1%) children reported overall improvement ("better") of pain. MCID for those reporting being "better" from baseline to week 4 was -20.00 mm in the VAS-Likert scale. 39 (48.8%) children had >30% improvement in AP. MCID for >30% pain improvement was -27.76 mm in the VAS-Likert scale. For the distribution-based approach, the mean test-retest reliability was 0.81. For there to be a reliable change at the 95% CI, the decline in MCID had to exceed -21.23 to be considered reliable. The anchor-based MCID for global satisfactory relief is lower than the reliability of the score based on the RCI; therefore, scores considered improved on either the anchor-based ("better") or FDA's and EMA's 30% change criteria will frequently not reflect reliable changes. To increase the likelihood that the child's rating of VAS change in a clinical trial will be reliable, and if the PRO wants to be exclusively based on AP changes, the RCI is preferable to either the anchor-based ("better") or percent change criterion. **Conclusions-** We have defined the MCID in children. A reliable MCID in children varies between 20 mm and 27.76 mm depending on the methods used for its calculation.

Su2059

A New Combined Clinical Endpoint for Clinical Trials in Abdominal Pain Functional Gastrointestinal Disorders (AP-FGIDs) in Children

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Background- There are no validated primary clinical endpoints for clinical trials in FGIDs. The Food and Drug Administration (FDA) and European Medicines Agency (EMA) proposed 30% improvement in intensity in abdominal pain (AP) for adults with IBS. There are no endpoints for clinical trials in children. The use of the FDA and EMA endpoints in children has been criticized as 30% improvement does not reflect changes in disability (an important outcome in children with AP-FGIDs) and not all children meeting the EMA-FDA proposed criteria reported feeling better when asked to summarize their progress. These problems suggest that alternative endpoints should be used. We propose a combined endpoint. We analyzed changes in disability and somatization in children who met 30% improvement in AP but also reported feeling better at the end of the study using a global satisfactory relief question that was previously validated in studies in adult patients with IBS. **Methods-** A secondary analysis of a database of children that participated in a randomized placebo controlled parallel clinical trial on amitriptyline for AP-FGIDs. Children completed daily questionnaires that included questions on disability and a visual analog scale (VAS) daily during run-in period and intervention. At the end of the study children completed questionnaires that included a question on satisfactory relief (worse, same, better). Answers to this question were analyzed in a binary fashion. Subjects also completed a set of validated questionnaires that included disability at entry and end of study (Functional Disability Inventory, FDI) and somatization (Children Somatization Inventory, CSI). Results of children who reported feeling better and had an improvement greater than 30% from run-in period to last week of study were compared with those of children who did not meet both criteria. **Results-** 67 children completed the study. 26 (39%) children met both criteria while the rest did not. There was no statistical difference in age or gender between both groups: met criteria 12.5 $\pm$ 3.1 years, 73% females, did not meet criteria 12.5 $\pm$ 2.7 years, 63% females. 18 out 26 (69%) children met a minimal clinical difference (MCID) proven to be reliably calculated based on RCI for this sample and measure (95% confidence interval for change scores based on the test-retest reliability of VAS measure). Children meeting both endpoints had >30% improvement in FDI in 19 (73%) cases vs. 20 (48%) in children who did not meet both endpoints (p<0.05) and a decrease in somatic complaints scores based on validated questionnaire (CSI) 9.1 $\pm$ 10.6 vs. 4.6 $\pm$ 6.9 (p<0.05). **Conclusions-** The study suggests that the combination of 30% improvement in AP with a positive response to a question of satisfactory relief could be used as primary efficacy endpoints in trials. Larger studies are needed to confirm our findings.

Su2060

Impact of Laparoscopic Antireflux Surgery on Belching in Pediatric GERD Patients

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Background: Laparoscopic antireflux surgery (LARS) is a well-established treatment option for children with PPI-resistant gastroesophageal reflux disease (GERD). In addition to preventing reflux of gastric contents, LARS may also impair the ability of the stomach to vent intragastric air (i.e. gastric belching). Impaired gastric belching after LARS may lead to gas-related symptoms, such as bloating and/or flatulence, and may induce supragastric belching, an altered mechanism in which air is sucked into the esophagus and immediately expelled without entering the stomach. The aim of the present study was to objectively evaluate the impact of LARS on gastric (GB) and supragastric belching (SGB) in children with GERD. **Methods:** We performed a prospective, multicenter, nationwide cohort study including 25 patients (12 males, median age 6 (range 1-18) years) with PPI-resistant GERD who were planned to undergo LARS. Twenty-four hour multichannel intraluminal impedance pH monitoring (MII-pH monitoring) was performed before and 3 months after fundoplication. Impedance pH-tracings were analyzed manually for reflux episodes and (supra)gastric belches according to previous defined criteria (Bredenoord et al, Gut 2004). As part of the GERD Symptom Questionnaire (GSQ), belching symptoms were assessed (scoring 1-7 for severity and frequency). Data were expressed as median and interquartile range (25^{th}-75^{th} percentile). **Results:** In 23 of 25 children both pre and postoperative 24-h tracings were successfully completed. LARS reduced acid exposure time from 8.5% (6.0-16.2%) to 0.8% (0.2-2.8%), p<0.001. LARS decreased the number of liquid (51 (40-93) to 10 (5-19), p<0.001) and mixed (38 (21-50) to 3 (1-8), p<0.001) reflux episodes. The total number of GBs was significantly reduced from 59 (43-77) to 5 (2-12), p<0.001) and completely eliminated in 3 patients after LARS. SGBs occurred both before (16/23 patients) and after (14/23 patients) LARS, with no difference in total number of SGBs (from 2 (0-7) to 2 (0-4), p=0.83). The number of patients with moderate to severe belching symptoms decreased from 12 (61%) before to 4 (17%), p<0.001 after LARS. Postoperative belching symptom scores were associated with GBs (r-0.53, p<0.01), but not with SGBs. **Conclusion:** Laparoscopic antireflux surgery significantly reduced the number of gastric belches in children with GERD, while the preoperative already low number of supragastric belches was not affected. Postoperative belching symptoms correlated with the number of gastric belches after surgery, but not with SGB.

Su2061

Utilising High-Resolution Colonic Manometry to Quantify Dysmotility in Children With Slow Transit Constipation

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Background: Slow transit constipation (STC) is associated with colonic motor abnormalities in both adults and children. Utilising high-resolution colonic manometry we have recently quantified the motor abnormalities in STC adults. Our aim in this study was to quantify the colonic motor abnormalities in children with STC and compare these data with STC adults to determine if the manometric signatures of abnormality were similar between the two groups. **Methods:** In 11 children (2 males; mean age 15.4 years; range 9-19 years) with marker study proven STC, after an overnight fast, a 36 sensors (spaced at 1.5cm intervals) water perfused manometry catheter was colonoscopically placed and the tip clipped in the region of the splenic flexure. Manometric recordings were taken for two hours pre and post a 700cKal meal. These data were compared to 12 healthy controls (5 men; median age 51 years; range 27 - 69 yrs) and 14 patients (2 men; median age 52 years; range 24 - 76 years) with scintigraphically defined STC. Data in adults were recorded with a 72 sensors (spaced at 1cm intervals) fibre-optic manometry catheter. Spectral analysis was used to determine any dominant frequency of pressure events prior to or after a meal. Propagating motor patterns were defined as i) cyclic (at 2-6/min); ii) short single motor patterns (<1 per min; extent 7 ± 2 cm) , iii) long single motor patterns (<1 per min; amplitude 48 ± 13 mmHg; extent 42 ± 9 cm); and iv) high amplitude propagating sequences (HAPS). The data are expressed as delta values (postprandial count - basal count). **Results.** In healthy controls (HC) and adult STC patients, 2-3 cpm activity was prominent prior to and after a meal. This activity was not evident in children. The change in the count of long (HC, 0.7 ± 0.4; STC adults, 1.7 ± 1.1; children, 1.7 ± 0.6 / 2 hr) and short (HC, -1.5 ± 2.1; STC adults, 1.9 ± 2.4; children, 0.5 ± 0.6 / 2 hr) single propagating motor patterns did not differ between the 3 groups. In HC there was a significant increase in the count of retrograde cyclic motor patterns and this was not seen in either patient group (HC, 59.9 ± 25.4; STC adults, 4.9 ± 1.5; children, 2.4 ± 0.8 / 2 hr; ANOVA P < 0.0001). HAPS were not seen prior to the meal and after the meal were only identified in 5/12 HC, 1/14 adult STC and 0/11 children. **Conclusion**: Neither patient group responded to a high calorie meal. The number of propagating events did not differ between STC adults and children, however in children the normal 2-3 cpm slow wave activity was not evident. The failed meal response and lack of prominent slow wave activity may indicate potential intrinsic and extrinsic abnormalities in children with severe constipation. Supported in part by NHMRC Australia.