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## GASTROESOPHAGEAL REFLUX ASSESSED BY IMPEDANCE-PH MONITORING IN CRITICALLY ILL MECHANICALLY VENTILATED CHILDREN

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Background and Aims: Critically ill patients have esophageal motor abnormalities and high risk of gastroesophageal reflux (GER). We aimed to evaluate the acid and non acid GER by multichannel intraesophageal impedance-pH (MII-pH) monitoring in critically ill children undergoing mechanical ventilation. Patients and Methods: Thirty-three critically ill children undergoing mechanical ventilation were enrolled. All were sedated, on full enteral nutrition and underwent MII-pH study by using equipment Sleuth-Sandhill Scientific, USA. Data were manually analyzed by using software BioVIEW Analysis version 5.6 (Sandhill Scientific). MII-pH parameters analyzed were: number of total episodes of GER (NGER); height of refluxate [proximal (PGER) or distal (DGER)]; reflux content [acid, when  $\text{pH} < 4$  (AGER) or non acid, when  $\text{pH} > 4$  (NAGER)]; and acid reflux index [(ARI) percentage of time when  $\text{pH} < 4$ , considered altered when ARI was  $> 10\%$  in children under 1 year age and  $> 5\%$  in older than 1 year). The following variables were also considered for analysis: use of antacid medicines (yes or no) and placement of enteral feeding tube (gastric or post-pyloric). Wilcoxon test was used to compare AGER vs NAGER, and PGER vs DGER. Mann-Whitney test was used to compare the number of reflux episodes of patients on and off antacid medicines or patients with gastric or postpyloric feeding. Results: Median (range) age was 4 months (1-174m), 23 were males. Eighteen (54.5%) were on antacid secretory medicines (9 ranitidine, 9 omeprazol), and all of them did not have increased ARI. From 15 patients who were off antacid medication, 3 had increased ARI. A total of 1931 GER episodes were analyzed. Median (25th-75th percentile) NGER/patient was 59 (19.5–84.5) episodes. There was significant difference between NAGER and AGER [40.0 (19.5–66.5) vs 1.0 (0.0–12.0), respectively,  $p < 0.001$ ], and PGER and DGER [38.8 (11.0–58.0) vs 12.0 (4.0–23.5), respectively,  $p < 0.001$ ]. In distal and proximal reflux, there was a significantly increased number of non-acid reflux than acid reflux [distal reflux: AGER 0.0 (0.0–1.5) vs NAGER 10.0 (4.0–19.0),  $p < 0.001$ ; and proximal reflux: AGER 0.0 (0.0-10.0) vs NAGER 34.0 (11.0–47.5),  $p < 0.001$ ]. These results remained significant after controlling the use of antacids and placement of enteral tube feeding to all parameters: NGER ( $p = 0.421$  and  $p = 0.129$ ), AGER ( $p = 0.509$  and  $p = 0.478$ ), NAGER ( $p = 0.117$  and  $p = 0.116$ ), PGER ( $p = 0.486$  and  $p = 0.104$ ) and DGER ( $p = 0.682$  and  $p = 0.157$ ). Conclusion: Critically ill mechanically ventilated children had more proximal and nonacid GER. This may be due to the esophageal motility abnormalities found in this group of patients and reinforces the risk of pulmonary aspiration.

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