

Gastroesophageal reflux disease and cow's milk hypersensitivity in infants and children

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ABSTRACT

This PhD dissertation is based upon clinical studies performed during my employment at the Paediatric Research Unit, Institute of Clinical Research, Faculty of Health Sciences, University of Southern Denmark from 2000 until 2003. The studies address different methodological aspects of esophageal pH monitoring and the possible causative association between gastroesophageal reflux disease (GERD) and hypersensitivity to cow's milk in infancy and childhood. Esophagogastroduodenoscopy and esophageal pH monitoring are the main investigations in the evaluation and quantification of GERD. The reproducibility of prolonged esophageal pH monitoring has been elucidated in the first study. Thirty infants and children underwent 2x24 hours continuous esophageal pH monitoring. Based upon the Bland and Altman Limits of agreement method the physiologic variation in esophageal acid exposure was illustrated by a lower limit of 0.2 and an upper limit of 3.3. This broad range of day-to-day variability will be a limiting factor for interventional studies evaluated by repeated esophageal pH monitoring. The second study elucidated the association of GERD and hypersensitivity to cow's milk. A total of 42 symptomatic infants and children were investigated for GERD and cow milk hypersensitivity by means of upper endoscopy, biopsy and 48 hour esophageal pH monitoring with simultaneous milk challenge during the second recording day. Severe GERD was confirmed in 17 infants/children. Ten of these proved hypersensitive to cow milk based upon a second challenge procedure performed after elimination diet. Phasic pH monitoring pattern, skin patch positivity and duodenal nodules noted by endoscopy were seen in the cow milk sensitive GERD group but not as obligatory findings. This subgroup displayed a significant reduction in esophageal acid exposure at follow-up after elimination diet. Histological and immunohistochemical studies revealed significantly increased numbers of eosinophils, mast cells and T-lymphocytes in addition to increased basal zone and papillary length in infants and children with endoscopic esophagitis. No significant differences were noted with regards to numbers of inflammatory cells in the cow milk sensitive GERD subgroup. The investigations confirm an association of GERD and food hypersensitivity not only in infants but also preschool and schoolchildren.