Cow's Milk Challenge Increases Weakly Acidic Reflux in Children with Cow's Milk Allergy and Gastroesophageal Reflux Disease

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Objective To assess and compare the pattern of reflux in a selected population of infants with cow's milk (CM) allergy (CMA) and suspected gastroesophageal reflux disease (GERD) while on dietary exclusion and following challenge with CM.

Study design Seventeen children (median age: 14 months) with a proven diagnosis of CMA and suspected GERD underwent 48-hour multichannel intraluminal impedance-pH monitoring. For the first 24 hours, the infants were kept on amino acid–based formula, and for the subsequent 24 hours, they were challenged with CM.

Results The total reflux episodes and the number of weakly acidic episodes were higher during CM challenge compared with the amino acid–based formula period [total reflux episodes: 105 (58-127.5) vs 65 (39-87.5), $P < .001$; weakly acidic episodes: 53 (38.5-60.5) vs 19 (13-26.5), $P < .001$; median (25th-75th)]. No differences were found for either acid or weakly alkaline episodes (not significant). The number of weakly acidic episodes reaching the proximal, mid, and distal esophagus was higher during CM challenge ($P < .001$). No differences were found in either acid exposure time or number of long-lasting episodes (not significant).

Conclusions In children with CMA and suspected GERD, CM exposure increases the number of weakly acidic reflux episodes. CM challenge during 48-hour multichannel intraluminal impedance-pH monitoring identifies a subgroup of patients with allergen-induced reflux, and in selected cases of children with CMA in whom GERD is suspected, its use could be considered as part of diagnostic work-up. *(J Pediatr 2012;161:476-81).*

Cow's milk (CM) allergy (CMA) and gastroesophageal reflux disease (GERD) are both common complaints in infancy. Several studies support the hypothesis of a causal relationship between them, suggesting that at least in a subgroup of infants GERD is attributable to CMA.[1]

Contrasting results have been published on the role of 24-hour pH-monitoring in differentiating between primary GERD from GERD secondary to CMA.[2-4] Although 24-hour pH monitoring is one of the current standard methods for gastroesophageal reflux (GER) assessment in children,[5] it will fail to detect some types of reflux, especially when little or no acid is present in the refluxate. Multichannel intraluminal impedance (MII) and pH monitoring combined allows better characterization of the reflux episodes as acid, weakly acidic, and weakly alkaline and also determines the height reached by the refluxate.[6]

In this prospective study, we aimed to investigate the effect of CM's challenge on the type and physical characteristics of reflux episodes during 48-hour MII-pH monitoring.

Methods

The children included in the study required a definitive diagnosis of CMA and suspected GERD and had been on amino acid–based formula (AAF) as milk substitute for at least 2 months. Exclusion criteria were known infectious and systemic disorders, structural abnormalities of the gastrointestinal tract, neurologic impairment, previous esophageal or gastrointestinal surgery, and immunodeficiency. The initial diagnosis of CMA in infants with suspected symptoms and/or signs was based on positive oral food challenge following an initial 4-week elimination diet. In all patients, a CM–free diet was started using an AAF (Neocate LCP; Nutricia UK, Wiltshire, United Kingdom) as milk substitute, and the open oral challenge was performed using a formula based on whole CM protein. The suspected diagnosis was then confirmed if the symptoms reoccurred.[7] The diagnosis of suspected GERD was based on clinical history and symptom assessment by using the Infant GER Questionnaire Revised.[8]

AAF	Amino acid–based formula
CM	Cow's milk
CMA	Cow's milk allergy
GER	Gastroesophageal reflux
GERD	Gastroesophageal reflux disease
MII	Multichannel intraluminal impedance
PAR-2	Proteinase activated receptor 2
SAP	Symptom association probability

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