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DIAGNOSTIC MARKERS IN RELATION TO CHALLENGE-PROVEN INFANT COW'S MILK PROTEIN ALLERGY

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Introduction: The role of functional tests in distinguishing functional Gastroesophageal Reflux Disease (GERD) from cow's-milk induced GERD is unclear. This is a prospective study of infants with unsettled behaviour and reflux symptoms, assessing tests to diagnose gastroesophageal reflux (GERD) from Cow's Milk Protein Allergy (CMPA). Our primary hypothesis was that infants with unsettled behaviour and regurgitation but a negative assessment for GERD are likely to suffer from CMPA.

Methods: Breastfed and formula-fed infants aged 0–6 months with symptoms of irritability, vomiting and/or food refusal were enrollment. Consented infants were investigated with a cow's milk patch test and IgE serology and plasma Vitamin D. A parent interview documented symptoms. The effect of 10–14 days of CMP elimination on symptoms was evaluated according to a cry-fuss chart. Remaining CMP free, a randomised placebo-controlled CMP challenge to diagnose CMPA was performed. In the case of formula fed infants the trial was double blind. Reflux symptom severity was assessed by parental completion of the validated infant GERD-Q-R questionnaire. Additional investigations included; 24 h pH-MII probe, gastric emptying time (measured by ^{13}C-octanoate breath test), Intestinal sugar permeability and stool samples were assayed for calprotectin.

Results: Fifty infants (23 F: 27 M) between 0.5 and 5.5 months of age (mean 2.9 months) were enrolled. At enrollment the cry-fuss time was considered abnormal (>130 min/48 h) in all infants. For 31 infants (63%) crying-fussing improved when CMP was eliminated and these infants were considered to have a CMPA. 3 infants had specific IgE to CMP > 0.35 Ku/L and/or a positive allergy patch test. CMPA was predicted by normal or near-normal diagnostic measurements of GERD.

Conclusion: Infants with vitamin D insufficiency and the absence of diagnostic evidence for GERD, based on 24 h pH-MII probe metrics, were likely to have a CMPA.

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ACID-BASED FORMULA WITH SYNBIOTICS MODIFIES GUT MICROBIOTA IN NON-IGE MEDIATED COW'S MILK ALLERGIC INFANTS

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Cow's milk allergy (CMA) is associated with an aberrant gut microbiota in early life. Non-IgE mediated CMA is less well understood and symptoms are complex. Previously, it was shown that gut microbiota of non-IgE mediated CMA infants became closer to that of healthy breastfed infants after an intervention with a synbiotics-containing amino acid-based formula (AAF).

In a prospective, randomised, double-blind controlled study, effects of an AAF with synbiotics (oligofructose, inulin, *B. breve* M-16V) were studied on gut microbiota, symptoms, safety and medication use in infants with suspected non-IgE mediated CMA. The infants received either an AAF or an AAF with synbiotics for 8 weeks and use of study products was continued if advised by clinicians. At baseline, 8, 12 and 26 weeks, faecal samples were collected, symptoms recorded and medication use reported. The percentages of faecal bifidobacteria and *Eubacterium rectale/Clostridium coccoides* (*ER/CC*) were determined. Microbial composition of faeces was further analysed by16S ribosomal sequencing.

At inclusion, mean age (±SD) of infants (n = 71) was 6.00±2.98 months. Subjects had predominantly GI (90%) and dermatological symptoms (10%). Percentage of bifidobacteria at weeks 8, 12 and 26 were higher in those using AAF with synbiotics (36, 42, 41%) vs AAF only (15, 16, 15%) (all $P < 0.001$). *ER/CC* was lower in infants on AAF with synbiotics (12, 9, 18%) vs AAF (27, 28, 31%) (all $P \leq 0.001$). Diversity increased over time characterised by a gradual increment in the AAF with synbiotics vs those on AAF (Shannon index, difference = −0.026, $P = 0.005$). Symptoms decreased in both groups. During the study, infants on AAF with synbiotics had less ear infections (0% vs 20%; $P = 0.011$) and used less dermatologicals (17% vs 45.7%; $P = 0.019$).

Higher bifidobacteria and lower *ER/CC* were observed in infants receiving AAF with specific synbiotics vs AAF only. Interesting effects were observed at infection rate and medication use.

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ADVERSE IMPACT OF CHILD FOOD ALLERGIES ON CARER RELATIONSHIPS AND SOCIAL ACTIVITIES

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Objectives: The purpose of the study was to obtain the carer rating of the psychosocial impact of their child's food allergy on a range of relationships and social activities, given the carer's unremitting responsibility to manage their child's risk of allergic reactions and chronic food allergy associated morbidity.

Methodology: A 6-month single centre prospective study was conducted, surveying all carers attending for their child's first food allergen challenge admission for the period 1 July 2015 to 31 December 2015. The questionnaire captured data regarding carer and child characteristics. A Likert-type 5-point scale obtained a carer rating of impacts on relationships and social activities.

Results: 85 carers completed questionnaires. Children were aged on average 4 (range 0–15) years. 16 (19%) were allergic to 4 or more foods. Allergies included egg 56 (66%), peanut 41 (48%) and cow's milk protein 38 (45%).

13 (15%) reported negative impact on their relationship with their food allergic child which was high for 1 (1%). Of 28 (33%) carers reporting negative relationship impacts with their spouse, none rated this as high. Negative relationship impacts were reported in relation to extended family by 35 (41%) and friends by 31 (36%) of carers, for both the impact was high in 5 (6%).

The child's food allergy limited attending restaurants for 78 (92%) and to a high degree for 36 (43%) carers. The allergies limited attending events catered by others for 75 (88%), and to a high degree for 30 (35%) carers.

Conclusions: High adverse relationship impacts were uncommon within the carer's immediate family. Negative relationship impacts were more frequently seen with extended family and friends and social activities were significantly impacted.