Overuse of Food Allergy Testing
Food allergies are very common in children, but misunderstanding of the indications for allergy testing leads to inappropriate treatment and increased healthcare costs. The authors of this study retrospectively evaluated all pediatric patients over a 15-month period who had been referred to a tertiary pediatric allergy center and who previously had undergone food-specific IgE testing. Testing for food-specific IgE was considered appropriate if there was a history of any type of anaphylaxis symptoms noted after eating a specific food or if there was a history of moderate or severe atopic dermatitis (based on National Institute of Allergy and Infectious Diseases guidelines). A cost analysis subsequently was performed for resultant allergy consultation which included further testing costs.

In total, 797 pediatric new patient visits were reviewed, and food-specific IgE testing was performed on 284 patients (35%). Ten of these patients were excluded due to a history of eosinophilic esophagitis or having a lack of food-specific IgE testing results in the medical record, leaving 274 patients who underwent further review. Only 90 of these patients (32%) had appropriate indications for testing. The most common reason for incorrectly ordering food-specific IgE testing was for symptoms of allergic rhinitis, mild atopic dermatitis, and idiopathic urticaria. After these patients were seen in the tertiary pediatric allergy clinic, 52 patients underwent repeat food-specific IgE testing, and 149 patients underwent skin prick tests.

Additionally, 126 (45.9%) of the 274 patients who had undergone food-specific IgE testing prior to being seen in the allergy clinic had changed their diet as a result of these initial tests. However, only 54 (42.8%) of the 126 patients who had changed their diet had a history that warranted diet modification. At least one food group could be introduced back into the diet in 88.9% of these same patients.

Texas Medicaid fee schedules were utilized to determine the cost of determining the full testing needed to clarify actual food allergies in the 274 patients who had initially undergone food-specific IgE testing. Total fees for consultation, initial IgE testing by the primary care provider, skin testing and repeat food-specific IgE testing at the tertiary allergy center, food challenge testing, and prescription for epinephrine injections totaled $79,412. Only 4 patients who underwent initial food-specific IgE testing had a true food allergy identified which was associated with a positive predictive value of 2.2%. This study demonstrates that food-specific IgE testing has the potential to be a valuable tool in determining food allergies, but such testing should be done correctly to prevent unnecessary diagnoses, to prevent further testing, and to prevent increased healthcare costs. The authors rightly suggest that many food allergies can be determined with a simple history and physical examination.


Anxiety and Pediatric Crohn Disease
Patients with inflammatory bowel disease (IBD), including children, can have significant anxiety associated with their disease. The authors of this study evaluated the prevalence of anxiety symptoms in a cohort of pediatric patients with Crohn disease (CD) and attempted to correlate severity of anxiety symptoms with CD symptom severity. This retrospective study evaluated data from pediatric CD patients who had undergone a pediatric anxiety questionnaire screening over a 2-year period. Anxiety symptoms were measured using the Screen for Child Anxiety Related Disorders (SCARED) tool, which is a validated questionnaire assessing anxiety symptoms in children between 9 and 18 years of age. The SCARED tool contains 41 items in 5 domains and utilizes a Likert scale to measure anxiety symptoms over a 2-week catchment period. CD severity was determined using the Harvey-Bradshaw Index (HBI).

A total of 93 patients with CD were screened for this study with 90% of the study group consisting of white children at age 12 years or older (average age 14.7 years and 47% female). Over half of the patients had been diagnosed with CD for over one year. SCARED scores of 20 or higher (consistent with an anxiety disorder) were present in 30% of the study population with 50% of the patients scoring above the cut-off values for anxiety in at least one of the five domains. Younger children were significantly more likely to have higher SCARED scores. The majority of HBI scores (84%) were consistent with inactive disease although HBI scores were significantly higher in patients with shorter disease duration. Importantly, children with higher HBI scores had higher SCARED scores with the SCARED

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domain that evaluated school anxiety being significantly associated with higher HBI scores for categories of well-being, abdominal pain, and number of loose stools. Presence of extra-intestinal manifestations of disease was significantly associated with higher SCARED scores in the domain of somatic/panic scores.

This study suggests a correlation of worsening anxiety with active pediatric CD. This study is retrospective, and HBI scores were obtained by chart review only, so these limitations should be noted. However, the results suggest that screening for anxiety especially in the school setting may prove to be a screening tool to evaluate for active CD necessitating interventional therapy.


C-Reactive Protein and Pediatric Inflammatory Bowel Disease

Serum markers, such as the C-reactive protein (CRP) can be used in pediatric patients with inflammatory bowel disease (IBD) to monitor for disease activity and response to medical therapy. However, CRP levels may not necessarily match IBD activity, and the authors of this study evaluated CRP genotype at the time of IBD diagnosis to correlate with pediatric IBD phenotype.

All pediatric patients were recruited from Scotland as part of the Paediatric Inflammatory Bowel Disease Cohort and Treatment Study (PICTS). CRP gene haplotype and single nucleotide polymorphism (SNP) analysis occurred to determine patient-specific genotyping. This genotyping was correlated with IBD phenotyping which included clinical evaluation, radiographic testing, and laboratory testing including CRP serum levels. Additionally, physician global assessment of functioning was utilized to evaluate response to anti-tumor necrosis factor alpha therapy.

In total, 465 pediatric IBD patients were recruited (median age 11.5 years, 57% male) with 67% of patients having Crohn disease (CD), 24% having ulcerative colitis (UC), and 9% having IBD type unclassified (IBDU). CRP haplotype ATGCTC was statistically more common in pediatric patients with CD who were less than 10 years of age. Serum CRP levels were statistically more likely to be elevated in patients with CD at diagnosis compared to patients with UC, and in particular, SNP rs1205T was statistically more present in patients with CD compared to patients with UC. An elevated serum CRP at the time of IBD diagnosis was significantly associated with 3 SNPs of the CRP gene (rs1205, rs1130864, and rs1417938). However, CRP genotyping saw no association between haplotype/SNP changes and CD phenotype. The authors were unable to compare similar findings with patients with UC and those with sole colonic distribution of CD due to lack of patient numbers. Although an elevated serum CRP at diagnosis was associated with a need for future surgery in pediatric patients with CD, no serum CRP level or CRP genotype change was predictive of response to anti-tumor necrosis factor alpha therapy in the entire pediatric IBD cohort.

It is known that pediatric patients with IBD can have different clinical presentations and response to therapy compared to adult patients, and this paper suggests that differences in CRP genetics may be useful as a potential biomarker of disease progression specifically in children with IBD.


Stool Color Card Use for Biliary Atresia Screening

Biliary atresia (BA), a progressive sclerosing disease of unknown etiology affecting the intra- and extrahepatic bile ducts, is one of the most common reasons for liver transplantation in infants and children. Early utilization of hepatoperoenterostomy (Kasai procedure) before 60 days of age can improve long-term native liver survival and can prevent liver transplantation. Since BA may occur as frequently as 0.5 per 10,000 live births in the United States and as frequently as 1 per 10,000 live births in Japan, a good screening tool is needed. Since BA is associated with acholic stool, prior research has shown that a stool color card given to parents of newborns has the potential to diagnose BA early in the course of the disease process leading to a sooner corrective Kasai procedure. In this study, the authors...
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evaluated the effectiveness of a stool color card to screen for BA in the Tochigi Prefecture of Japan over a 19-year screening period.

A stool color card was given to all pregnant women as part of a Maternal and Child Health Handbook, and these screening cards were filled out by mothers prior to the one-month clinic follow up visit. Infants with stool color that suggested possible BA were evaluated to look for other cause of cholestasis, and high-risk patients for BA underwent operative cholangiography or laparotomy prior to a potential Kasai procedure. Of note, none of the infants with false positive stool color cards required operative intervention.

Over the 19-year screening period, 84% of infants born in the prefecture had participated in this program (264,071 infants). A total of 34 infants were diagnosed with BA during this same time period. Screening color cards lead to BA diagnosis of 26 of these infants, and the other 8 children had BA missed due to multiple reasons, including ICU care after birth, misreading of the stool color card, and no return of the stool color card for review. The mean age of performing a Kasai procedure was 59.7 days, and infants who had BA detected by the stool screening card had the Kasai procedure performed at a significantly younger age. Infants who had a missed BA diagnosis had a mean age of a Kasai procedure past the 60-day window of optimal outcome. The stool color card demonstrated a sensitivity of 76.5% and specificity of 99.9%. Kapalan-Meier survival analysis (defined as an endpoints of being alive with no liver transplant) at 5, 10, 15 years after Kasai procedure was 87.6%, 76.9%, and 48.5%.

This study suggests that stool color screening cards have the potential to detect BA early in life leading to an early Kasai procedure and improved native liver survival. Stool color card use now has been implemented nationally in Japan. Clear understanding about stool color card use is needed by both parents and providers, and this study suggests that stool color card use to help diagnosis BA during infancy should be considered internationally.


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