

Visualizing the Small Bowel in Pediatric Gastroenterology

Adult gastroenterologists have significantly more experience compared to pediatric gastroenterologists in the use of video capsule endoscopy (VCE) and double balloon enteroscopy (DBE) used in the detection and potential treatment of mucosal lesions involving the distal small intestine. The authors of this study performed a single-center, retrospective review of 36 pediatric patients (age range 5-20 years) who had undergone both VCE and DBE at a single children's hospital in the United States. VCE studies were read by 4 pediatric gastroenterologists while DBE was performed by one pediatric gastroenterologist with expertise in this endoscopic technique.

The most common reasons for VCE and DBE were evaluation for occult gastrointestinal bleeding (27.8%) and Crohn's disease (27.8%) although other purposes for performing studies included evaluation for chronic abdominal pain, polyps, and protein-losing enteropathy. The most common findings on VCE included polyps (25%), erosions/erythema (25%), and irregular mucosa (21.1%). The most common findings on DBE were irregular mucosa (15.4%), polyps (12.8%), and erosions/erythema (10.3%). Positive findings were more common using VCE (88.8%) compared to DBE (58.3%), and the same findings identified using both DBE and VCE were noted in 61.9% of patients. VCE was determined to have 95% sensitivity, 20% specificity, 62% positive predictive value, and 75% negative predictive value. DBE was determined to have 87% sensitivity, 65% specificity, 66% positive predictive value, and 86% negative predictive value.

Although these results come from a single institution, aspects of this study are still applicable to pediatric patients with occult GI bleeding. For example, VCE had good sensitivity but worse specificity compared to DBE suggesting that individual variability can exist when interpreting VCE findings. VCE and DBE are feasible study options in children with VCE being diagnostic and DBE being diagnostic and potentially therapeutic (but also invasive).

Danialifar T, Naon J, Liu Q. "Comparison of diagnostic accuracy and concordance of video capsule endoscopy and double balloon enteroscopy in children." *Journal of Pediatric Gastroenterology and Nutrition*. 2016; 62: 824-827.

Can We Predict Which Adults Will Get Fatty Liver Based on Childhood Risk Factors?

Non-alcoholic fatty liver disease (NAFLD) is associated with obesity, and the authors of this study evaluated childhood risk factors that subsequently could lead to fatty liver disease in adults. The authors of this study

used data from the Cardiovascular Risk in Young Finns Study which is a longitudinal study evaluating long-term risk factors for atherosclerosis development. In 2011, liver ultrasound was performed on 2042 subjects who initially were enrolled in the study in 1980. Body mass index (BMI) and blood pressure were obtained in these individuals and a questionnaire was utilized which obtained information including smoking history, amount of physical activity, age of menarche, breastfeeding history, presence of coronary artery disease, family history of hypertension, alcohol intake, as well as other factors. Serum insulin, C-reactive protein, and fasting lipid levels were obtained in all participants as part of the longitudinal study. Genome-wide association studies were performed for single nucleotide polymorphisms (SNPs) of the *PNPLA3* and *TM6SF2* genes, which are associated with fatty infiltration of the liver.

At the time of the ultrasound evaluation during adulthood, 19% of the study subjects had fatty infiltration of the liver. Odds ratio analysis showed a significant association of fatty liver with male sex, history of preterm birth, history of being small for gestational age, SNP mutations of *PNPLA3* and *TM6SF2*, age- and sex-adjusted BMI, insulin levels, and history of low birth weight/low birth height. The authors then performed modeling adjusted for long-term alcohol consumption to determine risk factors, and childhood age, BMI, male sex, insulin levels, low birthweight, and SNP mutations of *PNPLA3* and *TM6SF2* were significantly predictors of fatty liver development during adulthood, regardless of alcohol intake.

This study suggests that multiple risk factors during childhood can lead to adult fatty liver disease, and such factors should be considered when screening children who are at a high risk of developing adult fatty liver disease. The authors note that liver ultrasound is not considered the "gold standard" for diagnosing fatty liver disease compared to liver biopsy; however, ultrasound is not invasive and is more appropriate as a screening tool for large population studies. Also, this study involves a homogenous population in Finland, and its applicability to other populations is not yet known.

Suomela E, Oikonen M, Pitkanen N, Ahola-Olli A, Virtanen J, Parkkola R, Jokinen E, Laitinen T, Hutri-Kahonen N, Kahonen M, Lehtimäki T, Taittonen L, Tossavainen P, Jula A, Loo B, Mikkilä V, Telama R, Viikari J, Juonala M, Raitakari O. "Childhood predictors of adult fatty liver: the cardiovascular risk in young Finns study." *Journal of Hepatology*. [ePub Ahead of Print]

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