

Parent-reported symptoms gauge features of the food allergic disease EoE

June 4 2015

Researchers have identified that parent-reported responses to a questionnaire called the Pediatric Eosinophilic Esophagitis Symptom Score (PEESS v2.0) correspond to clinical and biologic features of eosinophilic esophagitis (EoE) - a severe and often painful food allergy that renders children unable to eat a wide variety of foods.

This study, published online in *Journal of Allergy and Clinical Immunology*, was led by researchers at Cincinnati Children's Hospital Medical Center.

Eosinophils are normal cellular components of the blood, but when the body produces too many eosinophils they can cause a variety of [eosinophilic disorders](#). These are disorders involving chronic inflammation and resulting in tissue damage, often in the gastrointestinal system.

The current focus for evaluating treatment involves looking at changes in the tissues and cells of the esophagus. However, to improve both clinical outcomes and patients' quality of life, there is a need to objectively measure and consider both patients' symptoms and how they feel, according to the research team.

"Because eosinophilic esophagitis is a disease with multiple symptoms, the ability to capture patient and parent perceptions of these symptoms is a major unmet need," says Lisa J. Martin, PhD, professor of Human Genetics at Cincinnati Children's and first author of the study. "By

having validated tools to measure how patients feel, our reported findings provide a new opportunity for evaluating treatments going forward. The validation of the PEES symptoms with biologically and clinically pertinent assessments is therefore a major step forward for improving the outcomes in patients with EoE."

The authors of this study recruited pediatric patients with eosinophilic esophagitis. The PEES v2.0 questionnaire measured symptoms and their impact. On the basis of a previous study, the authors grouped these questions into four categories that represent the major symptom types observed in eosinophilic esophagitis—dysphagia, gastrointestinal reflux disease, nausea/vomiting, and pain.

The study demonstrated that these four PEES v2.0 symptom categories were meaningful. Each corresponded with clinical symptoms of eosinophilic esophagitis. Importantly, the biologic features most closely aligned with the dysphagia category. However, dysphagia only modestly corresponded with the main biologic measure of disease activity, eosinophil number. Interestingly, dysphagia more closely associated with eosinophil activity, [mast cells](#), and gene expression. Eosinophil activity is a marker of immune cell activity. Mast cells are immune cells involved in the development of eosinophilic esophagitis. These results suggest that eosinophil activity and mast cells may contribute to dysphagia symptoms.

Using the Eosinophilic Esophagitis Diagnostic Panel, a set of 94 genes expressed in the esophagus, the authors linked particular genes with the categories, thus revealing key steps involved in the clinical manifestations of this disease.

This study is the first to validate the PEES v2.0. This work is an essential step toward improving the outcomes of patients with [eosinophilic esophagitis](#). With the PEES? v2.0 categories, researchers

can better track disease activity in clinical settings, and this instrument can be used to test the impact and benefit of new therapies. The categories will also aid diet intervention and drug trials. Long term, this work may help identify the biologic pathways to target for intervention.

Allergic diseases have been on the rise over the past 20 years, with approximately one of every 13 children having food allergies and over 2.5 million children suffering from allergic asthma. Only recently recognized as a distinct condition, the incidence of EoE has also been increasing, according to Marc E. Rothenberg, MD, PhD, Director of the Division of Allergy and Immunology, the Cincinnati Center for Eosinophilic Disorders, and a co-author on the current study.

Rotenberg and his laboratory team pioneered research showing that EoE has a reported incidence estimated to be approximately 1 out of 1,000 people, is caused by a combination of genetic and environmental factors, and is primarily mediated by an immunologic response to foods. The hallmark of EoE is swelling and inflammation in the esophagus, accompanied by high levels of immune cells called eosinophils.

EoE can affect people of any age but is more common among young men who have a history of other allergic diseases, such as asthma and eczema. EoE is often first discovered in children with feeding difficulties and failure to thrive, but it is often misunderstood and not well known, delaying proper diagnosis and treatment.

Provided by Cincinnati Children's Hospital Medical Center

Citation: Parent-reported symptoms gauge features of the food allergic disease EoE (2015, June 4) retrieved 28 April 2024 from

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