

ESOPHAGUS

Eosinophilic esophagitis—mast cells, B cells and IgE production

Eosinophilic esophagitis (EE)—a chronic inflammatory disorder of the esophagus—is considered an atopic disease, but its pathogenesis is poorly understood.

The esophagus has only recently been recognized as an immunologically active tissue. Marc Rothenberg and colleagues from the Cincinnati Children's Hospital Medical Center investigated the production of IgE and levels of B cells and mast cells in the esophagi of patients with EE. "Based on the limited value of skin-prick testing for food allergies (even though EE is a food allergy problem) we hypothesized that the local generation of immunoglobulin (specifically allergy types) could be occurring and that these could be directly and locally sensitizing mast cells," says Rothenberg.

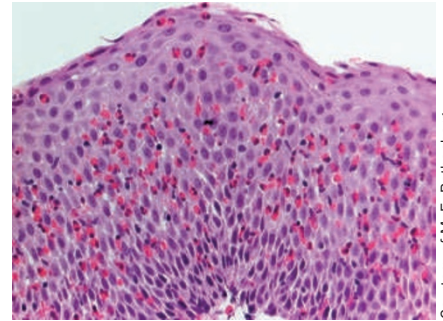
Endoscopically obtained biopsy samples from the esophagi of either pediatric patients with EE (defined as

≥ 15 eosinophils per high power field) or controls were examined. 11 patients with EE and 8 controls were included in the study. Atopic and nonatopic individuals were included in both groups.

Immunohistochemistry and immunofluorescence were used to assess the numbers of mast cells, B cells and IgE-bearing cells in the biopsy specimens. In addition, reverse transcription PCR was carried out to examine the expression of genes involved in B-cell activation, class switch recombination to IgE and IgE production.

"We found elevated levels of mast cells and a full spectrum of genes involved in immunoglobulin production in the esophagus," reports Rothenberg. "Furthermore, levels were higher in patients with EE compared with controls."

The results also showed that there was no difference in these levels between atopic and nonatopic individuals.



Courtesy of M. E. Rothenberg

These findings support the hypothesis that IgE production occurs in the esophageal mucosa of patients with EE.

"We need to develop methods for analyzing and quantitating levels of antigen-specific immunoglobulin (especially IgE) in the esophagus; this will tell us which foods may be driving the allergic inflammation in patients," concludes Rothenberg.

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Original article Vicario, M. *et al.* Local B cells and IgE production in the oesophageal mucosa in eosinophilic oesophagitis. *Gut* 59, 12–20 (2009)