

Eosinophils Accumulate in the Gastric Mucosa of Food-Allergic Mice

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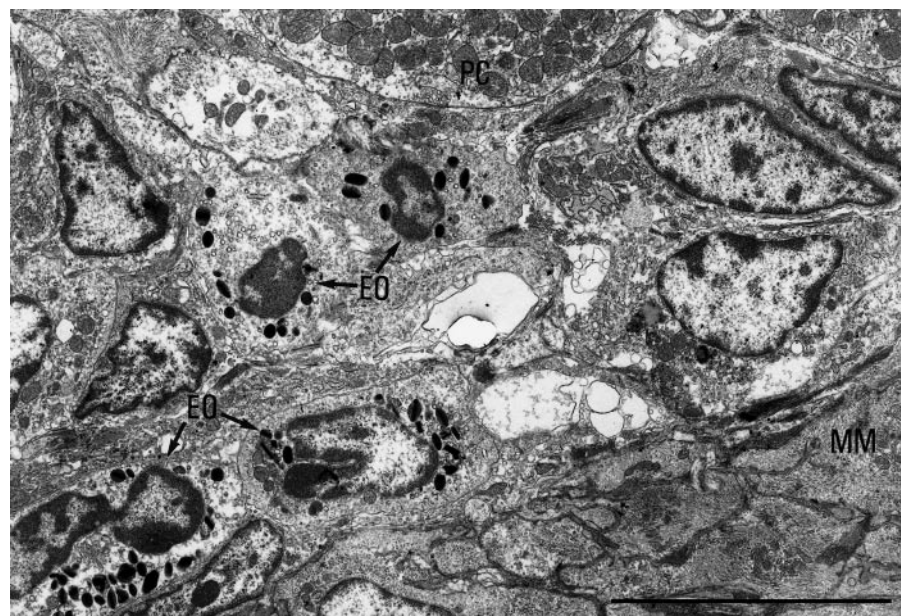
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In humans, manifestations of allergic gastrointestinal reactions cannot easily be visualized and assessed due to the inaccessibility of the target organ [1]. Therefore, most of the pathophysiological information derives from animal studies [2]. To analyze the mechanisms and possible therapeutic approaches for type I food allergy, a true animal model, where sensitization is induced by oral feeding,

could be of great value. Previous studies have demonstrated that oral antigens administered by gavage to mice can cause gastrointestinal eosinophilia, when the antigens were protected from degradation by entrapment in enteric beads [3, 4].

We reported recently that specific IgE, mucosal and skin hypersensitivity were induced in BALB/c mice, when

Fig. 1. The accumulation of eosinophils in the gastric antrum mucosa of food-allergic BALB/c mice is illustrated by electron microscopy. Four eosinophils (EO) are located in the tissue between parietal cells (PC), macrophages and the muscularis mucosae (MM). Uranyl acetate and lead citrate staining; bar = 10 μ m, original magnification $\times$ 4,500.



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1018–2438/04/1351–0001\$21.00/0

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food proteins were given orally under concomitant suppression of gastric acid by proton pump inhibitors, H₂-blockers, or acid neutralizers. By downregulating the proton concentration in the gastric fluids, these drugs prevented peptic digestion [5].

Simultaneously, the number of mast cells and eosinophils increased, indicating the development of a pathophysiology very similar to human food allergy [5]. In figure 1, the observed eosinophilia is illustrated by an electron micrograph. Eosinophils accumulated in the lamina propria, where these cells play a key role in the inflammation of gastric mucosa.

Thus, protein feeding under anti-acid treatment induces type I food allergy in BALB/c mice, most likely simulating the situation in human patients. We suggest that this immunization regime represents a valid murine model of food allergy.

Acknowledgments

This work was supported by a grant of the Austrian National Bank (OeNB # 10326) and of the Austrian Science Funds (SFB F018 # 8).

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