Chapter 7

Applications of Morphometry in Non-tumour Pathology

7.1 Small Intestine: Morphometry of Biopsies for the Diagnosis of Food Allergy

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7.1.1 Introduction

Intolerance to certain food is clinically obvious and it is important to distinguish between non-immunological causes, allergic reactions and functional gastrointestinal disorders. Immunological tests are not always helpful and false positive skin

![Diagram](image-url)

**Fig. 7.1.1. Number of IgE-containing cells per mm² lamina propria area in jejunal biopsies of healthy volunteers, patients with various gastrointestinal disorders (g.s.e. = gluten sensitive enteropathy) and food allergy.**
tests frequently occur in atopic individuals due to non-specific histamine liberators. Radioallergosorbant test (RAST) for specific IgE dietary antibodies is also not reliable in the diagnosis of food allergy. The study of jejunal biopsies is more specific, but although partial villous atrophy and an increased number of intraepithelial lymphocytes are found in children, in adult patients no morphological changes of the jejunal mucosa are found with qualitative investigations. However, morphometry of immunoperoxidase-stained jejunal biopsies showed a marked increase of IgE-containing cells in the lamina propria, irrespective of the type of foodstuff, both in children and adults (Rosekrans et al, 1980), and these data are described below.

7.1.2 Methods

Biopsies are sectioned (4 μm), stained with haematoxylin-eosin and specifically for IgE heavy chains, and measured (for details of tissue processing and measurements, see section A. 2.10).

7.1.3 Results and Discussion

As shown in fig 7.1.1, the number of IgE-containing cells in the lamina propria in the patients with food allergy is markedly increased.

Thus, in both the juvenile and the adult patients it is possible to differentiate patients with food allergy from patients with other kinds of gastrointestinal disorders using immunohistochemistry of proximal jejunal biopsy specimens in combination with morphometry.

References


7.2 Large Bowel: Differential Diagnosis of Inflammatory Diseases with Morphometry and Immunohistochemistry

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7.2.1 Introduction

Ulcerative colitis and Crohn's disease are chronic inflammatory conditions of the gastrointestinal tract of unknown aetiology and pathogenesis. The pattern of im-