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The implication of morphological characteristics in the etiology of allergic asthma disease and in determining the degree of severity of atopic and bronchial asthma

Junior Alode V., Lamine B., Ylia P., Alphonse S., Ivanovna A.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Apoptosis of immuno-competent cells involved in controlling the development of atopic and bronchial asthma is a physiological process characterized by specific morphological feature. Therefore, the aim of the present study was to evaluate the morphological changes and their impact on diagnosis of bronchial and atopic asthma, with special emphasis on apoptotic markers of lymphocytes of asthmatic patients according to their degree of severity. In the present study, both morphological and biochemical approaches were used to study the implication of lymphocytes in the pathogenesis of allergic asthma. The morphological study was carried out using optical and electronic microscopes and the rate of DNA fragmentation via the method of flow cytometry and electrophoretic agarose gel. The morphological and DNA fragmentation results obtained showed the deregulation of apoptosis of lymphocytes of asthmatic patients with bronchial and atopic asthma but for every individual patient from each group. The presence of chromatin spotting without the degradation of DNA into fragments of high molecular weight and extensive cytoplasmic swelling and vacuolization in asthmatic patients with serious severity gives the impression of an intermediate cell death phenotype such as aponecrotic-like. Thus, the death of lymphocytes of asthmatic patients with serious severity is related to a specific structural feature that can be described as aponecrotic cell death-like, occurring during the deregulation of apoptosis. It is commonly thought that the subtle changes in the lymphocytes of asthmatic patients may be a direct result of the relative degree of severity of pathology or of a degree of allergen.

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Keywords

Apoptosis, Bronchial asthma, DNA fragmentation, Lymphocytes, Morphological feature