of life, and 11% (8-17%) in those whose scans at discharge gave no evidence of ventricular dilatation, hydrocephalus or cerebral atrophy (loss of brain tissue from any cause). By contrast, the probability of a disorder was 100% (66-100%) in infants with markedly increased parenchymal echodensities in the first week, and 88% (70-96%) in infants with evidence of cerebral atrophy at discharge. 301 of the 342 infants studied could be assigned, on the basis of the ultrasound scan at discharge, either to a large group, comprising 80% of the population, who were at low risk of neurodevelopmental disorders; or to a small group, comprising 8%, who were at high risk: the remaining infants (who had ventricular dilatation) were at intermediate risk of neurodevelopmental disorders.

INFLAMMATORY CELLS AND MEDIATORS IN ASTHMA

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Human bronchial asthma is characterised by a widespread and variable intrathoracic airflow obstruction caused, at least in part, by the release of chemical mediators from mast cells and other inflammatory cells. Manifestation of the asthmatic response can be divided into three stages: a rapid spasmogenic phase, a late sustained phase and a subacute, chronic inflammatory phase (1). The immediate response to inhaled allergen has conventionally been associated with the activation of pulmonary mast cells and the release of histamine and spasmogenic products of arachidonic acid metabolism (1). Recent evidence indicates that the IgE-dependent activation of alveolar macrophages (2) and platelets (3) may also be involved. Release of chemotactic factors then leads to a secondary recruitment of further inflammatory cells including neutrophils, eosinophils and monocytes (1). Activation of all three cell types may be involved in late phase responses and in the induction of non-specific bronchial hyperreactivity. Platelet activating factor (PAF-acether) may be essentially implicated in the latter phenomenon (4). The recruitment of eosinophils appears to be critical for the development of many of the clinical features of continuing asthma, including mucus production and desquamation of the surface respiratory epithelium.

While no single cell type can be responsible for all of the manifestations of human bronchial asthma, activation of pulmonary mast cells has been centrally incriminated in the early pathology of the disease. Mast cells are widely distributed throughout the human respiratory tract but those cells lying immediately adjacent to the airways might be expected to be of major importance in modulating the initial phases of the allergic response. These cells would come into immediate contact with inhaled antigens and release their mediators directly onto the airway surface. Such superficially located mast cells may be recovered by bronchoalveolar lavage (BAL) and their properties have been studied in some detail (5-7). In this context, it is important to appreciate that mast cells from different sources, and even from varying locations within a given tissue, may exhibit a marked heterogeneity in their functional properties (8). Current evidence indicates that BAL mast cells in man may represent a particular subpopulation with special characteristics.

Mast cells comprise approximately 0.25% of the total

nucleated cells in the lavage fluid of normal individuals and these cells release histamine in dose-dependent fashion on challenge with anti-IgE (5). Most interestingly, increased numbers of eosinophils and mast cells are recovered by lavage of asthmatic subjects and the latter cells show both a high degree of spontaneous instability and an enhanced responsiveness to immunological challenge (7). There is also a significant correlation between the percentage of mast cells in the lavage fluid of asthmatics and measured indices of airflow obstruction (7). In addition to histamine, anti-IgE induces a dose-dependent release of the newly generated mediators prostaglandin D₂ (PGD₂) and leukotriene C₄ (LTC₄) from both BAL cells and parenchymal cells obtained by enzymic dispersion of whole lung tissue (6). Anti-IgE is more effective in inducing PGD₂ production than histamine release from the BAL cells and maximal amounts of the prostanoid are generated at lower dilutions of antiserum.

Liberation of PGD₂ is significantly correlated with the percentage of histamine release, suggesting that both mediators are derived from mast cells. The spontaneous generation of LTC₄ is variable and higher concentrations of anti-IgE are required to evoke the de novo production of the eicosanoid. No correlation is observed between the percentage of histamine release and the generation of LTC₄ by BAL cells, suggesting that cells other than mastocytes are involved in its formation. BAL cells spontaneously release more histamine and PGD₂ than dispersed lung cells but the anaphylactic secretion of histamine, PGD₂ and LTC₄ is comparable in the two cases. However, the production of all three mediators is now significantly intercorrelated for the parenchymal cells. Both BAL and dispersed lung mast cells are thus capable of releasing anaphylactic mediators following immunological challenge. The hyperreactivity and strategic location of the former cells suggests that they may play a major role in human bronchial diseases and provide a useful model for the detailed study of such conditions.

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