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Increased cytotoxic T-cells in the airways of adults with former bronchopulmonary dysplasia

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Shareable abstract (@ERSpublications)
Young adults with former BPD display more cytotoxic T-cells in the airways than healthy subjects. These T-cells correlate with FEV_1. Thus, cytotoxic T-cells may contribute to the pathology behind chronic airway obstruction in adults with former BPD. https://bit.ly/3soI4lK

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Abstract

Rationale Bronchopulmonary dysplasia (BPD) in preterm-born infants is a risk factor for chronic airway obstruction in adulthood. Cytotoxic T-cells are implicated in COPD, but their involvement in BPD is not known.

Objectives To characterise the distribution of airway T-cell subsets in adults with a history of BPD.

Methods Young adults with former BPD (n=22; median age 19.6 years), age-matched adults born preterm (n=22), patients with allergic asthma born at term (n=22) and healthy control subjects born at term (n=24) underwent bronchoalveolar lavage (BAL). T-cell subsets in BAL were analysed using flow cytometry.

Results The total number of cells and the differential cell counts in BAL were similar among the study groups. The percentage of $CD3^+CD8^+$ T-cells was higher (p=0.005) and the proportion of $CD3^+CD4^+$ T-cells was reduced (p=0.01) in the BPD group, resulting in a lower CD4/CD8 ratio (p=0.007) compared to the healthy controls (median 2.2 *versus* 5.3). In BPD and preterm-born study subjects, both $CD3^+CD4^+$ T-cells (r_s=0.38, p=0.03) and CD4/CD8 ratio (r_s=0.44, p=0.01) correlated positively with forced expiratory volume in 1 s (FEV_1). Furthermore, $CD3^+CD8^+$ T-cells were negatively correlated with both FEV_1 and FEV_1/forced vital capacity (r_s= −0.44, p=0.09 and r_s= −0.41, p=0.01, respectively).

Conclusions Young adults with former BPD have a T-cell subset pattern in the airways resembling features of COPD. Our findings are compatible with the hypothesis that $CD3^+CD8^+$ T-cells are involved in mechanisms behind chronic airway obstruction in these patients.

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