DELETION OF PROTEIN KINASE C DELTA INCREASES THE SUSCEPTIBILITY IN SV129 MICE TO ALLERGIC ASTHMA

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Background

Due to its vast complexity, allergic asthma has been poorly understood up to date. Predominant immune response is characterized by T helper 2 (Th2) cells and eosinophilic lung inflammation. However, other asthma endotypes exist with predominant neutrophilic inflammation generally associated with steroid resistant asthma. On how this type of asthma type develops or is regulated remains elusive. Protein kinase C δ (PKC δ) has been proposed to play an important regulatory role in the activation of target of rapamycin (mTOR) pathway upon the allergic airway inflammation and has been proposed as the target for innovative therapeutic treatment for allergic airway diseases. Here, we investigated the role of PKC δ in allergic airway inflammation.

Methods

We used PKC δ-/- and wild type (wt) littermate controls in an ovalbumin (OVA) model. We sensitised mice intraperitoneally with (OVA:Alum) complex 3 times at days 0, 7 and 14 and challenged intranasally (OVA 100µg) at days 21 to 23. We harvested bronchoalveolar lavage fluid (BALF), serum and mediastinal lymph nodes at day 24 and analysed cellular infiltrate in the lung using flow cytometry, cytokines and antibodies by ELISA.

Results

PKC δ-/- mice deteriorated rapidly after first intranasal challenge with OVA, developing strong lung inflammation with elevated number of neutrophil infiltrate in the BALF. Contrary, wt mice treated with OVA showed predominantly eosinophilic inflammation in BAL, with no severe damage by histopathology.

Conclusions

Overall, our preliminary results suggest an important role of PKC δ in shift from eosinophilic towards neutrophilic inflammation during OVA induced allergic asthma.