Role of Bronchoscopy in Lung Transplantation

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Lung transplantation is the only definitive treatment for many end stage lung diseases. Repeated episodes of acute rejection are believed to be a major risk factor for development of bronchiolitis obliterans (BO), the leading cause of death in lung allograft recipients. Since immunologic activity during rejection can occur in the alveolar space, interstitium, and vascular space, which are all accessible via the bronchoscope, then fiberoptic bronchoscopy has become a crucial tool for investigating the pathogenesis of lung allograft rejection.

Many laboratories have examined bronchoalveolar lavage fluid and transbronchial biopsies for markers of acute and chronic lung allograft rejection. These studies have shown that multiple cytokines and other soluble mediators, as well as adhesion molecules, and specific types of lymphocytes are present in the allograft during rejection episodes. Our laboratory has been interested in examining bronchoalveolar lavage fluid and transbronchial biopsies for novel antigens that may be targets of the rejection response. Our data show that IgG2 antibodies are produced in lung allografts during rejection, and that these antibodies are deposited in the perivascular and peribronchiori connective tissues of the allograft lung, which are the same sites of rejection activity. Type-V collagen [col(V)] is located in these tissues and is recognized as an antigen by these antibodies. Col(V) peptides are present in allograft BAL fluid during rejection. Furthermore, utilizing ex-vivo and in vitro experimental systems, lung lymphocytes from lung allograft recipients proliferate in response to col(V).

Although lung allograft rejection is known to triggered by immune responses to donor alloantigens, the current data suggest that local immune responses to col(V) contributes to rejection activity. Furthermore, since col(V) is fully conserved amongst individuals, then these data showing that col(V) is an antigen in lung allograft recipients suggests that lung transplant rejection involves auto-immune as well as allo-immune responses.

References