Conclusions

In agreement with the recent state-of-the-art paper and review articles, we believe that there is no indication at present for the use of bronchoalveolar lavage in clinical practice for the diagnosis, staging, monitoring or therapy of bronchial asthma. The only indication that may prove to be clinically helpful is the presence of pulmonary infiltrates in asthmatics, particularly for the diagnosis of allergic bronchopulmonary aspergillosis.

Chronic bronchitis and emphysema

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Despite the widespread use of bronchoalveolar lavage (BAL) in several lung diseases, only a few studies have evaluated its usefulness in patients with chronic bronchitis and/or emphysema.

Bronchoalveolar lavage in the diagnosis of chronic bronchitis and emphysema

Chronic bronchitis is defined by the presence of symptoms, and emphysema by the presence of pathological enlargements of airspace with destructive changes in the walls, thus bronchoalveolar lavage has no application in the definition of the diagnosis of either disease. In addition, there is no indication at present for the use of such a procedure in clinical work for staging or monitoring the course of chronic bronchitis and emphysema because of the lack of specificity of the findings from bronchoalveolar lavage fluid analysis. Due to various degrees of severity of obstruction great care should be taken when lavaging these patients (see chapter on Side-effects and Safety of BAL).

Findings in bronchoalveolar lavage fluid from chronic bronchitis and emphysema

Asthma, chronic bronchitis and emphysema are grouped under the terminology of chronic obstructive pulmonary disease (COPD). At present, very little is known about the biochemical and cellular changes that occur in BAL in each stage of chronic bronchitis and emphysema, and it can be summarized in the following points: with the exception of smokers who have been well characterized and who are likely to have small airways disease, there is little information about bronchoalveolar lavage findings in subjects with obstruction of the small airways (small airways disease) and in subjects with simple chronic bronchitis.

In patients with COPD the recovered fluid is reduced to 10–40% of that instilled [273–276] and the bronchoalveolar lavage fluid contains an increased number of neutrophils as well as bronchial lavage fluid [274–277]. Bronchoalveolar neutrophilia is not specific for COPD, since it is present in smokers without COPD, patients with cystic fibrosis, and in some interstitial lung diseases [101, 198]. In BAL from patients with emphysema and alpha$_1$-PI, deficiency there is a severe neutrophilia (77.8%±18.4 of the differential count), suggesting high elastase burden in the alveolar lining fluid and reduced concentrations of alpha$_1$-PI, whereas the concentration of alpha$_2$-macroglobulin and antileucoproteases is normal [275].

Use of bronchoalveolar lavage in the therapy of chronic bronchitis and emphysema

At present, bronchial lavage has a limited role in the therapy of chronic bronchitis and emphysema. It may be used in some selected cases for removal of abundant secretions.

In the future it could provide a useful method of assessment of the effect of therapy. For example, according to the hypothesis that lung destruction in COPD is primarily mediated by a protease/antiprotease imbalance in the lower respiratory tract, the prevention of structural changes leading to severe functional impairment might be obtained by enhancing the antiprotease screen of the respiratory tract. Several pharmacological approaches have been investigated: 1) genetically engineered mutants of alpha$_1$-AT and low-molecular weight elastase inhibitors; and 2) alpha$_1$-AT that may be administrered in sufficient quantities by infusion to replete deficient patients. BAL might be used to evaluate the efficacy of this therapy, to verify whether adequate enzyme concentrations are reached in alveolar lining fluid [278, 279].

Conclusions

In conclusion, in agreement with recent review articles [101, 198], we believe that there is no indication at present for the use of bronchoalveolar lavage for the diagnosis, staging or monitoring of chronic bronchitis and emphysema because of the lack of specificity of the findings from bronchoalveolar lavage fluid analysis. However, bronchoalveolar lavage from patients with mild or moderate airflow obstruction can be safely accomplished for the investigation of the mechanisms involved in the development of the disease.