Local effect of airway clearance techniques in COPD patients

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Rationale
A lot of comparative research has been conducted on the effects of airway clearance techniques. Lung function testing does not allow evaluating regional changes. Recent advances in imaging techniques do provide a new method for the evaluation of the airways and allow for the calculation of regional differences. Are the effects of two different airway clearance techniques (ACT) measurable with functional respiratory imaging (FRI)?

Methods
6 COPD patients were included and evaluated between the 3 and 5th day of hospital admission for an acute exacerbation. Two groups of 3 patients were treated for one week using IPV or autogenic drainage. Pulmonary function tests (PFT) and FRI were performed baseline and post treatment.

Results
In this small sample no significant differences in response were observed between both groups. For the total study group PFT showed a small significant change in vital capacity (+8\%, p=0.03) and residual volume (-7\%, p=0.03). FEV1 did not change significantly (+7\%, p=0.09). FRI showed significant changes in airway volume (+31\%, p<0.001) and resistance (iRaw, -43\%, p<0.001), with large lobar heterogeneity (±90\% for iRaw) within each patient.
Conclusions

This preliminary data suggests that FRI can be used to visualize local effects of ACT’s in COPD patients. The clinical relevance of the changes detected using FRI will be subject of further research.