

Vibration response imaging (VRI) for assessment of results in interventional bronchology – a feasibility study

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Introduction Interventional procedures are of increasing importance in bronchology. However objective measures after intervention are widely lacking. Thus neither different methods nor results in different centers can be reliably compared.

Aim of Study We explored feasibility of the VRI for evaluation of results after bronchoscopic interventions.

Method The 42 sensitive microphones of the VRI system pick up the vibrations on the chest wall created by respiration maneuvers. By processing the signals to dynamic gray scale images the breathing maneuvers can be followed real time on a monitor. In a preliminary prospective feasibility study the electronic stethoscope was applied before and after interventions (dilation, laser treatment, stenting etc.) and compared to images of healthy individuals.

Results In the first 10 pts the signals differed considerably from the harmonic images in healthy persons in crazy patterns ("disco pattern"). After successful intervention we observed a significant change towards a more normal behavior. The intervention resulted in different VRI patterns which for example seemed to be correlated to a different aerodynamic behavior of different stent types.

Conclusion Already at this early stage we observed significant changes in the VRI patterns pre and post intervention in comparison to normal images. These changes can be possibly quantified by complex algorithms and thus serve a more objective quantification of pre and post intervention status. In future it might also become possible to obtain reliable informations on the site and the nature of the airway problem. This might have decisive influence on choosing the best method for intervention.