

Evaluation of Obstruction Location and Interventional Bronchoscopy Outcome with Vibration Response Imaging VRI

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RATIONALE:

Interventional bronchoscopy can provide considerable relief for life-threatening symptoms of central airway stenosis. However, assessment of the therapeutic results by non-invasive rival methods: dyspnea score (DS), pulmonary function testing (PFT), radiology and physical exam are inconsistent. We investigated the value of VRI as a complementary tool for evaluating results before and after intervention.

METHODS:

VRI was used to record the lung sounds of 51 subjects (55% male, 59+/-13 years) and to visualize the signals as dynamic grey-scale images. Subjects were evaluated by the computer-based device before and after 64 interventions (53% stents, 36% resection/dilatation, 11% removal of mucus plugs) for localization and outcome.

RESULTS:

The stenosis could be localized in 95% of cases; accuracy of the VRI compared to bronchoscopy was 94% for the 17 tracheal obstructions and 95% for the 39 bronchi. Overall accuracy of the VRI, compared to bronchoscopy and non-invasive rival methods, in assessing outcome as improved or not improved was 84%; whereas, DS was 67%, PFT was 70% and radiology was 35%.

CONCLUSIONS:

VRI is a useful tool for assessment of obstruction location and therapeutic outcome of treatment for central airway stenosis. This technique is quick, non-invasive and minimal patient cooperation is required to perform the examination, which is particularly advantageous to patients who have difficulty with the standard measurements.