

Vibration Response Imaging (VRI™) is a Useful Tool for Assessment of Outcome after Bronchoscopic Interventions
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PURPOSE:

Interventional procedures are of increasing importance in bronchology. Gold standards (GS) for monitoring intervention outcome (clinic, lung function, x-ray) are insufficient. Thus, neither different methods nor results in different centers can be reliably compared. Vibration response imaging (VRIXP™) device records lung sounds and displays results as a dynamic image and as quantitative lung data (QLD). We explored VRI™ technology's QLD as a means for assessing outcome of bronchoscope interventions.

METHODS:

In 81 patients, sent for intervention, lung sounds were recorded by the VRIXP™ device. 47 underwent 59 bronchial interventions (dilation, laser treatment, stenting, resection, lavage). For 28 QLD for left/ right lung could be calculated before/after the procedure so far.

Outcome was classified by GS and VRI™ technology as "better", "same" or "worse". VRI™ technology classification was "better" if DQLD of pathological lung > 5%; "same" if DQLD of total left/right lung < 5%; worse if not "better" or "same". GS was an aggregation of physical exam, X-ray, dyspnea scale, and/or lung function test.

RESULTS:

The over all accuracy rate of VRI™ technology in comparison to GS was 82% (23/28). In cases that were "better" according to GS, the accuracy rate was 89% (16/18). In cases that were "same" according to GS, the accuracy rate was 4/7, and in "worse" cases the accuracy rate was 3/3. The accuracy rate for stent intervention was higher (91% =10/11) than for other intervention modalities (76%=13/17).

CONCLUSIONS:

We observed significant changes in the VRI™ technology's QLD that were analogous to pre- and post-intervention GS assessment. QLD may serve as a more objective method for evaluating bronchial intervention outcome. This is an ongoing study and more data will be collected for more robust statistics.

CLINICAL IMPLICATIONS:

The VRIXP™ technology's QLD has the potential to quantify bronchoscope interventions in a rapid and radiation free manner and can be even applied in severely compromised patients that can not undergo conventional diagnostic procedures before intervention. This can also influence in choosing the best intervention method.