

Clinical yield of vibration response imaging technology for pleural diseases.

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Objective

Vibration response imaging (VRI) is a new system recording the vibrations produced by airflow which converts the signals to a dynamic image of the lung. The vibration energy throughout the breathing cycle can be quantified for any lung region, by integrating the energy over 42 acoustic sensors placed on the patient's back. Since the vibration response of a body depends on its structural properties, complex structures can exhibit acoustic responses, which may vary in space, time and frequency. Moreover, abnormalities of the lung and the pleural space are reflected by modifications of the vibration response.

The aim of the study was to evaluate the clinical yield of the vibration response imaging (VRI) in a group of patients suffering from pleural diseases including pleural effusions and pneumothoraces

Material and methods

Chest X ray (CXR) and Vibration response imaging (VRI) (Deep Breeze Ltd., Or-Akiva, Israel) was used in consecutive patients presenting pleural effusions or pneumothorax before and after therapeutic procedures (thoracentesis for pleural effusions, exsufflation or pleurocath placement in case of pneumothorax).

Results

Twenty five patients (20 pleural effusions and 5 pneumothorax) were enrolled in this study.

For each patient we found a very good correspondence between CXR and VRI abnormalities both before and after therapeutic procedures.

Furthermore, the possibility to perform VRI instantaneously after the procedure allows a rapid assessment of the efficacy of the procedure and the detection of potential complications such as iatrogenic pneumothorax in case of thoracentesis.

Conclusion

VRI technology, a radiation-free thoracic imaging, could replaced CXR in order to assess the efficacy or the complications of therapeutic procedures in pleural diseases.