

Pleural Disease

Wednesday, November 2, 2005

12:30 PM - 2:00 PM

VIBRATION RESPONSE IMAGING (VRI): A NEW MODALITY FOR EVALUATION AND FOLLOW-UP OF PLEURAL EFFUSION (PE)

Ram Mor, MD*, Tatiana Boikaner, MD, Avi Man, MD, Zipi Yemini, Igal Kushnir, MD and Joel Greif, MD

Pulmonary Institute, Tel Aviv Med Center, Tel-Aviv, Israel

PURPOSE: **Imaging** is essential for confirmation of PE, especially prior to taping. Chest X-ray (CXR) cannot be done effectively at bedside and involves radiation. Ultrasound requires expensive equipment and special skills. Follow-up of patients after drainage usually involves repeated radiation for weeks or months. The VRI system constructs a dynamic lung image from **vibrations** produced by airflow. The **vibrations**, hence the image, are altered by the airway and parenchymal abnormalities. The **vibration** energy from 40 sensors, attached to the back, is processed during breathing cycles and creates a dynamic image. The presence of fluid as well as compression and displacement of the lungs by PE are easily detected by this method. Changes in the amount of pleural fluid can be seen in successive VRI recordings. To evaluate this novel technology in the monitoring of PE compared to conventional CXR.

METHODS: We analyzed the VRI of 10 patients (6 males) with avg. 69.7 yrs with PE. The presence of PE was confirmed by a standard CXR; one case of large PE (> 2 Lit.), 6 with moderate PE (1–2 Lit.) and 2 with small PE (< 1 Lit.). Repeated CXR and VRI were obtained following drainage in all cases.

RESULTS: The characteristic VRI image of PE showed a meniscus shape in the lower lobe(s) and absence of **vibration response** (VR) in the area of the pleural fluid. Absence of VR was correlated to the region of PE as determined by the CXR in 9/10 (90%) patients. Following treatment, VRI images showed increased **vibration response** in the drained area in all 10 cases, which corresponded with CXR clearing. The decrease in fluid level after drainage was evident in all the VRI recordings.

CONCLUSION: The VRI provides a simple, bedside, radiation-free approach to follow the course of pleural effusion; thereby, improving the cost effectiveness of bedside evaluation and follow up.

CLINICAL IMPLICATIONS: The VRI provides a simple, radiation-free approach to follow the course of pleural effusion; thereby, improving the cost effectiveness of bedside follow up.

DISCLOSURE: Ram Mor, None.

www.chestjournal.com