22. Lung Fluid Amounts Estimated by Remote Dielectric Sensing Values and Invasive Hemodynamic Measurements

Teruhiko Imamura, Masakazu Hori, Yohei Ueno, Makiko Nakamura, Naoya Kataoka, Mitsuo Sobajima, Nobuyuki Fukuda, Hiroshi Ueno, Koichiro Kinugawa, University of Toyama, Toyama, Japan

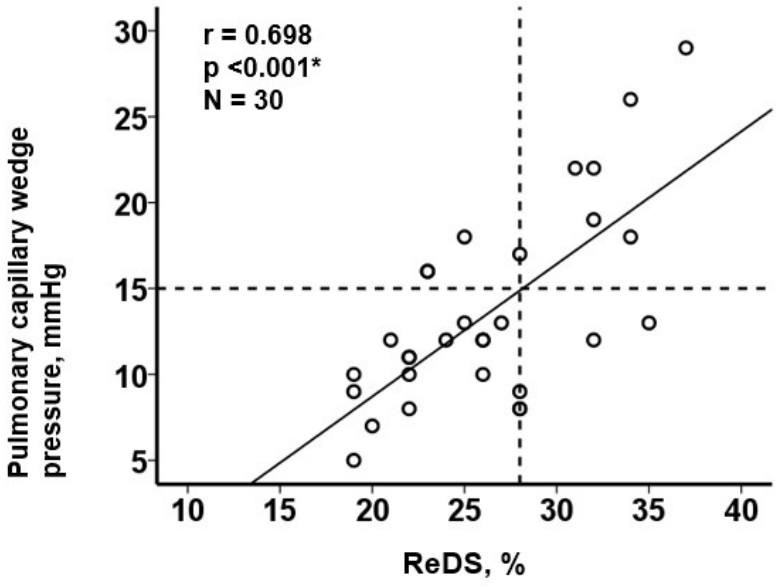
Body

Background: Remote dielectric sensing (ReDSTM) is a recently introduced non-invasive electromagnetic-based technology to quantify lung fluid levels. The association between ReDS values and invasively measured hemodynamics, particularly among those with small body size, remains uncertain.

Methods: Consecutive patients with chronic heart failure who were admitted to our institute and underwent right heart catheterization and simultaneous ReDS measurement at clinically stable conditions between Sep and Nov 2021 were prospectively included. The correlation between ReDS values and pulmonary capillary wedge pressure was investigated.

Results: A total of 30 patients (median 79 [73, 84] years old, 13 men) were included. Median ReDS value was 26% (22%, 28%). ReDS values had a moderate correlation with pulmonary capillary wedge pressure ($r = 0.698$, $p < 0.001$), even among those with a height <155 cm. ReDS values with a cutoff 28% predicted a pulmonary capillary wedge pressure >15 mmHg with sensitivity 0.70 and specificity 0.75.

Conclusion: A non-invasive electromagnetic-based technology ReDS should be a promising tool to estimate cardiac pressure in patients with heart failure, even among those with smaller body size.



Clinical Implications: My study will help enable cardiovascular clinicians to estimate intra-cardiac pressure by utilizing a novel remote dielectric sensing system non-invasively.