Discrimination of False-Positive Events Transmitted via Optivol Fluid Status Monitoring Using an Analysis of Rising Pattern of Optivol Fluid Index

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Optivol fluid status monitoring measures intrathoracic impedance and Optivol Fluid Index (OVFI) provides an early warning of thoracic fluid retention. We evaluated the predictive value of these data as early warning of exacerbation of heart failure (HF). 82 consecutive patients with structural heart disease treated with Medtronic CRT-D or ICD were enrolled. During a mean follow-up period of 352 ± 131 days, 531 clinical data were transmitted via CareLink Network. The ratio of Optivol fluid alerts was 31% (163 episodes) of all episodes. 56 patients (68%) presented positive results, 18% (30 episodes) of them presented the signs of worsening of HF (group A). In contrast, 133 episodes presented no signs of worsening HF (group B). The mean time between the initial OVFI threshold crossing and peak amplitude in group A was longer than group B (19.1 ± 6.8 vs 12.6 ± 10.2 days, P=0.0014). The mean duration above the OVFI threshold in group A was longer than group B (49.1 ± 34.2 vs 17.6 ± 16.2 days, P<0.0001). The frequency of peak amplitude of OVFI exceeding 200 (ohm) was higher in group A than group B (76.7% vs 9.0%). These results suggest that gradual elevation, extended threshold crossing period and higher amplitude of OVFI may be useful to discriminate false-positive events.

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