Abstract: P6334

Daily body weight in patients with chronic heart failure: improved diagnostic value by analysing prolonged time intervals

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Topic(s):
Chronic Heart Failure - Clinical

Citation:
Background: Daily body weight (BW) is a mainstay in the management of patients with chronic heart failure (HF). Guidelines recommend to take action if BW increases more than 2kg within 3 days. However, the evidence behind the 2kg/3d rule is unclear and studies have shown poor diagnostic performance of this algorithm.

Purpose: To assess the diagnostic value of different BW thresholds and time intervals to alert for imminent HF decompensation.

Methods: We studied 184 patients with HF (age 71±10 yr, EF 26±11%). 43% had been hospitalized for HF during the preceding year. They were assessed by daily BW using digital scales with direct data transfer to a central data base. The mean follow-up was 286 days.

To decrease day-to-day variability, BW was analysed based on a daily moving average over 3 days. We retrospectively calculated the sensitivity and false-positive rate of BW thresholds at 1.5, 2.0, 2.5, 3.0 and 3.5 kg and time intervals between 2 and 30 days. Threshold crossings occurring within 30 days prior to a hospitalization for decompensated HF were deemed a positive alert.

Results: The sensitivity of 2kg/3d was poor (13%). Prolonging the time interval of weight changes markedly improved sensitivity. Increasing the weight threshold decreased the false positive rate. Greatest sensitivity (60%) was achieved using a 14 day interval at a weight threshold of 1.5 kg. However, this was associated with a high rate of false alerts (3.1 per patient/year). A weight threshold of 3.5 kg resulted in excellent specificity (0.3 false alerts per patient/year), however sensitivity was low (20%, 20 day time interval).

Conclusion: Monitoring daily BW using a 2kg/3d algorithm is associated with poor diagnostic performance. Generally, by analyzing stable trends over time (moving average) and using prolonged time intervals, BW monitoring with digital scales can achieve a clinically meaningful diagnostic performance. This new approach to BW monitoring may improve early detection of imminent HF decompensation.
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