Our purpose was to evaluate the feasibility and accuracy of CVP estimates assessed upon the height of hand veins collapse (HVC) using invasively measured CVP as the gold standard” Vogel et al (2019).

Abstract:

Rapid estimates of the central venous pressure (CVP) can be helpful to administer early fluid therapy or to manage cardiac preload in intensive care units, operating rooms or emergency rooms in order to start and monitor an adequate medical therapy. Invasive CVP measurements have inherent and non-negligible complication rates as well as great expenditures. Several noninvasive methods of CVP measurements, like ultrasound-guided techniques, are available, but require trained skills and special equipment which might not be at hand in all situations.

Our purpose was to evaluate the feasibility and accuracy of CVP estimates assessed upon the height of hand veins collapse (HVC) using invasively measured CVP as the gold standard.

The HVC was determined by slowly lifting the patient’s hand while watching the dorsal hand veins to collapse. The vertical distance from the dorsal hand to a transducer air zero port was noted and converted to mmHg. The observer was blinded to the simultaneously measured CVP values, which were categorized as low (<7 mmHg), normal (7–12 mmHg) and high (>12 mmHg).

Measurements were performed in 82 patients who had a median age of 67 [60;74]. Median CVP was 12 [8;15] mmHg and the median absolute difference between the measured HVC and CVP was 4 [2;7] mmHg. The Spearman correlation coefficient between CVP and HVC was 0.55, 95%-CI [0.35;0.69]. Overall CVP categorization was correct in 45% of the cases. HVC had a sensitivity of 92% for a low CVP with a negative predictive value of 98%. A high HVC had a sensitivity of 29% but a high specificity of 94% for a high CVP.

The overall performance of observing the hand vein collapse to estimate CVP was only moderate in the intensive care setting. However, the median difference to the CVP was low and HVC identifies a low CVP with a high sensitivity and excellent negative predictive value.
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