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**Symptomatic Hypotension, Venous Oximetry and Outpatient Hemodialysis**

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**Problem Statement:** Symptomatic hypotension is the most common complication during hemodialysis. It can induce cardiac arrhythmias and predisposes patients to coronary, splanchnic, and/or cerebral ischemic events. Non-invasive intermittent blood pressure measurement is used to identify hypotension during dialysis, yet it is a post-facto indicator of intravascular hypovolemia. Continuous monitoring of central venous oxygen saturation (ScvO<sub>2</sub>) may offer an innovative approach to early detection of symptomatic hypotension during outpatient hemodialysis.

**Aims:** The overall aim of this study is to determine whether ScvO<sub>2</sub> is related to changes in systolic blood pressure (SBP) and acute signs and symptoms in outpatients undergoing hemodialysis. The specific aims of this study are to determine the: 1.) change in ScvO<sub>2</sub> as fluid is removed during outpatient hemodialysis; 2) relationship between ScvO<sub>2</sub> and changes in systolic blood pressure during hemodialysis; 3.) association between percent change in ScvO<sub>2</sub> and acute signs and symptoms during hemodialysis; 4.) association between the percent change in SBP and acute signs and symptoms during hemodialysis; and 5.) change in ScvO<sub>2</sub> in patients without symptomatic hypotension compared to those with symptomatic hypotension.

**Methods:** In this prospective observational study, data were collected from adult hemodialysis outpatients with a central line dialysis catheter. ScvO<sub>2</sub>, blood pressure, blood volume change, total fluid removed and acute signs and symptoms were recorded during one week of consecutive hemodialysis treatments. Descriptive statistics, multi-level regression and multi-level negative binomial regression models were utilized to analyze data.

**Findings:** Subjects (n=39) were mostly male (56%), African American (49%) and White (28%) with a mean age of 60 +17 years. There was a statistically significant linear and quadratic change in ScvO<sub>2</sub> over the duration of hemodialysis and the change trajectory was significantly greater in those patients with symptomatic hypotension. ScvO<sub>2</sub> was significantly associated with SBP and acute signs and symptoms. Acute symptoms associated with hypotension occurred in 38% of patients and 24% of dialysis treatments.

**Conclusion:** ScvO<sub>2</sub> may be used by dialysis nurses to guide therapeutic interventions to avoid symptomatic hypotension in the outpatient setting. Further research is warranted to replicate these findings and broaden our understanding of strategies to mitigate hypotensive symptoms.

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