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Assessment of Volume Status in Maintenance Hemodialysis Patients: a Comparitive Evaluation between Clinical Judgement and IVC Measurements

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Objectives : The objective of this study is to assess the reliability of volume status by comparing the IVC measurements and clinical assessments among maintenance hemodialysis patients.
Methods : A prospective comparative study was carried out including 18 patients undergoing maintenance hemodialysis at Bahria International Hospital, Pakistan. Each patient's volume status was first assessed by a physician using traditional clinical methods, including intradialytic hypotension and tachycardia, skin turgor, dryness of tongue, engorged neck veins, lung auscultation for crepitations, and evaluation of peripheral edema. Following the clinical assessment, the same patients underwent ultrasound-guided inferior vena cava collapsibility index (IVC-CI) measurement by a POCUS certified physician. The results from both methods were recorded and compared to evaluate the accuracy and reliability of IVC-CI in assessing volume status in hemodialysis patients. Information related to threshold points and methods adopted for clinical assessment is presented in Figure 1. To understand the agreement between these two methods, data was analyzed using Stata by employing Cohen's Kappa technique.
Results : The results of Cohen's Kappa method are found to be significant at 1% level of significance, indicating that there is substantial agreement between clinical methods and ultrasound assessment techniques. Further, the agreement rate is found to be 83.33% as shown in table 1.
Conclusions : This study reveals a substantial agreement between ultrasound-guided IVC collapsibility index and traditional clinical assessment methods in evaluating volume status in hemodialysis patients. The high correlation ($\kappa = 0.7128$, $P = 0.0001$) suggests that IVC-CI is a reliable non-invasive tool for fluid management. Incorporating ultrasound-based assessment into routine practice may enhance accuracy, save time and improve patient outcomes.

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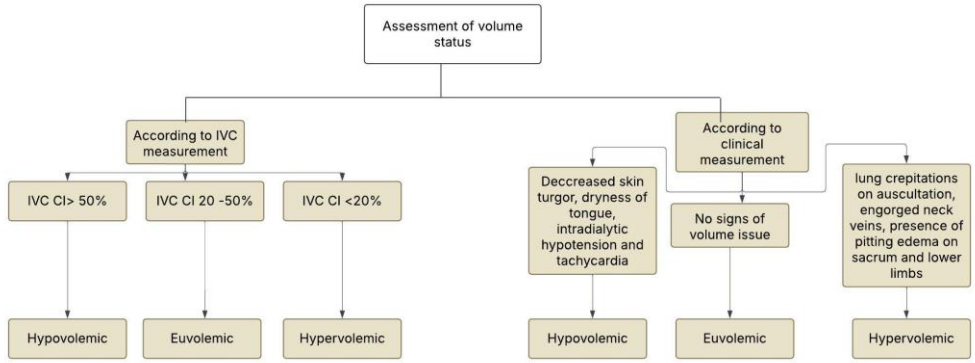

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Table 1:	**Comparison of Volume Status Assessment by IVC and Clinical Evaluatio**				
Volume status by IVC	**Volume status clinically**			**Kappa**	**p Value**
	Hypovolemic	Hypervolemic	Euvolemic		
Hypovolemic	4	0	0	0.7128	0.0001
Hypervolemic	0	4	2		
Euvolemic	0	0	8		
Data is N					