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REVIEWER'S REPORT

Manuscript No.: IJAR-52961 Date: 23/07/2025

Title: *High Central Venous Oxygen Saturation and Elevated Serum Lactate in Septic Shock: A Marker of Impaired Oxygen Utilization*

Recommendation:
✓ Accept as it is .....
Accept after minor revision.....
Accept after major revision .....
Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity		✓		
Significance	✓			

Reviewer Name: Dr. S. K. Nath Date: 23/07/2025

Reviewer's Comment for Publication:
The study concludes that high $ScvO_2$ (>85%) can paradoxically be associated with elevated serum lactate levels, indicating impaired tissue oxygen utilization rather than effective oxygenation. It emphasizes that SaO_2 alone does not reflect tissue perfusion status. For better assessment of septic shock patients, combining $ScvO_2$ and lactate monitoring offers a more accurate depiction of oxygenation and metabolic status, guiding more effective resuscitation strategies.

Reviewer's Comment / Report

Strengths of the Study:
- **Prospective and Observational Design:** Allows for real-time data collection and monitoring, providing a clearer picture of dynamic changes in markers during septic shock management.
- **Clear Inclusion/Exclusion Criteria:** Focused on adult septic shock patients, with specific parameters for patient selection, increasing the internal validity.
- **Multiple Measurement Timepoints:** Data collected at standardized intervals (e.g., 1 hour, 6 hours, 12/24 hours) to observe trends over time and assess the utility of markers dynamically.
- **Relevant and Clinically Significant Markers:** The study examines key indicators ($ScvO_2$, SaO_2, serum lactate), which are routinely used in critical care settings, enhancing the practical relevance of findings.
- **Findings Supported by Statistical Analysis:** Includes correlation analysis and group comparisons, adding robustness to the conclusions.

Weaknesses of the Study:
- **Small Sample Size (n=50):** Limits generalizability and statistical power, reducing confidence in applying findings broadly.
- **Single-Center Study:** Findings may not be representative of different populations or healthcare settings.
- **Lack of Outcome Data:** The study emphasizes correlations without directly linking these markers to clinical outcomes such as mortality, organ failure, or length of stay.
- **Limited Exploration of Pathophysiology:** While it notes that high $ScvO_2$ may reflect impaired oxygen extraction, detailed mechanistic insights or additional microcirculatory assessments are lacking.
- **No Interventional Component:** As an observational study, it cannot determine causality or how modifying these parameters might influence outcomes.
- **Potential Measurement Variability:** Variability in timing and technique of sample collection could affect results, though this is inherent in clinical studies.