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abstract

The Relationship Between Estimated and Measured Glomerular Filtration Rate in Pediatric Hematopoietic Stem Cell Transplant Recipients: Single Centre Experience

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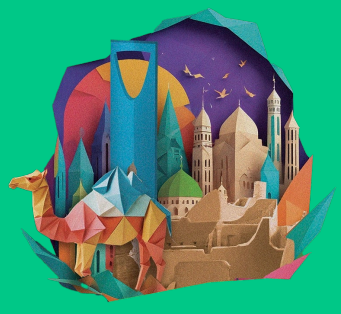

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abstract

The Relationship Between Estimated and Measured Glomerular Filtration Rate in Pediatric Hematopoietic Stem Cell Transplant Recipients: Single Centre Experience

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Introduction: Glomerular filtration rate (GFR) is a vital parameter in determining pediatric eligibility for hematopoietic stem cell transplant (HSCT). However, there are no established guidelines for GFR assessment in this population outside of research protocols. The Tc-99m DTPA scan is frequently employed in clinical practice to assess GFR, while the Schwartz formula serves as a more accessible alternative. This study aimed to compare and assess if there is a discrepancy between the Tc-99m DTPA scan and Schwartz formula in assessing GFR.

Methodology: We performed a retrospective chart review study on 100 pediatric patients who underwent HSCT at King Abdulaziz Medical City, Jeddah, from January 2016 to February 2024. All patients had both Nuclear GFR and Schwartz GFR measured pre-transplant and at post-transplant intervals, and abnormal GFR was classed as <100mL/min. Bland-Altman Analysis and Student's t-test were used to assess agreement and calculate statistical differences.

Results: The mean GFR values were 112.8 mL/min and 113 mL/min for Schwartz and Nuclear methods respectively, with no statistically significant difference between the values (p=0.83). However, average percentage accuracy was 21%, and only 27% of Schwartz GFR values fell within 10% of nuclear GFR. The mean bias was 0.62 mL/min, with 95% limits of agreement ranging from -56.6 to 57.8 mL/min.

Conclusion: There was no statistically significant difference between mean GFR in both techniques; however, the Schwartz formula displayed suboptimal accuracy and broad variability compared to nuclear GFR. We recommend Schwartz formula to be implemented as a preliminary screening tool for renal insufficiency, with the Tc-99m-DTPA being implemented as a confirmatory method for abnormal results.