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The Performance of Urinary Albumin to Creatinine Ratio to Predict Renal Transplantation Outcomes: A Meta-Analysis

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Objectives: The urinary albumin to creatinine ratio is a biomarker describing kidney function correlated with the glomerular filtration rate. The advantages of this biomarker are that it is relatively stable, describes the long-term function, and is not affected by inflammatory conditions. However, its role in predicting the clinical outcome of renal transplants is not yet well known. This meta-analysis aims to evaluate the performance of urinary albumin to creatinine ratio to predict renal transplantation outcomes

Methods: We searched the electronic database in PubMed, Google Scholar, and Scopus up to January 2023 to find how the urinary albumin to creatinine ratio could be used to predict renal transplantation outcomes. The pooled area under Receiver Operating Characteristic (ROC) curve was used to evaluate the performance of the urinary albumin to creatinine ratio to predict the five-year mortality. The use of a fixed-effect or random-effects model depended on heterogeneity.

Results: Among 584 searched studies, five studies were finally included for meta-analysis. All studies showed AUC > 0.5 to predict mortality with significant heterogeneity. The random effect pooled area under the receiver operating characteristic curve was 0.829 (95%CI 0.761 to 0.897, $p<0.001$).

Conclusions: Our meta-analysis indicated that the urinary albumin to creatinine ratio could be used to predict renal transplantation outcomes. However, this meta-analysis does not stratify the urinary albumin to creatinine ratio due to resource limitations. More studies are needed to assess the predictive value of various urinary albumin-to-creatinine ratio cut off.

Figure 1. Flow diagram