STUDY OF MODALITIES FOR ASSESSMENT OF RENAL TISSUE (SMART); KIDNEY BIOPSIES WITH ULTRASOUND VS. CT GUIDANCE: A RETROSPECTIVE ANALYSIS

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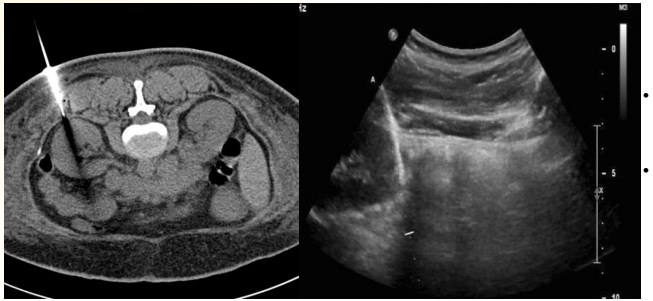
Introduction

Kidney percutaneous biopsies are vital for diagnosing renal diseases, yet the choice between ultrasound (US) and computed tomography (CT) guidance remains debated. There is research regarding US guidance being superior to blinded non-focal biopsies. But no research has directly compared US to CT.

This study evaluates these modalities to determine if one offers a significant advantage in glomerular yield or post-op complications aiming to standardize approach.



Methods

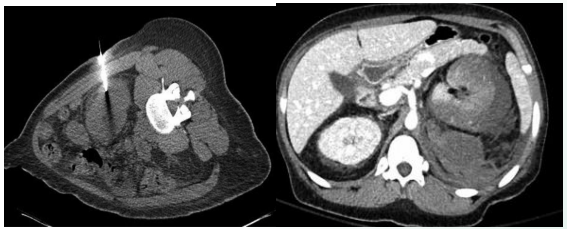
- **A retrospective chart review included individuals over 18 years of age who underwent random renal biopsies in the Detroit Medical Center hospital system between January 2013 and December 2022.**
- **Data extracted included demographic information, Body Mass Index, procedural details, glomerular yield, and post-op complications that were quantified according to the Adverse Event Classification by the Society of Interventional Radiology.**
- **A total of 590 patient charts were reviewed, yielding 55.8% male patients and 44.2% female patients. Native and transplanted kidneys comprised 57.3% and 42.7% of biopsies, respectively. The mean age of patients was 45.96 (SD = 16.59).**

Results

- The results of an independent samples t-test revealed no statistically significant difference in the glomerular yield between biopsies obtained utilizing CT (M = 20.47 , SD = 14.25) or US (M = 21.72, SD = 13.10) guidance (t(584) = - 0.83, p = .41).
- All biopsies with a glomerular yield of zero utilized US guidance (n = 6, 1.2% of 499 US guided procedures) and were in patients with a BMI greater than 25.
- A chi-square test of independence performed to examine the relation between modality and post-procedural complications showed statistical significance, X2 (2, N = 590) = 106.38, p < .001. Biopsies using CT guidance were more likely to have mild adverse events. There were no life threatening events or deaths directly associated with the procedures.

Conclusion

US and CT guided renal biopsies have comparable glomerular yield. In conclusion, US guidance stands out for its portability, accessibility, cost-effectiveness, and radiation-free nature compared to CT.



Computed tomography, axial view, demonstrates percutaneous biopsy needle within the left kidney (Right) and post-biopsy perinephric hematoma (Left).

References

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