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Sex Differences in Outcomes Among Patients Who Underwent Cardiac Ablation: A Retrospective Cohort Study

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Sex Differences in Outcomes Among Patients Who Underwent Cardiac Ablation: A Retrospective Cohort Study

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Background

Cardiac ablation, encompassing radiofrequency and cryoablation modalities, is a therapeutic intervention targeting abnormal heart rhythms by disrupting electrical pathways within the heart. Despite its widespread use, research focusing on sex-specific outcomes among patients undergoing cardiac ablation remains limited. Understanding potential sex differences in treatment response and outcomes is crucial for optimizing patient care and outcomes.^{1,2} Therefore, this retrospective cohort study aimed to analyze the national inpatient sample database to assess in-hospital outcomes among patients undergoing cardiac ablation, specifically focusing on sex disparities.

Methods

Data from the National Inpatient Sample (NIS) Database for the years 2019 and 2020 were utilized to identify hospitalizations of female patients who underwent cardiac ablation based on international classification of diseases 10th revision codes. Multivariate logistic regression was employed to adjust for confounding variables, with inpatient mortality as the primary outcome measure. Statistical analyses were conducted using SPSS software.

Results

The study cohort comprised 25,754 patients who underwent cardiac ablation, including 9,616 (37.3%) females. Female patients undergoing cardiac ablation exhibited a higher prevalence of hypertension (66.8% vs. 51%, $P < 0.001$) and chronic kidney disease (35.2% vs. 23.6%, $P < 0.001$) compared to their male counterparts. In-hospital mortality was significantly elevated among female patients (1.3% vs. 1.2%, $P < 0.001$). Multivariate regression analysis revealed that female patients had a higher risk of inpatient mortality (OR 1.446, 95% CI 1.355-1.542, $P < 0.001$) and increased odds of adverse events including ventricular arrhythmia, acute kidney failure, stroke, and deep vein thrombosis.

Outcomes	Odds Ratio	95% CI	P-Value
Ventricular Arrhythmia	1.300	1.279-1.322	< 0.001
Acute Kidney Failure	1.442	1.417-1.468	< 0.001
Stroke	1.700	1.648-1.754	< 0.001
DVT	1.613	1.494-1.742	< 0.001

Conclusion

This nationally representative retrospective cohort study highlights the association between female sex and heightened mortality, as well as worse outcomes, among patients undergoing cardiac ablation. These findings emphasize the importance of considering sex-specific factors in treatment strategies to optimize outcomes and minimize disparities in cardiac care.

References

- 1.Redfearn DP, et al. Sex Differences in Outcomes After Ablation for Atrial Fibrillation: A Systematic Review and Meta-analysis. *JACC Clin Electrophysiol.* 2019;5(3):296-305.
- 2.Blomström-Lundqvist C, et al. 2020 ESC Guidelines for the Diagnosis and Management of Atrial Fibrillation Developed in Collaboration with the European Association for Cardio-Thoracic Surgery (EACTS). *Eur Heart J.* 2021;42(5):373-498.