Contemporary Trends in Renal Artery Stenting for Patients with Renovascular Disease in the United States: Effect of Clinical Trials on Management

Waseem Wahood, MS[1]; Edwin A Takahashi, MD[2]; Andrew H Stockland, MD[2]; Christopher J Reisenauer, MD[2]; Sanjay Misra, MD[2]

1. Dr. Kiran C. Patel College of Allopathic Medicine, Nova Southeastern University, Davie, FL
2. Department of Interventional Radiology, Mayo Clinic, Rochester, MN

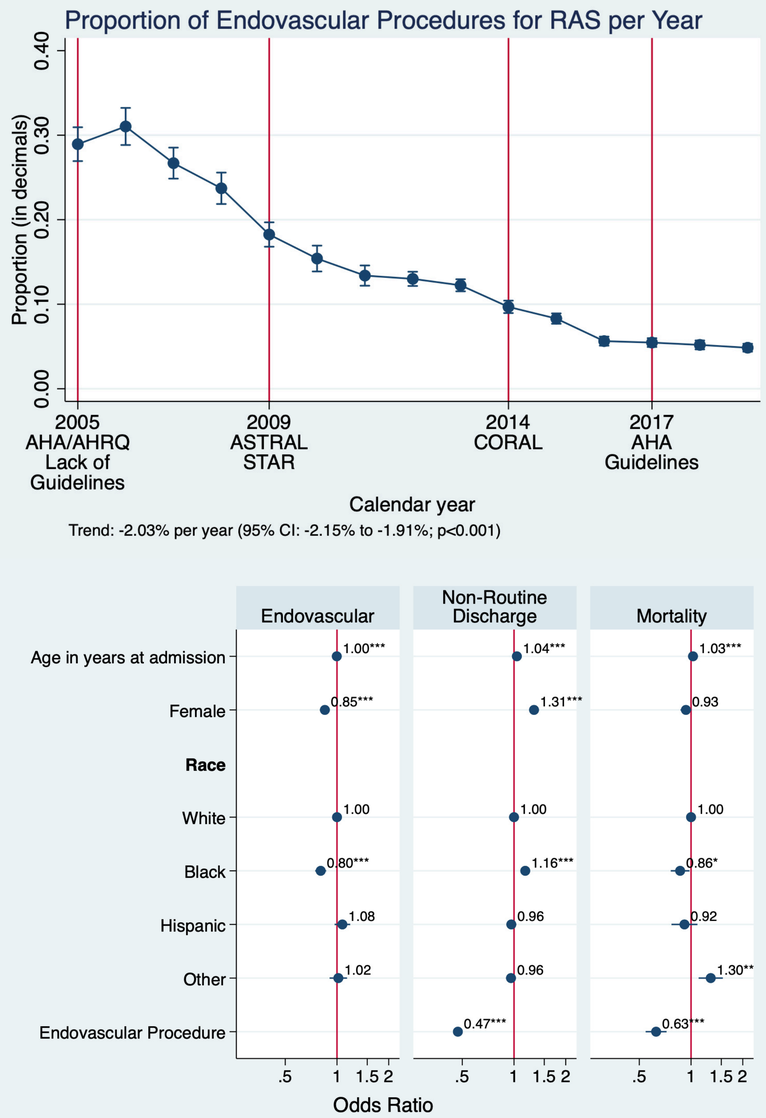
Background

In the past two decades, randomized clinical trials regarding intervention for renal artery stenosis (RAS) were emerging. Among them are the STAR, ASTRAL, and CORAL trials. Additionally, the AHA, ACC, and AHRQ released statements regarding the interpretation of these trials' findings, indicating that medical management alone is favorable over endovascular intervention. The impact of these trials on changes in the rates of intervention and outcomes is unknown. Thus, we investigated whether the conclusions may have influenced treatment modalities and outcomes of RAS.

Materials and Methods

The National Inpatient Sample (NIS) was queried between 2005 to 2019, for adult patients with RAS. Endovascular interventions included angioplasty and/or stenting. Cochrane-Armitage test was conducted to assess trends in proportion of endovascular intervention among those with RAS in three different time periods: 2005-2009 (pre-ASTRAL and -STAR), 2009-2014 (post-ASTRAL and -STAR) and 2014-2019 (post-CORAL). Multivariable logistic regression was used to assess patient profile of those who received endovascular intervention, non-routine discharge, and in-hospital mortality. Admissions involving fibromuscular dysplasia and open intervention were excluded.

Figure 1-2



Results

915,802 admissions were identified; 156,119 (17.05%) of them involved endovascular intervention. There was a decrease in trends of proportion of endovascular intervention by 2.03% per year (95% CI: -2.15 to -1.91; p<0.001). Additionally, there was a decrease in trends of proportion of endovascular intervention in the three time periods (2005-2009: -3.24% [-3.72, -2.76]; p<0.001. 2009-2014: -2.03% [-2.32, -1.75]; p<0.001. 2014-2019: -0.96% [-1.11, -0.81]; p<0.001).

Black patients (OR: 0.80; p<0.001), females (OR: 0.85; p<0.001), and those on long-term anticoagulation (OR: 0.70; p<0.001) had lower odds of receiving endovascular intervention. Those who received endovascular intervention had lower odds of non-routine discharge (OR: 0.47; p<0.001) and mortality (OR: 0.63; p<0.001).

Conclusion

Our analysis demonstrated that the trends in proportion of endovascular intervention decreased over the 15 years analyzed, suggesting that it may have influenced treatment practices for RAS. Additionally, endovascular intervention had lower odds of non-routine discharge and mortality, which may indicate that careful selection for treatment have improved over the years.

Contact Information

Name: Waseem Wahood
Email: ww412@mynsu.nova.edu