Clinical Outcomes of Atrial Fibrillation in Aortic Aneurysm Patients: Insights from the National Inpatient Sample

Analysis for RCOP NIS Cardio13

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## Preamble:

* **Reference Papers:**
  + [Kumi et al. 2024](https://doi.org/10.1136/bmjopen-2023-077839)
* **Study Objective**: Examine the impact of atrial fibrillation on in-hospital mortality and length of stay among inpatient admissions with a principal diagnosis of aortic aneurysm (AA).
* **Data Source**: Cross-sectional analysis of the National Inpatient Sample (NIS) from 2018 to 2020.
* **Patient Selection**: Included all inpatient admissions with a principal diagnosis of AA.
* **Aortic Aneurysm + Atrial Fibrillation Categories**:
  + Aortic Aneurysm with Atrial Fibrillation
  + Aortic Aneurysm without Atrial Fibrillation
* **Primary Outcomes**:
  + In-hospital all-cause mortality
  + Total hospital length of stay (days)
* **Statistical Analysis**: Multiple logistic and linear regression to determine the independent association of atrial fibrillation with in-hospital mortality and length of stay, respectively, adjusted for:
  + Demographics:
  + Medical History:
  + Comorbidities:
* **Software:** All analyses were performed using R Version 4.4.1 (R Foundation for Statistical Computing, Vienna, Austria)

## Baseline Table:

| **Characteristic** | **Overall**, N = 200,2501 | **Aortic Aneurysm with Atrial Fibrillation**, N = 39,0301 | **Aortic Aneurysm without Atrial Fibrillation**, N = 161,2201 | **p-value**2 |
| --- | --- | --- | --- | --- |
| Age, y | 70 (12) | 73 (11) | 69 (12) | <0.001 |
| Sex |  |  |  | 0.2 |
| Female | 59,240 (30%) | 11,765 (30%) | 47,475 (29%) |  |
| Male | 141,010 (70%) | 27,265 (70%) | 113,745 (71%) |  |
| Race |  |  |  | <0.001 |
| White | 150,495 (77%) | 30,940 (82%) | 119,555 (76%) |  |
| Asian or Pacific Islander | 5,250 (2.7%) | 1,105 (2.9%) | 4,145 (2.6%) |  |
| Black | 22,075 (11%) | 2,890 (7.6%) | 19,185 (12%) |  |
| Hispanic | 10,695 (5.5%) | 1,830 (4.8%) | 8,865 (5.7%) |  |
| Native American | 740 (0.4%) | 120 (0.3%) | 620 (0.4%) |  |
| Other | 5,130 (2.6%) | 975 (2.6%) | 4,155 (2.7%) |  |
| Charlson comorbidity index | 2.63 (1.70) | 2.98 (1.80) | 2.54 (1.66) | <0.001 |
| Residential income |  |  |  | <0.001 |
| $1 - $51,999 | 54,180 (28%) | 8,995 (23%) | 45,185 (29%) |  |
| $52,000 - $65,999 | 53,525 (27%) | 10,025 (26%) | 43,500 (27%) |  |
| $66,000 - $87,999 | 48,415 (25%) | 10,115 (26%) | 38,300 (24%) |  |
| $88,000 or more | 40,700 (21%) | 9,260 (24%) | 31,440 (20%) |  |
| Expected primary payer |  |  |  | <0.001 |
| Private | 47,895 (24%) | 7,875 (20%) | 40,020 (25%) |  |
| Medicaid | 13,350 (6.7%) | 1,670 (4.3%) | 11,680 (7.3%) |  |
| Medicare | 133,140 (67%) | 28,480 (73%) | 104,660 (65%) |  |
| Other | 5,610 (2.8%) | 980 (2.5%) | 4,630 (2.9%) |  |
| Hospital region |  |  |  | <0.001 |
| Midwest | 49,140 (25%) | 9,875 (25%) | 39,265 (24%) |  |
| Northeast | 35,830 (18%) | 7,095 (18%) | 28,735 (18%) |  |
| South | 77,960 (39%) | 14,105 (36%) | 63,855 (40%) |  |
| West | 37,320 (19%) | 7,955 (20%) | 29,365 (18%) |  |
| Hospital bedsize |  |  |  | <0.001 |
| Large | 131,165 (66%) | 26,610 (68%) | 104,555 (65%) |  |
| Medium | 46,390 (23%) | 8,465 (22%) | 37,925 (24%) |  |
| Small | 22,695 (11%) | 3,955 (10%) | 18,740 (12%) |  |
| Hospital location and teaching status |  |  |  | <0.001 |
| Rural | 6,100 (3.0%) | 930 (2.4%) | 5,170 (3.2%) |  |
| Urban, non-teaching | 22,565 (11%) | 3,880 (9.9%) | 18,685 (12%) |  |
| Urban, teaching | 171,585 (86%) | 34,220 (88%) | 137,365 (85%) |  |
| Hypertension | 166,000 (83%) | 33,940 (87%) | 132,060 (82%) | <0.001 |
| Cerebrovascular disease | 17,455 (8.7%) | 4,265 (11%) | 13,190 (8.2%) | <0.001 |
| Heart failure | 36,420 (18%) | 12,575 (32%) | 23,845 (15%) | <0.001 |
| Diabetes mellitus | 35,950 (18%) | 7,325 (19%) | 28,625 (18%) | 0.042 |
| Chronic kidney disease | 41,105 (21%) | 9,835 (25%) | 31,270 (19%) | <0.001 |
| Chronic obstructive pulmonary disease | 60,135 (30%) | 12,365 (32%) | 47,770 (30%) | <0.001 |
| HIV/AIDS | 1,420 (0.7%) | 285 (0.7%) | 1,135 (0.7%) | 0.8 |
| 1Mean (SD); n (%) | | | | |
| 2Wilcoxon rank-sum test for complex survey samples; chi-squared test with Rao & Scott's second-order correction | | | | |

## Outcomes Table:

| **Characteristic** | **Overall**, N = 200,2501 | **Aortic Aneurysm with Atrial Fibrillation**, N = 39,0301 | **Aortic Aneurysm without Atrial Fibrillation**, N = 161,2201 | **p-value**2 |
| --- | --- | --- | --- | --- |
| Died during hospitalization | 12,550 (6.3%) | 2,890 (7.4%) | 9,660 (6.0%) | <0.001 |
| Length of stay (days) | 5.8 (8.2) | 7.9 (8.8) | 5.3 (7.9) | <0.001 |
| 1n (%); Mean (SD) | | | | |
| 2chi-squared test with Rao & Scott's second-order correction; Wilcoxon rank-sum test for complex survey samples | | | | |